DecoSpector 360™ Software Guide for Administrators

SOFTWARE VERSION: 6.2.23 SOFTWARE

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Chapter 1 Introduction

Welcome! Congratulations on your purchase of a Pressco DecoSpector 360™ system! The DecoSpector is an inspection system that performs extensive product quality checks on 100% of the decorated surface area of printed beverage cans.

The DecoSpector system locates the following on cans:

- Printing flaws (voids, spots, smears, cut blanket, etc.)
- Color conformity to specifications (drift, light, dark, contamination)
- Color to color registration (ghosting, shadows, shifts)
- Missing print coat (clear or white)

The DecoSpector system correlates defects to print blanket and mandrels, so that you can quickly locate problematic areas and make repairs or adjustments.

The system consists of a touch screen operator interface, a control enclosure, an inspection tunnel, and the associated cables connecting the components.

About this guide

This guide provides information about system features, setting up the system, using the software, and technical specifications. It is intended for Administrator-level users.

This guide provides the necessary information to operate a DecoSpector 360 system that is properly installed and programmed. Some machine functions require specialized training. This training is available from Pressco and may be conducted at your plant or at Pressco in Cleveland Ohio, USA. For more information, contact Pressco's training department.

This manual:

- Is valid for software version 6.2.23
- Is considered an integral part of the machine and should be kept handy for future reference as long as the system is being used in your plant
- Is your responsibility to keep in good condition, in a dry place, and ready for consultation by the authorized users of the system
- Contains the technology implemented at the time of selling and supplying the system and shall not be considered inadequate in case of technological enhancements in the machine or in the manual's illustrations

Related publications:

- DecoSpector 360 Operator Guide, intended for Operator-level users, and contains every day usage information.
- DecoSpector 360 Hardware Guide - or Technical Reference Guide, specific to cabinet type

The following types of alerts may appear in this guide:

> ***DANGER!*** *- Danger messages alert you to specific conditions that can cause serious or fatal personal injury. Danger messages give you important information which must be observed to prevent injury.*
>
> *WARNING: - Warning messages indicate information which must be observed to prevent injury, data loss, or equipment damage.*
>
> *CAUTION - Caution messages indicate important information which must be observed to prevent: loss of data, poor system performance, or equipment damage.*
>
> *Note: Notes contain special information that warrants being set off from the body text as shown here.*
>
> *IMPORTANT - Indicates prerequisites or information that must be observed to complete or understand a concept or task.*
>
> *TIP: Provides helpful hints for completing a task.*

Chapter 2 Safety Information

This section contains operator safety information that must be read before operating or servicing the system.

WARNING - This product contains no operator serviceable parts. Refer servicing to qualified personnel. To prevent electrical shock do not open cabinet doors whilst power is connected.

WARNING - Do not, under any circumstances, tamper with sealed machine parts or devices. This could result in the removal of protections that might create potentially hazardous conditions.

CAUTION - Possible hazardous optical radiation from LEDs. Do not stare at lamps.

Observe the following safety warnings when operating the system or working near it:

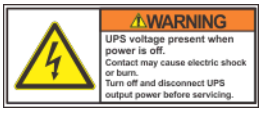
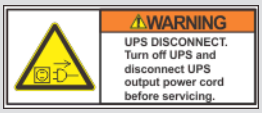
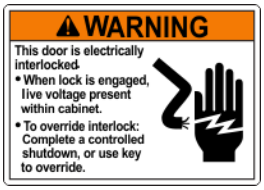
WARNING - Potential for projectiles to strike persons and cause injury. Keep clear of reject devices.

WARNING - Sensitive electronics and High Voltages may be exposed. Keep Processor Cabinet/ Electrical Control Box door closed.

Symbols Used With This System

The following symbols are used on or near the Pressco system. Be aware of potential risk hazards.

Symbol	Meaning
	CAUTION: Risk of danger. Refer to accompanying user documentation before use.
	WARNING: Risk of electric shock
	WARNING: Arc flash and shock hazard
	WARNING: Risk of electrical shock
	WARNING: Risk of burns from hot surface
	WARNING: Hand crush hazard
	On (supply)
	Off (supply)
	Alternating current

	Protective conductor terminal
	Warning: Arc flash and shock hazard
	Warning: UPS voltage present when power is off
	Warning: UPS Disconnect
	Warning: Electrical interlock
	Danger: shock and arc flash explosion hazards

Health Warning - Photosensitive Epilepsy

WARNING: PHOTOSENSITIVE EPILEPSY/ SEIZURES

A small percentage of individuals may experience epileptic symptoms or seizures when exposed to certain patterns or flashing lights. Exposure to the flashing lights in vision inspection systems may also trigger epileptic symptoms or seizures in these individuals. These flashing lights may trigger epileptic symptoms or seizures in persons who have no history of epileptic symptoms or seizures. If you, or anyone in your family has an epileptic condition or has had seizures of any kind, consult your physician before operating this machinery.

IMMEDIATELY DISCONTINUE use and consult your physician if you experience any of the following symptoms while operating this machinery:

- Dizziness
- Altered vision
- Eye or muscle twitches
- Loss of awareness
- Disorientation
- Seizures
- Any involuntary movement or convulsion

Epileptic symptom or seizure triggers vary from person to person. Some common triggers are:

- Flashing lights used for vision inspection systems or fire alarms
- Certain video games or TV broadcasts containing rapid flashes or alternating patterns of different colors
- Bright, contrasting patterns such as white bars against a black background
- Flashing white light followed by darkness
- Stimulating images that take up your complete field of vision, such as being very close to a TV screen or computer monitor
- Certain colors, such as red and blue

If you encounter something that might trigger epileptic symptoms or seizures without warning:

- Do not close your eyes (this could cause a flicker effect)
- Do not look directly at the flashing lights or trigger source
- Do cover one eye with the palm of your hand immediately
- Do turn away from the flashing lights or trigger source

Static Discharge Protection

Caution - Electronic components can be damaged by static electricity discharge.

Always observe the following precautions before removing, installing or handling any electronic components within the Inspection System:

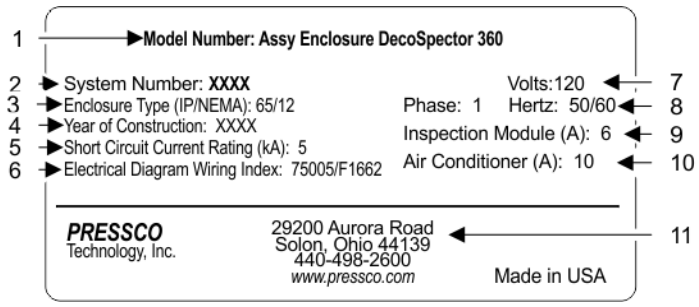
- Wear an anti-static wristband which is grounded to the Inspection System.
- Stand on an anti-static, grounded floor mat, and lay circuit boards on the mat during any board replacement.
- Keep circuit boards in static shield bags when storing and transporting. Ensure the bag is sealed.

Arc Welding Warning

WARNING - Potential equipment damage can occur if the vision equipment is not fully powered down prior to any arc welding performed on the line where the vision equipment is installed, specifically but not limited to our encoders.

Product Label

The following illustration shows an example label that you will find on the system components.



1) Name of component

2) Serial number

3) Enclosure type

4) Year of construction

5) Short circuit current rating (kA)

6) Electrical wiring diagram number (Pressco number)

7) Voltage range in Volts AC

8) Frequency range in Hertz (Hz)

9) Inspection module current rating

10) Air conditioner current rating

11) Place of construction

Warning Devices

The Pressco system has warning devices that indicate system failure or report excessive defects or warnings for your production line. These include an optional light tree, alarms and indicators on screen, and audible warnings (depending on system).

Alarms

User-programmable alarms allow you to set the duration of the lights in the optional light tree and the horn if certain criteria are met.

In addition to the light tree, an alarm button is displayed on screen when certain criteria are met. You can click the alarm button to clear the alarm(s) and see more detailed information about the alarm condition.

Light Tree

The optional light tree is mounted on a pole in a customer-specified location.

The light tree color segments represent each alarm or system condition. A color segment may appear for more than one alarm condition.

Residual Risk

The Pressco system has been designed to minimize any danger of personal injury. However, the system uses rejection devices to remove defective product from the production stream. Also, the electronics cabinets contain risk of shock if they are opened.

Observe the following safety warnings when operating the system or working near it:

> *WARNING - Potential for projectiles to strike persons and cause injury. Keep clear of reject devices.*
>
> *WARNING - Sensitive electronics and High Voltages may be exposed. Keep Processor Cabinet/ Electrical Control Box door closed.*

Intended Use

Type of Process - The Pressco system is intended to monitor container and other special manufacturing processes and identify non-conforming product.

Intended Use - The Pressco system is designed and constructed for use in an indoor industrial environment, always sheltered from the weather.

Space Required - The Pressco system and accompanying sensors must be installed in a place that will enable safe and easy installation, size changeover, user operation, and maintenance procedures.

Prohibited Use

> *WARNING - If this instrument is not used as specified, the protection provided by the equipment could be impaired. This instrument must only be used in a normal condition (in which all means of protection are intact).*
>
> *Important - The Pressco system should NOT be used for any purpose other than specifically indicated in the section titled "Intended Use" above.*

The following uses are not intended:

Use in an explosive environment

Use in a flammable environment

Use in a damp, moist, or wet environment, except where specifically indicated

Personal Protective Equipment

> *Important - Always follow the safety requirements of your plant in addition to the recommendations below.*

We recommend, at minimum, use of the following Personal Protective Equipment (PPE):

	Protective clothing
	Protective gloves
	Protective ear plugs or headphones
	Protective eye wear
	Protective foot wear

Personnel Safety

The following rules are recommended to ensure the safety of personnel in charge of machine operation and maintenance.

During machine operation:

	Only one operator is needed to operate the machine. All others must keep at a safe distance.
	Operators must be familiar with all machinery connected to the Pressco equipment and know how to use emergency stop devices. Note: the emergency stop devices may not be connected directly to the Pressco equipment, but it is important to know how to use them.
	Before putting the Pressco system online, the operator must ensure that all safety devices used with all connected machinery are in place and operational. Do not operate with guards removed.
	The operator must maintain maximum focus on his work and be alert throughout his shift. If this is not the case, immediately inform the shift supervisor.

When carrying out maintenance or repair work:

	Disconnect master switch. For switch locations, refer to the Power Up and Power Down section.
	Before starting the machine, ensure that no person is close to the machine.
	If maintenance or repair requires the disconnection or removal of safety or protection systems, this operation must be supervised by authorized personnel who must ensure the prevention of personal injury or damage to the machine. All machine movements must be performed with limited speed and limited movements.
	Maintenance or repair work on electrical components must be carried out exclusively by authorized, trained personnel. When running tests with power connected, you must

	strictly comply with the rules provided.
	Personnel working on higher parts of a machine must wear a harness and hook it on to the structure and must always move with extreme caution.
	Never perform lubrication or maintenance procedures on mechanical parts with the machine running.

For your safety, do not:

Open safety guards during machine operation

Perform maintenance and repair while the system is running

Lean on the machine

Sit on the machine components

Use the machine for purposes other than those listed in this manual

Modify parts of the machine

Allow unqualified personnel to operate or perform maintenance procedures on the machine

Lifting Heavy Objects

CAUTION - Some components are heavy. Take proper precautions to prevent personal injury or damage to equipment. If you are not capable of lifting the object alone, ask a capable person to help lift the object, or use a mechanical lifting device

The components do not have handles to lift the equipment. Be sure to:

- Lift equipment from the bottom - do not use wires, brackets, nor other protrusions
- Keep fingers away from sensor lenses to keep the equipment clean
- Proceed slowly

WARNING- The Pressco cabinets must NOT be lifted by one person. Use a mechanical lifting device, and ask another person to assist you.

Do not twist your body when moving the load. Instead take small steps with your feet turning until you are in the correct position.

To safely lift equipment:

1. Stand close to the load and center yourself over it with your feet shoulder width apart.
2. Tighten your abdominal muscles.
3. Keeping your back straight, bend your knees and squat down to the floor.
4. Get a good grasp on the load with both hands.

5. Keeping the load close to your body, use your leg muscles to stand up lifting the load off the floor. Your back should remain straight throughout lifting, using only the muscles in the legs to lift the load.
6. To place the load in the appropriate spot, bend at the knees using only your leg muscles to lower the load.

Authorized Users

Trained machine operators, mechanic and electrical maintenance staff, and plant managers are considered authorized users of the Pressco system. These users should carefully read the information contained in this manual. The plant manager must ensure that the safety recommendations included in this manual are observed.

> *WARNING - Allowing workers who are unfamiliar with the production process to operate the Pressco system could result in hazard risk.*

If you are unclear about any part of this manual, contact Pressco Technical Support.

> *Important - No worker should ever operate the system outside of his/ her own area of competence and responsibility.*

Proper Operation: - Only one worker is to operate the system at any given time. The correct position for the operator is in front of the user interface monitor or control enclosure (if applicable).

Repairs: - Any repair on the system shall be carried out exclusively by Pressco Technology Inc. service personnel or by other service expressly authorized by Pressco Technology Inc.

Spare Parts Usage

The following restrictions apply to replacing parts:

> *WARNING - Using spare parts that are not designed to Pressco's specifications can compromise the safety and effectiveness of the Pressco system.*

- The use of parts that are not within Pressco's design specifications is prohibited. This prohibition applies in particular when the parts involved contain or are connected with safety devices.
- Before resuming production, make sure all safety devices are in working order.

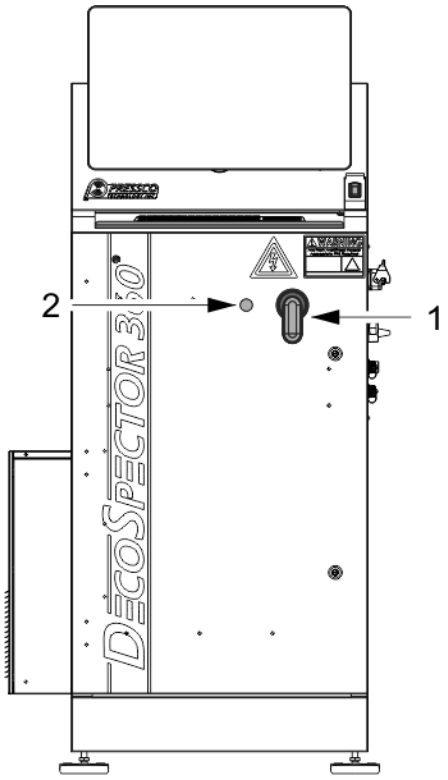
Pressco Technology Inc. shall not be liable in any way if any of the above-described directions are not complied with.

To obtain a spare parts list, contact the Spare Parts department at Pressco: SpareParts@-pressco.com. Or call +1-440-498-2000 (Monday - Friday 8AM - 5PM Eastern time).

In addition, Pressco's technicians are available to help customers, in their own plant, to solve any problem that might arise during use and maintenance of the system.

Chapter 3 Basic Operation

Power On and Off at the Control Enclosure



Power on: Turn on the switch [1] on the front of the cabinet. The power indicator [2] will illuminate. The software will start automatically. (You must log in and put the system online to begin inspection)

> *Note: it takes about a minute for the computer to start after the main power switch is turned ON*

Power off: Turn off the switch on the front of the cabinet. The system, including the computer, shuts down. The UPS shuts down.

> *WARNING - When you shut down power using this switch, there is still voltage present on the UPS inside the unit until it discharges.*
>
> *Important - If you want to restart the system, turn off the power, let the software and components completely shut down, and leave the power off for about one minute before turning it back on. This allows the electronic components to correctly reset.*

Log In

User: Supervisor
Access: Admin

Tap to log in. Enter your password (using the onscreen keyboard), then select Login. If you forgot your password, ask your Administrator to set a new password for you.

If you have a biometric account, press your finger on the biometric device to log in. You must use the same finger that you used when you created the account.

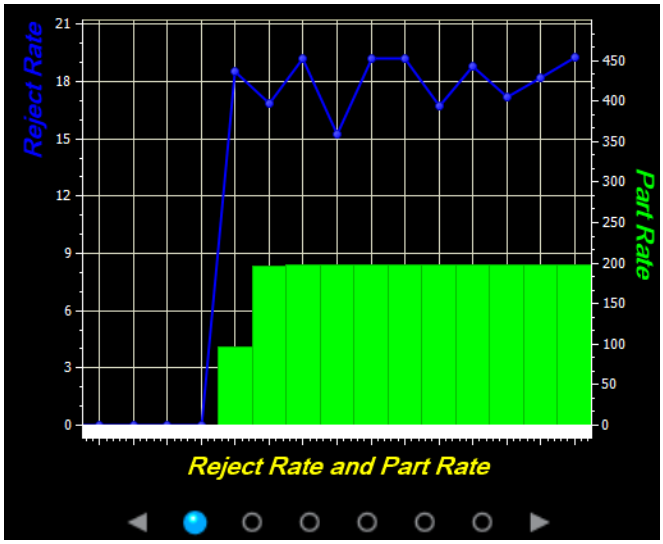
How to Select Items

To select items, use the touch screen. Depending on the area of the screen, different gestures provide additional functions.

	Tap to select an item.
	Swipe (or flick) to select the next image or graph. Flick a number to change a parameter value.
	Press and hold to bring up additional functions.

Use two fingers to zoom in or zoom out. Separate your fingers to zoom in, and move fingers together to zoom out.

Some areas provide multiple options to select items. For example:



- Swipe in the graph (or image) area to show the next one
- Select a dot below the graph (or image) to select a different one
- Select an arrow to the left or right to show the next one

Dashboard Feature

Dashboard To view the Dashboard, select the Dashboard icon from the Control Panel. (If you do not see this icon, then it needs to be configured.)

The Deco Dashboard feature is available in software versions 6.2.020, 6.3, 6.4 and higher, built after 22 February 2023.

The Dashboard is an optional feature that provides a high level view of how the Deco system is operating. Its main features include:

- Alarm monitoring
- Job performance comparison
- Defect percentages
- Part spacing and positioning

When the Dashboard is enabled, it is the main screen displayed when the DecoSpector software is launched.

The information on this screen is view only. In other words, there is no area that responds to mouse clicks with one exception: the individual cameras in the Part Position graph can be clicked for camera angle views.

Resetting the data on the dashboard

Clear the Dashboard statistics the same as clearing all system statistics.

- Press and hold in the statistics area to clear statistics.

You will be asked, “Do you want to clear the job statistics?” Select “Yes” and the dashboard data will be cleared and the Last Reset date/time will be updated.

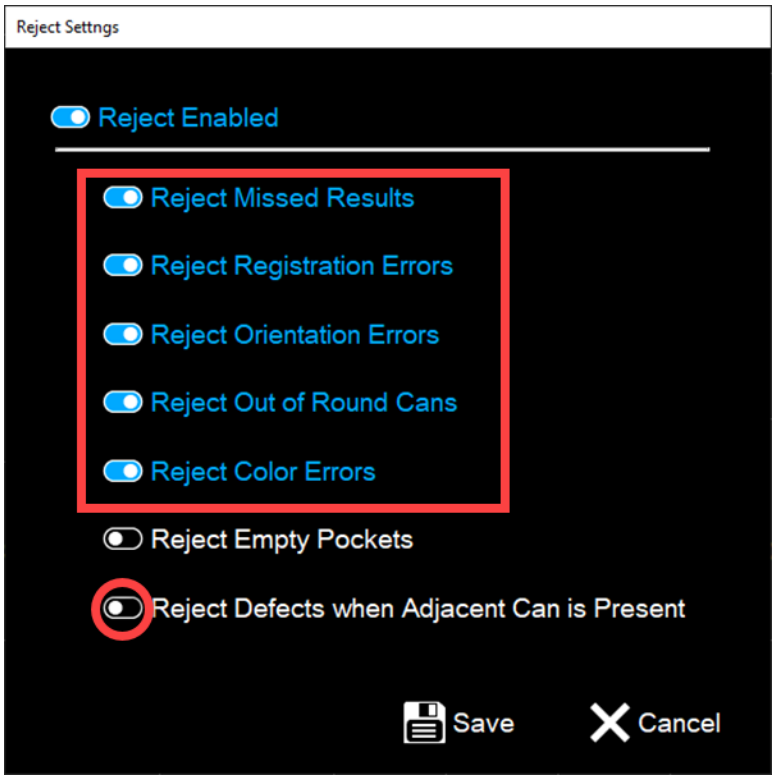
Configuration

To configure the Dashboard, you first need to enable it and set some parameters. To learn how to set up the Dashboard, see "Dashboard Setup" on page 143

Configure Reject Errors to Display

The next step is to configure the types of errors to reject. Select “Reject Settings” and enable all of the following:

a. Reject Missed Result
b. Reject Registration Errors
c. Reject Orientation Errors
d. Reject Out of Round Cans
e. Reject Color Errors



If any of these are disabled, then the reject statistics on the Dashboard graphs will not be accurate.

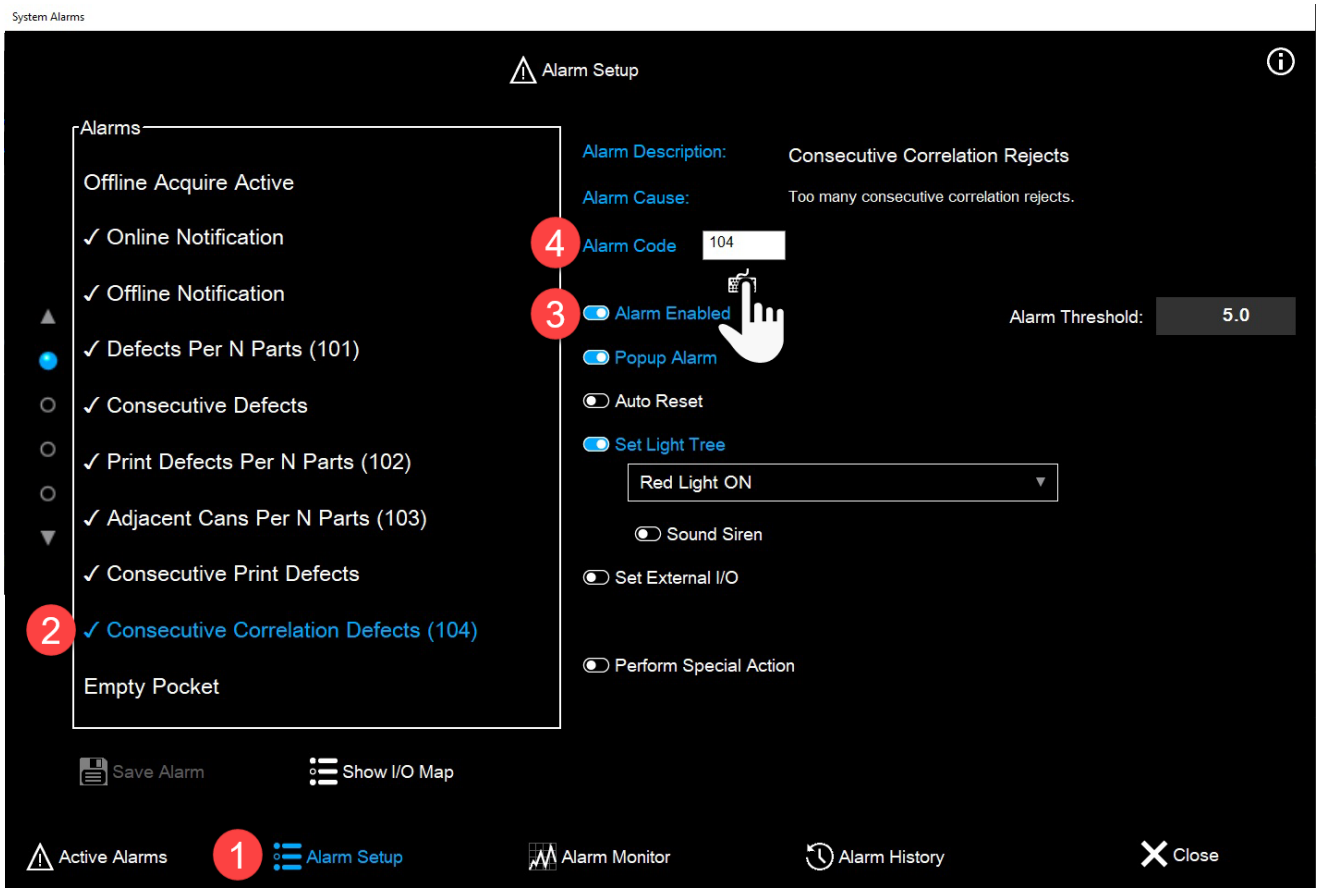
> *Note: Make sure “Reject Defects when Adjacent Can is Present” is disabled so that cans with shadow print errors caused by adjacent cans are passed.*

Configure Alarms to Display

The final step is to select the alarms you wish to be displayed in the Alarm Information table for monitoring. Select the alarm icon and select Alarm Setup.

Locate the alarms you wish to monitor. For each alarm, enable the alarm and enter an alarm code. Any alphanumeric value can be used as an alarm code. The code is added (in parentheses) to the alarm name in the left column. Any alarm given an alarm code will appear in the Alarm Information table.

> *Note: each alarm code must be unique*

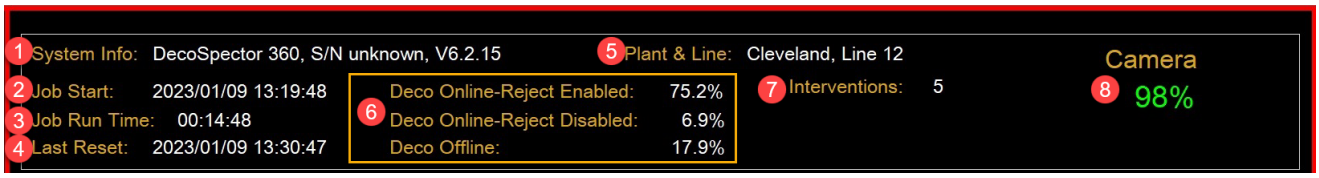


You can select as many alarms as you like, but only six alarms are visible at a time in the dash-board table. If more than six alarms are selected, then a vertical scroll bar will appear to the left of the table.

Alarm Information
Alarm
Count
Defects Per N Parts
3
Consecutive Defects
0
Consecutive Correlation Defects
0
Dirty Diffuser
0
Adjacent Cans Per N Parts
0
Color Delta E Error Per N Parts
0

Dashboard Features

See the descriptions of the various areas of the dashboard:



Dashboard header information:

1) **System Info** - Contains “DecoSpector 360” followed by the serial number of the machine and the version number of the software.

2) **Job Start Time** - This contains the date and time of when the job was first loaded.

3) **Job Run Time** - This contains the number of hours, minutes, and seconds since the job was first loaded.

4) **Last Reset** - This displays the last time the system was reset. The system is reset when Deco is launched, when a new job is loaded, or when you “tap and hold” in the statistics area of the Control Panel.

5) **Plant & Line** - Contains the respective fields from the Dashboard setup screen, separated by a comma.

6) **Deco Online-Reject Enabled/Disable/Offline** - These three values represent the percentages of the system’s online and offline time, with the online time split between the time the rejector is enabled and the rejector is disabled.

7) **Interventions** - This is the total number of times that a user does any of these: changes a parameter, clears an alarm, or takes the system offline then online again.

8) **Camera Cleanliness** - Represents the cleanliness of the camera, displayed as a percentage. Values 95%-100% display in green, values 90%-94% display in yellow, and values < 90% display in red.

Charts and Graphs:

9) **Alarm Information chart** - This chart shows the status of the alarms listed. When one of these alarms is triggered, but not cleared, the status circle to the left of the alarm name will appear red. Also, the alarm count in the graph is incremented. When you clear the alarm, the status circle will turn green. The count values are cleared whenever the system is reset.

10) **Inspection Deco Defects Graph** - This graph shows the percentage of total defects, print defects, and color defects. The vertical red line represents the threshold value as configured on the Dashboard Setup screen. If the percentage value of any of the bars is below the threshold value, the bar will be displayed in green. If the percentage value of any of the bars is above the threshold value, the bar will be displayed in red. If a vertical red line does not appear on the graph, it is because the threshold value is larger than the highest percent value currently represented on the graph.

11) **Part Spacing Graph** - This graph shows the spacing of the cans as they travel through the tunnel.

12) **Previous Job Comparison Graph** - This graph compares the currently running job (yellow bars) with the previously run job (blue bars). The data shown is the percentage of print defects, color defects, total rejects, total parts not inspected, and total time online.

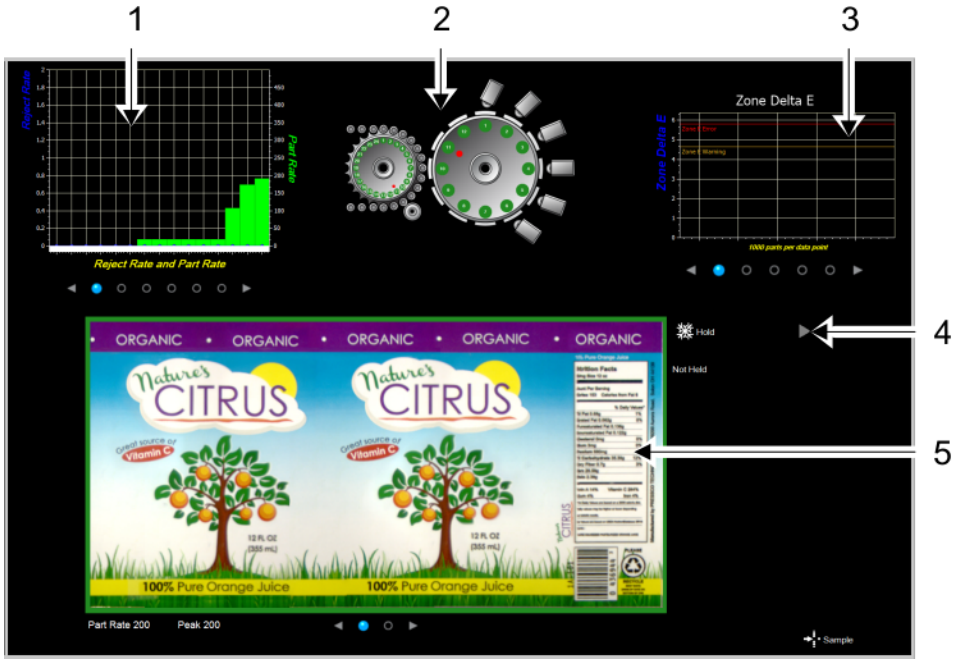
13) **Inspection Process Defects Graph** - This graph shows the percentage of total parts rejected but not inspected, total parts with image acquisition errors, total parts with registration or orientation errors, total parts that are out of round, and total parts that had a shadow print defect where an adjacent can was present and the part was passed. The vertical red line represents the threshold value as configured on the Dashboard Setup screen. If the percentage value of any of the bars is below the threshold value, the bar will be displayed in green. If the percentage value of any

of the bars is above the threshold value, the bar will be displayed in red. If a vertical red line does not appear on the graph, it is because the threshold value is larger than the highest percent value currently represented on the graph.

14) **Part Position Graph** - This graph plots the positions of the cans when the image is acquired. You can click on the individual cameras for camera angle views.

Overview Panel

Overview This screen shows an overview of the system statistics, correlation, and live part images. You can change views on this screen depending on your preferences. For example, you can view a large image of the correlation graphic instead of the part image if you want to.



1) Statistics Graphs - see "Graphs" on the next page

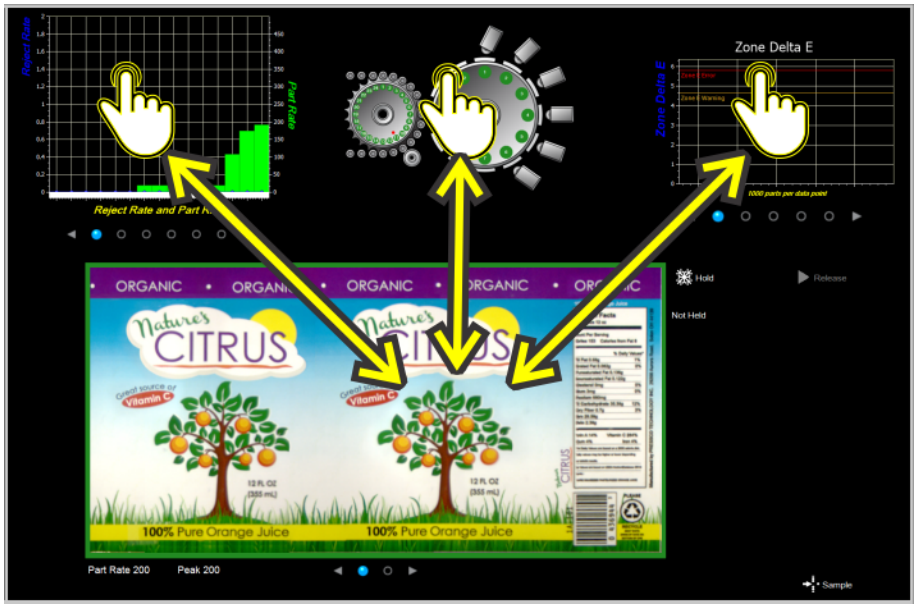
2) "Correlation" on page 122

3) "Color Trend Graphs" on page 113 (only if Color Zones are configured)

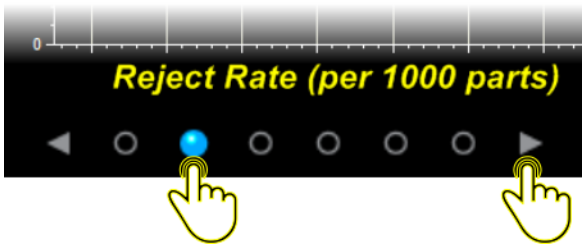
4) You can select what to display from "Overview Display View" on page 128

5) "View Live Images and Defects" on page 84

The lower section of the Overview Panel controls system operation and display. When a graph or image is displayed in the lower section, more controls are displayed to the right. Tap a graph or part image in the top section to display it as a large graph or image in the lower section of the panel.



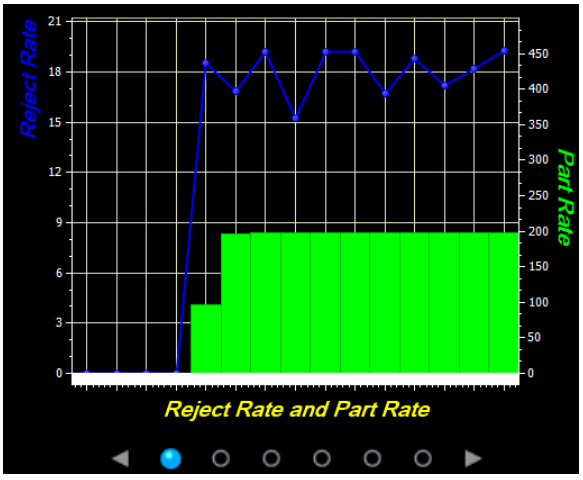
Swipe the graphs or use the buttons to display the different graphs.



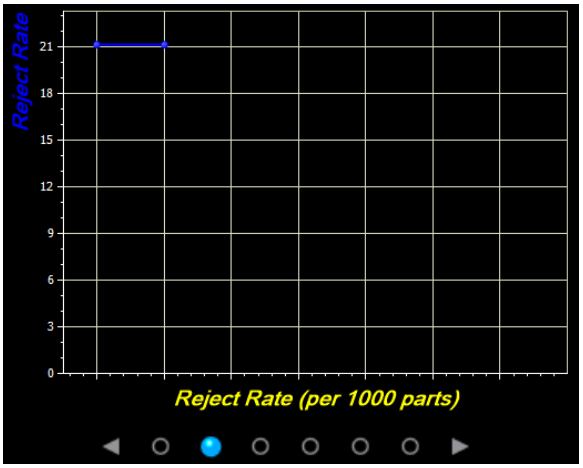
Graphs

The DecoSpector system has several graphs for you to monitor production. Tap the blue dots below the graph, or select the left and right arrows to see the different graphs. The following are examples:

Reject Rate and Part Rate Graph

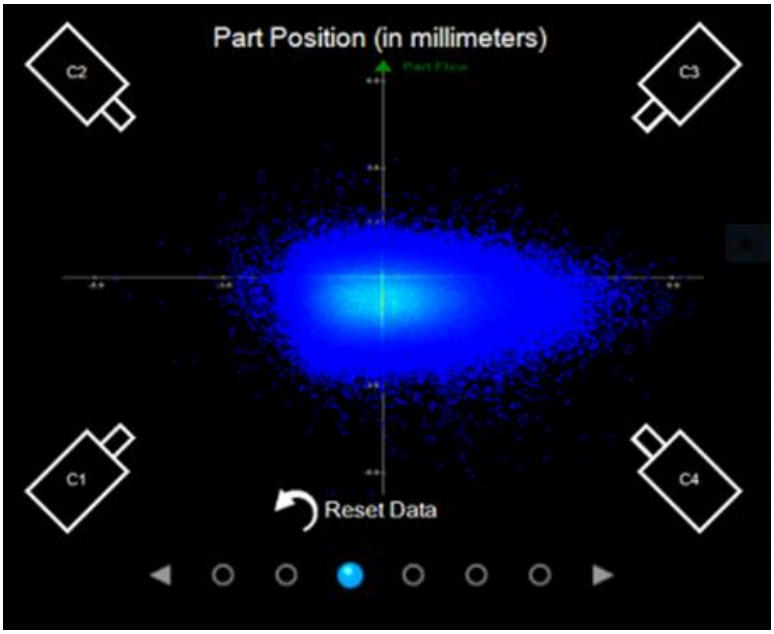


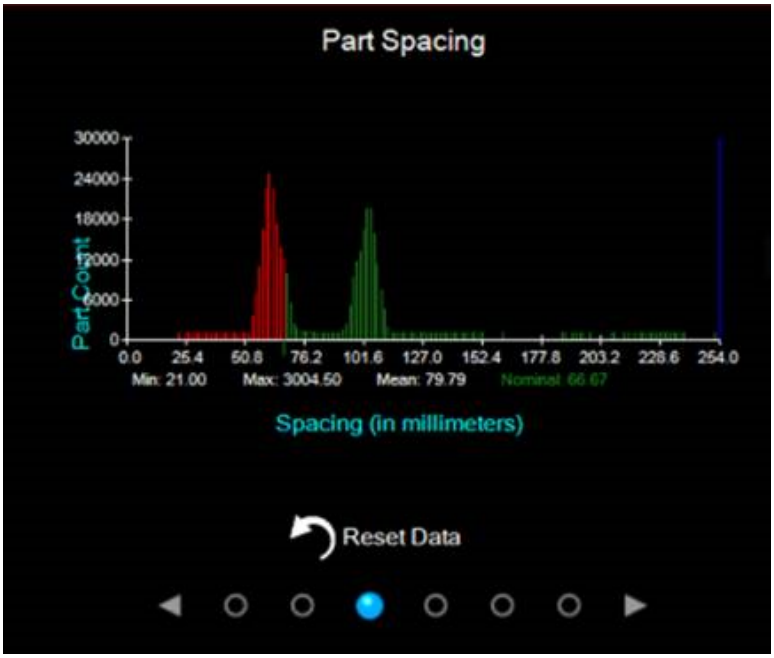
Reject Rate (per 1000 parts) Graph



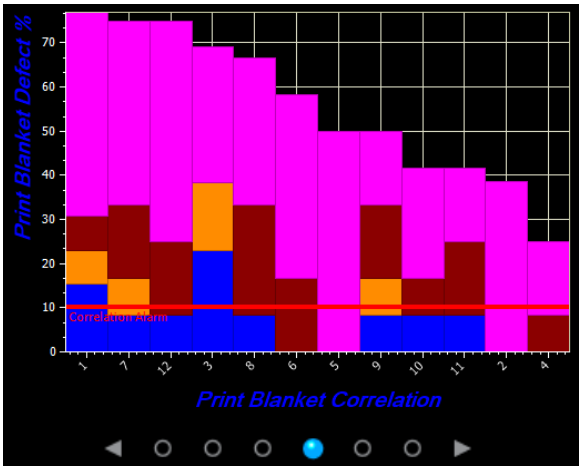
Part Position Feedback

This tool helps determine the position of the part flow, and quality of material handling, within the DecoSpector 360™ tunnel.





Print Blanket Correlation



Graphs for Mandrel and Pin correlation are also available.

Statistics Grid

	Count	Percent (%)
Total Parts Inspected	3000	99.569
Total Parts Offline	13	0.431
Total Parts Rejected	443	14.767
Total Parts With Defects	462	15.400
Empty Pockets	0	0.000
Forced Rejects	0	0.000
Part Locate Inconsistency	219	7.300
Adjacent Cans	0	0.000
Out of Round	0	0.000
Registration	219	7.300
Orient	0	0.000
Print Defects	243	8.100
Wrong Color	94	3.133
Scuff	148	4.933
Shadow	0	0.000
Large Color Void	1	0.033
Small Color Void	0	0.000
Color Defects	167	5.567
Missed Acquisitions	0	08/19 18:11
Missed Inspections	0	08/19 18:11
Missed Results	0	08/19 18:11
Encoder Overspeed	0	08/19 18:11

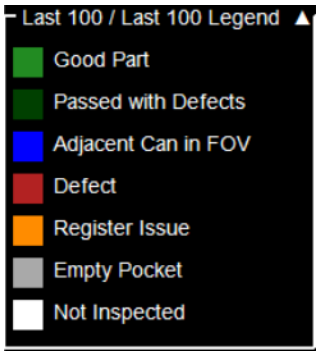
"Color Trend Graphs" on page 113

Color Borders Around Images

The DecoSpector system displays a different color border around each image depending on the inspection status. A green border is shown below.

This key is displayed in the "Print Quality Screen" on page 90.

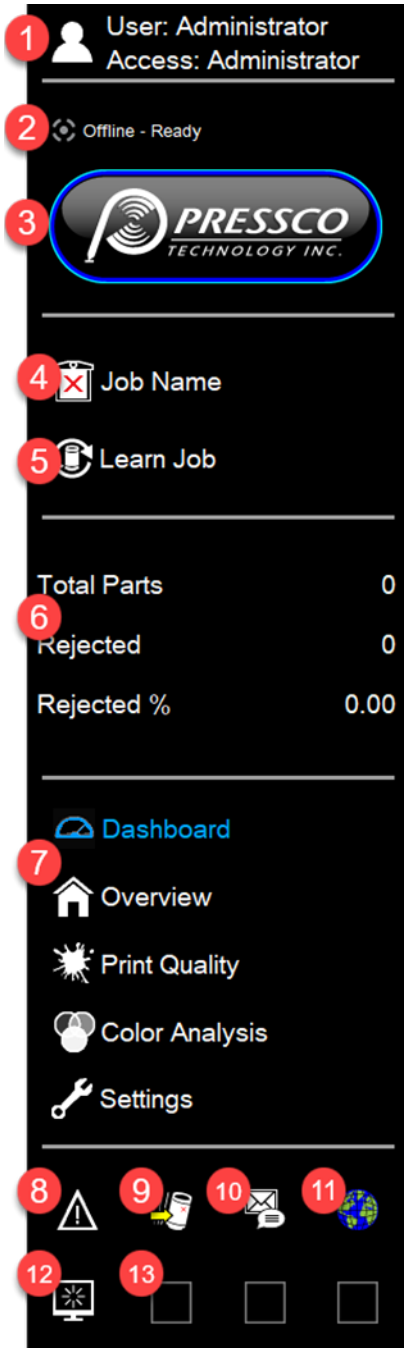
- Green = good part
- Dark Green = a part passed, but it also had defects (example: a shadow detected on a part that had an adjacent can. The shadow is assumed to have been



caused by the adjacent can)

- Blue = an adjacent can is in the camera's field of view
- Red = defect
- Orange = registration issue or orientation error
- Gray = empty pocket
- White = part not inspected

Control Panel



1) "Log In" on page 19

2) System status

3) "Online and Offline" on the next page

4) "Job Management" on page 40 - to change the part you are inspecting

5) **Learn Job** or **Relearn** - The options are set in "System Settings" on page 137

6) "Statistics on the Control Panel" on the next page

7) "Views from the Control Panel" on the next page

8) "Alarms" on page 171

9) "Rejector" on page 158

10) "Notepad" on page 35

11) "Language" on page 35

12) "Screen Capture" on page 36

13) "Custom Buttons" on page 198 - set up by the Administrator

Online and Offline

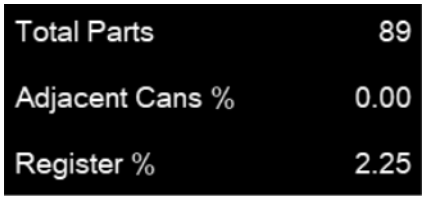
The button changes depending on system status and whether a user is logged in.

	Dark face with blue outline. Logged in: System is offline. Tap to put the system online.
	Blue face with blue outline. Logged in: System is online, capturing images, and/or inspecting parts. Tap to put the system offline.
	Dark face with no outline. No user logged in: When you select the button in this state, the system will prompt you to log in. No user logged in - System is offline.
	Light face with no outline. No user logged in - System is online, capturing images, and/or inspecting parts.

> *Note: An Administrator can enable or disable the automatic online feature from Settings | System Settings | Configuration Settings | Go Online After Job Learn Completes.*

Statistics on the Control Panel

Tap the statistics area (more than once) to view more statistics.



- Press and hold in the statistics area to clear statistics.

Views from the Control Panel

Select what to display in the Overview Panel (the big part of the screen).

- Select for the "Dashboard Feature" on page 20 (in software versions 6.2.20 and higher)

- Select for the Home screen, or "Overview Panel" on page 27

- Select for the "Print Quality Screen" on page 90

- Select for "Color Analysis" on page 106

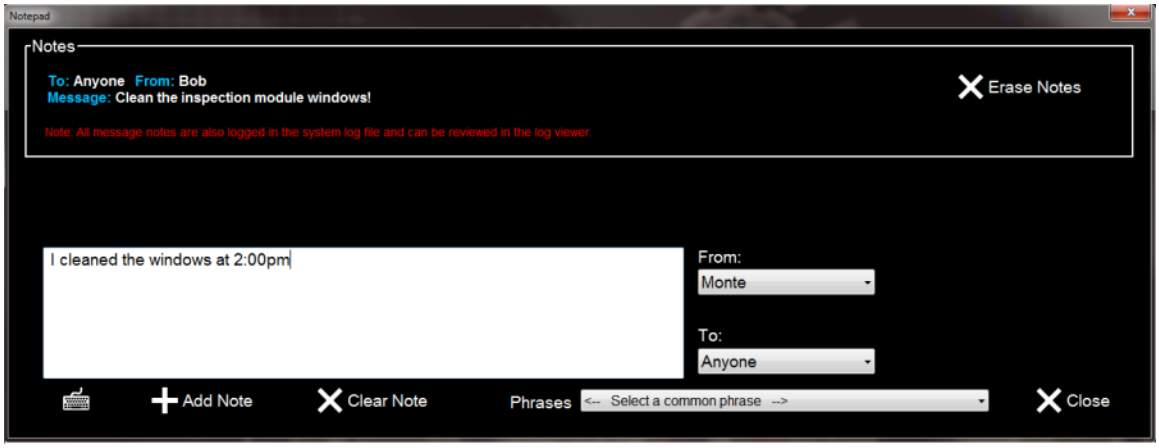
- Select for "Settings" on page 128 such as reject settings and reports

Notepad

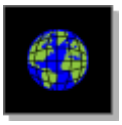
- Add messages to other DecoSpector users. Common phrases (provided from the Phrases drop-down menu) are normally used by Pressco Technicians to leave messages to operators, especially when a remote connection has been set up.

- The icon turns green when you Add Note, then Close the dialog. This notifies other users that there is a message waiting. To remove the green color, select Erase Notes. The icon turns white again. The system saves all messages in the "Log Viewer" on page 151.

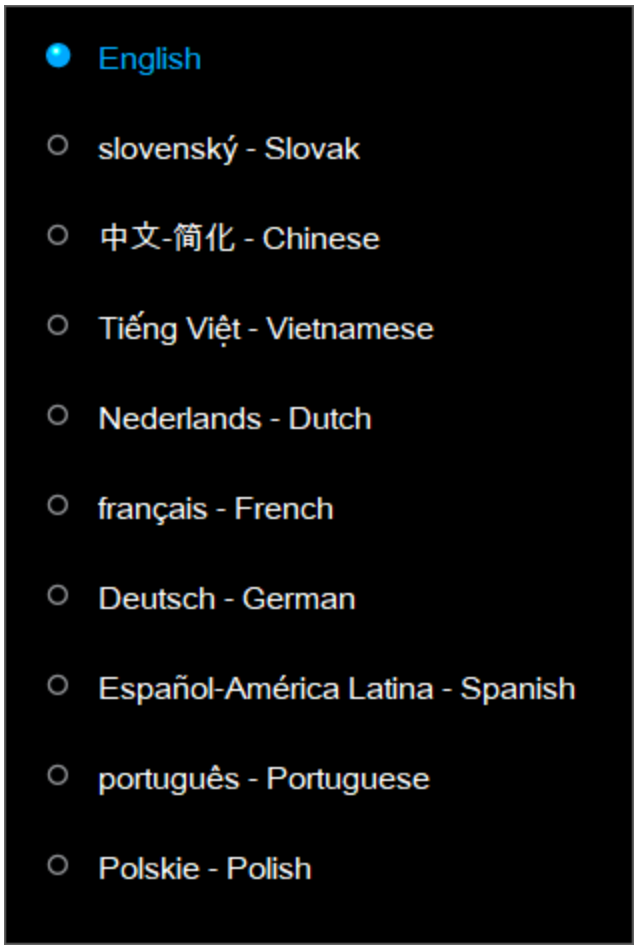
Clear Note removes the text in the white box only.



Language


- Select the user interface language. Your language preference is saved with your user account, so your default language is automatically loaded when you log in. This button is normally used to override the current language, or when no one is logged in.

The languages available, as of version 6.2.23 software, are:



- English
- Slovak
- Chinese (simplified)
- Vietnamese
- Dutch
- French
- German
- Spanish for Latin America
- Portuguese
- Polish

Screen Capture

- Capture a screen image for reference, troubleshooting, or to send to Pressco technical support. The system briefly displays the file path after the capture is taken.

Help

Access help (manuals) from Settings | System Utilities | Help. Displays the Help files.

> *Note: to exit, press the X button in the lower right corner. If the window moves so that you cannot see the X, try pressing the top bar of the help window, and dragging the window up. This allows you to see the controls at the bottom of the screen.*

Exit the Software

Administrator only

To exit the DecoSpector software:

1. Settings Settings | Global Utilities | Exit System.
2. Select Yes to confirm and exit. The software shuts down.

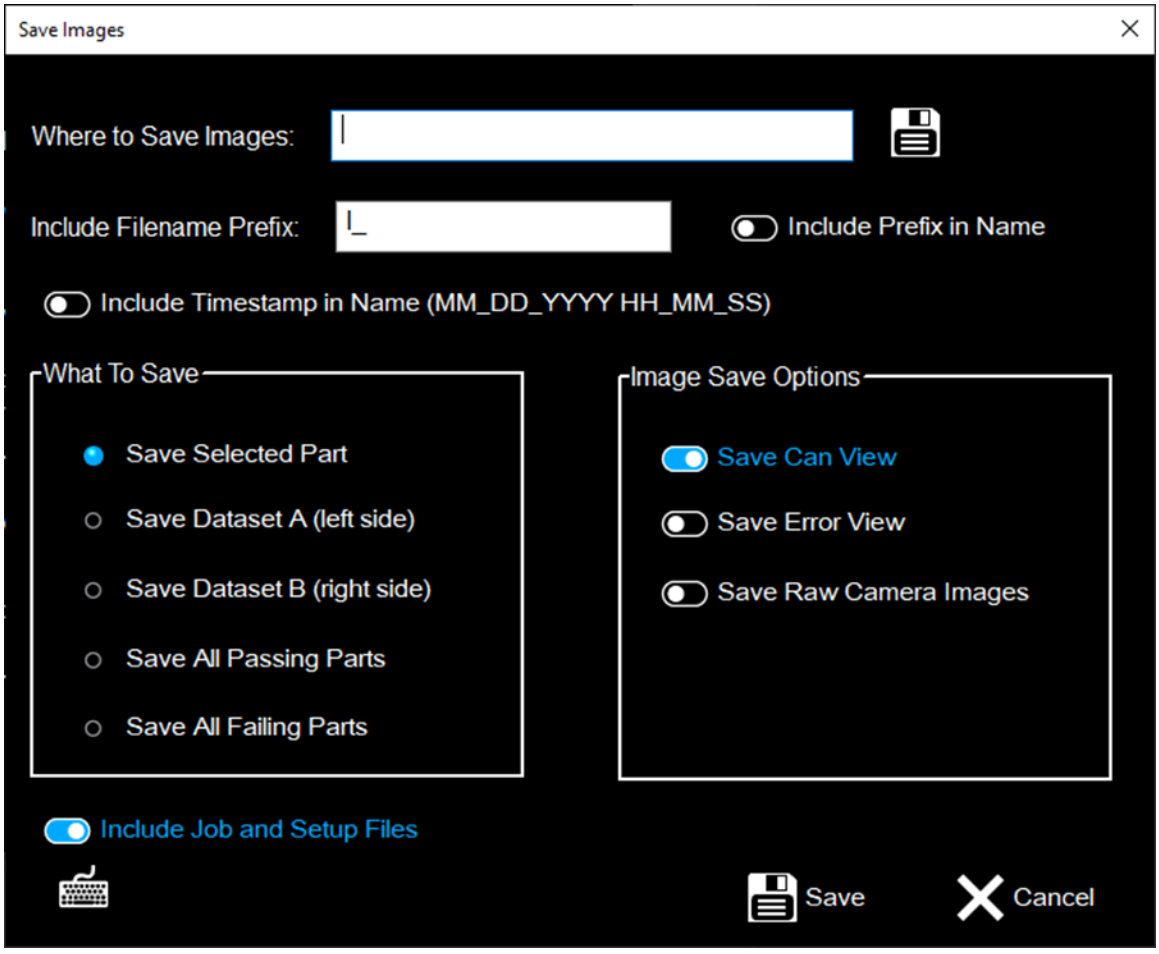
Save Images to USB Drive

You may need to transfer images from the DecoSpector system to your computer or send to Pressco technical support.

> *Note: The images must already be saved to system hard drive, or have occurred within the last 100 parts inspected.*

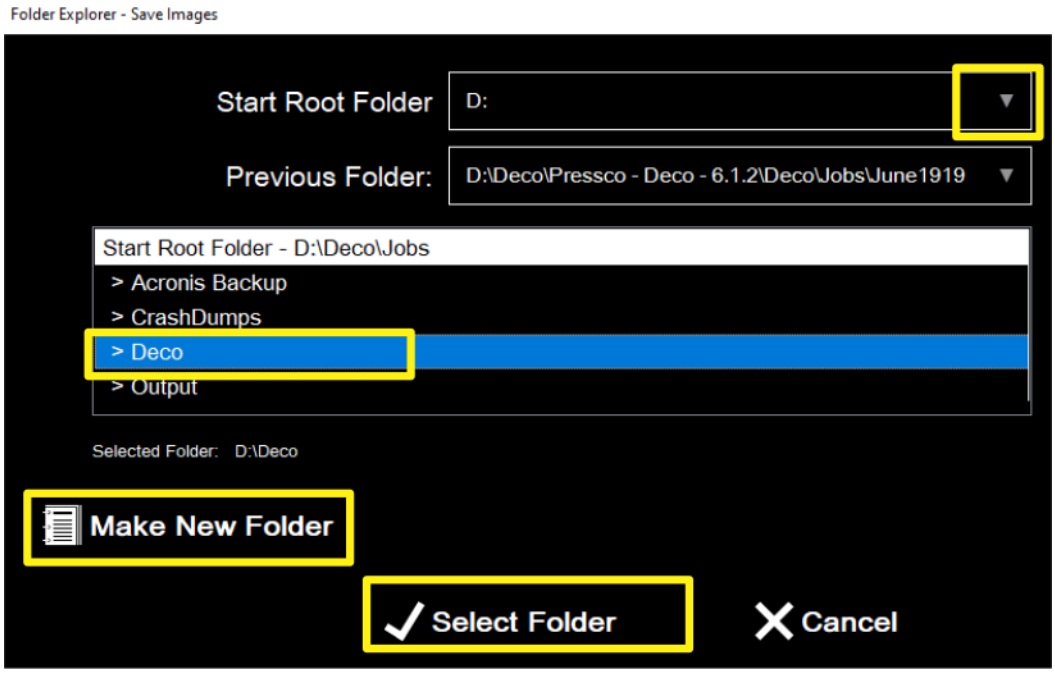
To save images to an external device:

1. Plug a USB device into one of the USB Ports.
2. Print Quality Select Print Quality.
3. Select the **Load** button to load the desired image(s). Then **Load Dataset**. See "Load Part Images" on page 91 for more information about loading images.
4. Save Part Images Select the **Options** button | **Save Part Images**.* The Save Images dialog is displayed.



*The Save Images icon only appears if you have loaded images. What To Save typically needs to be changed to Dataset A or B. Image Save Options - Save Raw Camera Images is only used to provide images that can be analyzed more effectively.

5. Select the disk icon next to "Where to save images."
6. Select the drop-down next to **Start Root Folder**, and select the USB drive location. Browse to the desired folder, using **Make New Folder** if desired.



7. Click **Select Folder** when you have selected the desired location.
8. Make other desired selections in the Save Image dialog and select **Save**. The images are saved to the device.

Chapter 4 Part and Job Management

This section describes how to have the DecoSpector system 'learn' your parts, and describes various job settings.

Learn Parts

The system must learn parts each time you load a part program or inspect a new part type. This ensures that the most recent decoration data is used for inspection.

- If you have inspected a part before and a part program exists, select **Relearn** or **Learn Job** from the Control Panel
- If you have never inspected a part type before, go to "New Part (First Time Inspecting a Part)" on page 44

Relearn a Job

Relearn job icon

Use Relearn:

- during part changeover, when a job already exists
- if you have been running the same part for several hours, to detect subtle process changes
- if inspection is not working correctly. First, "Clean the Tunnel Windows" on page 202, and then **Relearn**. If the windows get dirty over time, this can affect inspection performance.

See also "Learn Auto-Detect" on page 46

> *Note: If your Control Panel reads "**Learn Job**" instead of "Relearn" then the system determines whether the parts being inspected are from the same job that was already loaded.*

To use Relearn:

Select the **Relearn** icon from the home screen or Job menu. The system will automatically collect part images, go through Pre-Calibration and Part Fixture steps*, and then go online to inspect parts.**

> *Note: the learn process may take much longer than normal if part handling is not correct. If there are physically damaged cans, off center cans, or adjacent cans in the image, then the system will have difficulty learning the can label.*

*Pre-Calibration only occurs if the job can size is not already calibrated. The system may prompt you to align the print blanket, only if the consistency data for the part is out of specification. Move the image so that it looks like your print blanket.

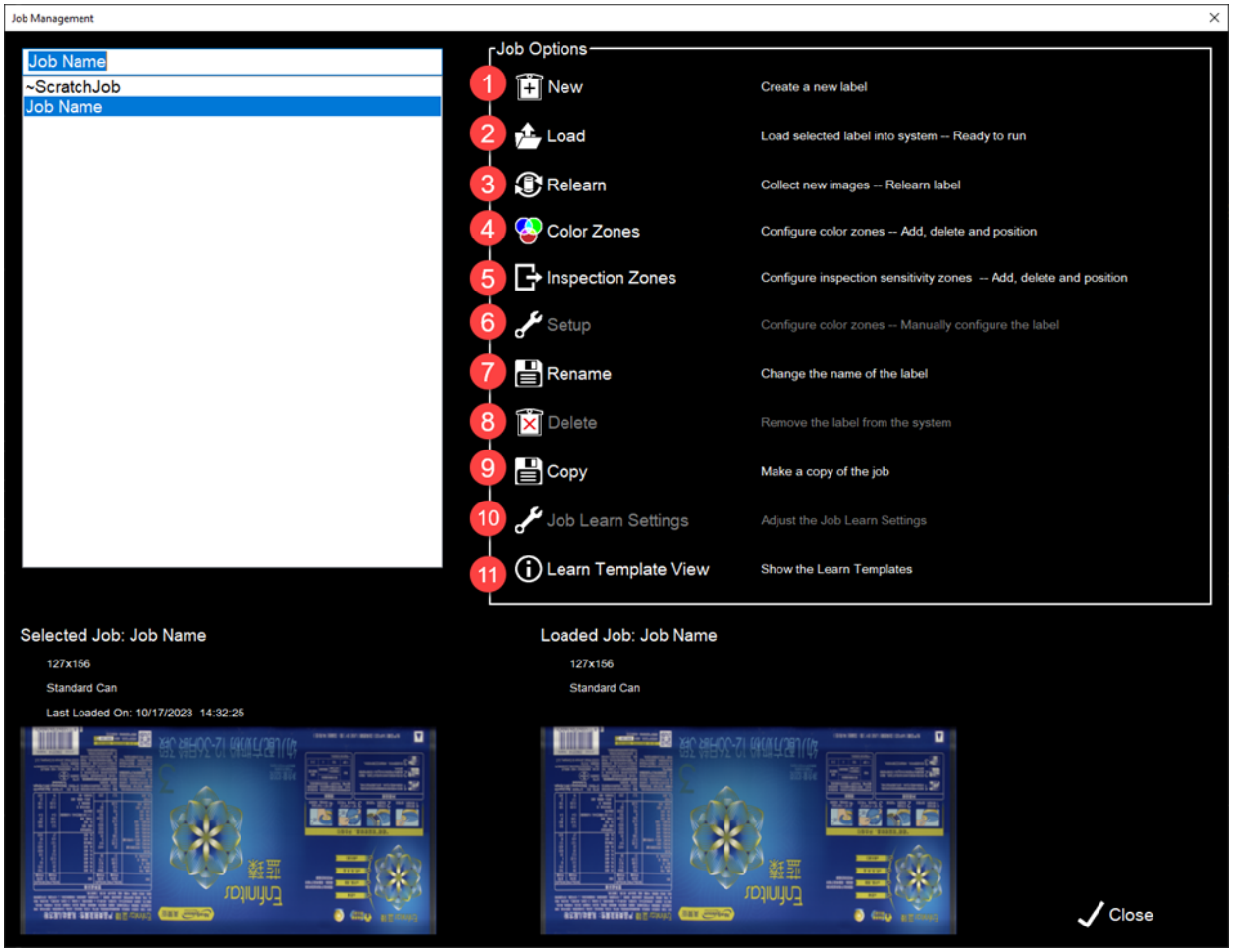
**The system must be set up to go online automatically. If not: Put the system online to inspect parts.

More information: "Align the Print Blanket" on page 47

Job Management

- Tap the job name icon (in the control panel) to open the job menu.

> *Note: You will learn new cans each time you change production. When you save a job, the lighting and inspection settings are saved.*



1) **New** - "New Part (First Time Inspecting a Part)" on page 44

2) **Load** - in the left column, select the job or label you want to inspect, then select **Load** "Part Changeover (Part Type Inspected Previously)" on page 43

3) **Relearn** - Relearn the label

4) **Color Zones** - If your system uses automatic colors, then you will not see this option. See "Color Zones - Manual, optional" on page 52

5) **Inspection Zones** - Increase or decrease sensitivity on portions of the label "Inspection Zones" on page 53

6) **Setup** - Advanced Job Settings *Pressco Technician access only*

7) **Rename** - rename the job or label

8) **Delete** - remove the job or label from the system *Administrator only*

9) **Copy** - make a copy of the job or label

10) Job Learn Settings - *Pressco Technician access only*

11) **Learn Template View** - Allows you to view the templates without needing to relearn the job.

Learn Menu Description

To access this menu, select the Job Name icon and then select **Relearn**. The menu will only stay on screen if the system does not automatically go online. Otherwise, it will appear for a short time, then automatically close.

> *Note: An Administrator can enable or disable the automatic online feature from Settings | System Settings | Configuration Settings | Go Online After Job Learn Completes.*

This menu is used during **Relearn**. Some options only appear after a process is complete (example: "Show Print Blanket" only appears after the system learns a print blanket).

1) "Align the Print Blanket" on page 47

2) "Lighting Settings" on page 80

3) **Collect Images** - this is done automatically during the relearn process

4) **Learn Print Blanket** - this is done automatically during the relearn process

5) "Inspection Zones" on page 53

6) "Color Zones - Manual, optional" on page 52

7) **Job Ready** - this becomes active when the system has finished learning the part. Select this to exit the learn menu. If your system is programmed to go online after learning, then you will not see this menu nor do anything.

8) "Learn Log After Relearn" on page 58

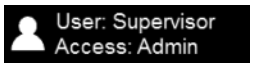
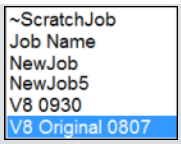
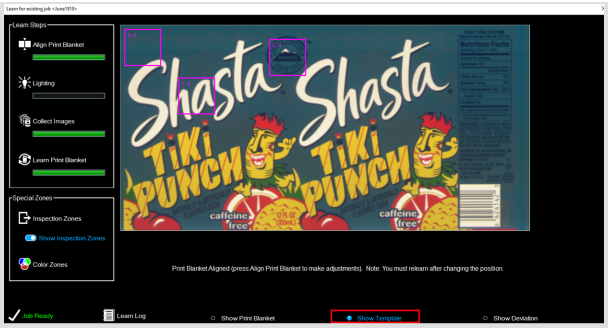
9) **Show Print Blanket** - look at the print blanket learned by the system

10) and 11) **Show Template** and **Show Deviation**. Show Templates

Part Changeover (Part Type Inspected Previously)

This process is used when you are changing over production. If you have inspected a part type previously, you will change the Job and relearn the parts.

To change parts:

Step	Button or Menu Item
1. Log in to the Pressco system. (Operators may change part jobs.)	
2. Make sure the system is offline, so the button face is not blue.	
3. Select Job icon (in the Control Panel) to open Job menu.	
4. Select the job name of the part you want to inspect.	
5. Select Load to load the job. The icon turns blue while the system loads the job. Wait until the job is loaded.	
6. Select **Relearn**. Wait while the system learns the label.	
7. If your system is programmed to go online automatically, you are finished. If your system is programmed to not go online after a job learn, then go to step 8.	
8. Select **Show Templates***. Make sure the images are clear, and they resemble your label. If not, select **Relearn** again. *You will only see Show Templates if the system is not programmed to go online automatically.	
8. Select **Job Ready** to close the Learn menu.	
9. Put the lane online.	

> *Note: the learn process may take much longer than normal if part handling is not correct. If there are physically damaged cans, off center cans, or adjacent cans in the image, then the system will have difficulty learning the can label.*

New Part (First Time Inspecting a Part)

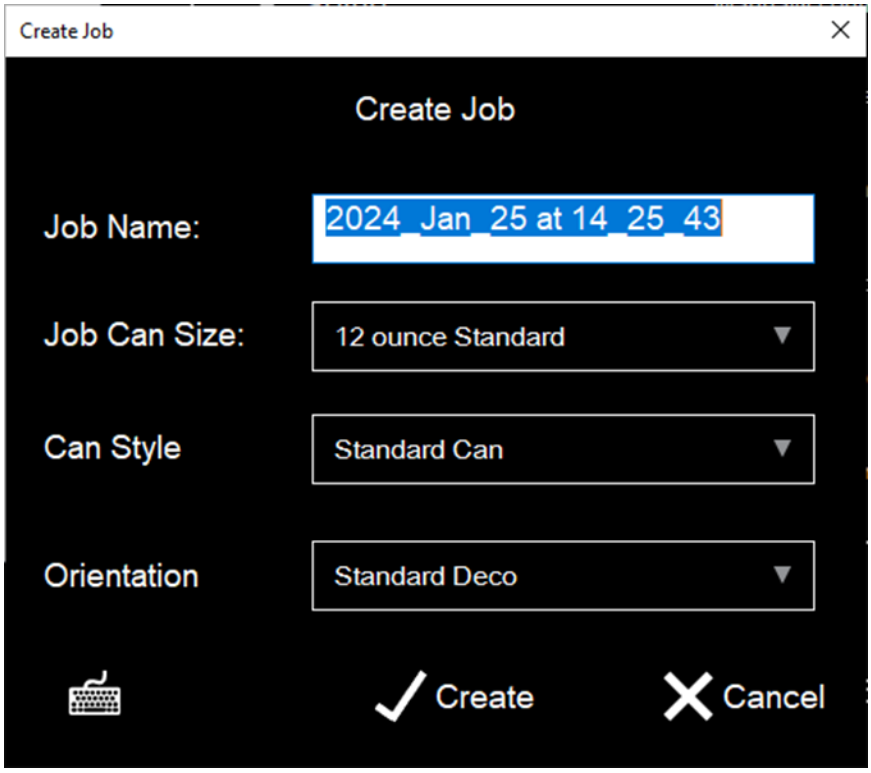
This process is used when you are changing production to a new type of part that the DecoSpector system has never inspected before.

Log in. Take the system offline (so the face of the button is not blue).

Allow the production line to run so that the system captures part images.

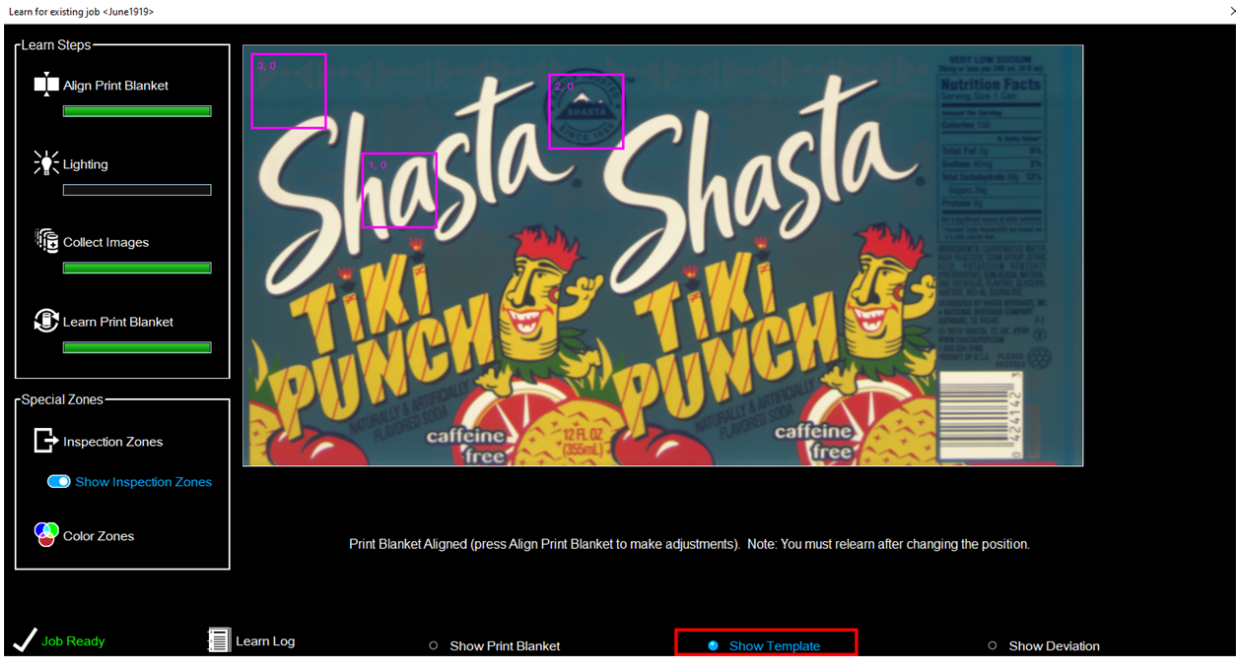
1.

Select Job Name | **New** from the Job Management menu.



2. Use the onscreen keyboard to create a new **Job Name**. Otherwise, the system defaults to the current date and time as the job name.
3. Select a **Job Can Size** from the drop-down menu.
4. Select a **Can Style** from the drop-down menu.
5. Select an **Orientation**. Typical setup uses "Standard Deco." The other options are available for special cases.
6. Tap the **Create** button to save your selections.
7. Wait until the system prompts you to align the print blanket. Select **OK**. To learn how to align the print blanket, see "Align the Print Blanket" on page 47.

8. Align the print blanket and select **Save Alignment.** The system collects part images, adjusts lighting, and creates templates. The system saves the templates, which are used as the standard to which it compares inspected parts during online operation. The system will post a temporary message that says "Learn Deco Finished."
9. If your system is configured to "Go Online After Job Learn," then you are finished. The system automatically finishes learning and goes online to inspect parts. Otherwise, go to the next step.
10. Select **Show Template**. Make sure the images are clear, and they resemble your label. If not, try to learn the part again. Exit from this menu and select **Learn Job** or **Relearn** from the Control Panel.



> *Note: If your system is not configured to automatically go online, you may set up Special Zones: "Inspection Zones" on page 53 and/ or "Color Zones - Manual, optional" on page 52.*

11. Select **Job Ready** to finish the learn process.
12. If your system is configured to view the Learn Review Report, then another screen will display any images that were excluded from the learn process.
13. Put the system online to inspect parts.

See also "Learn Auto-Detect" on the next page

Learn Auto-Detect

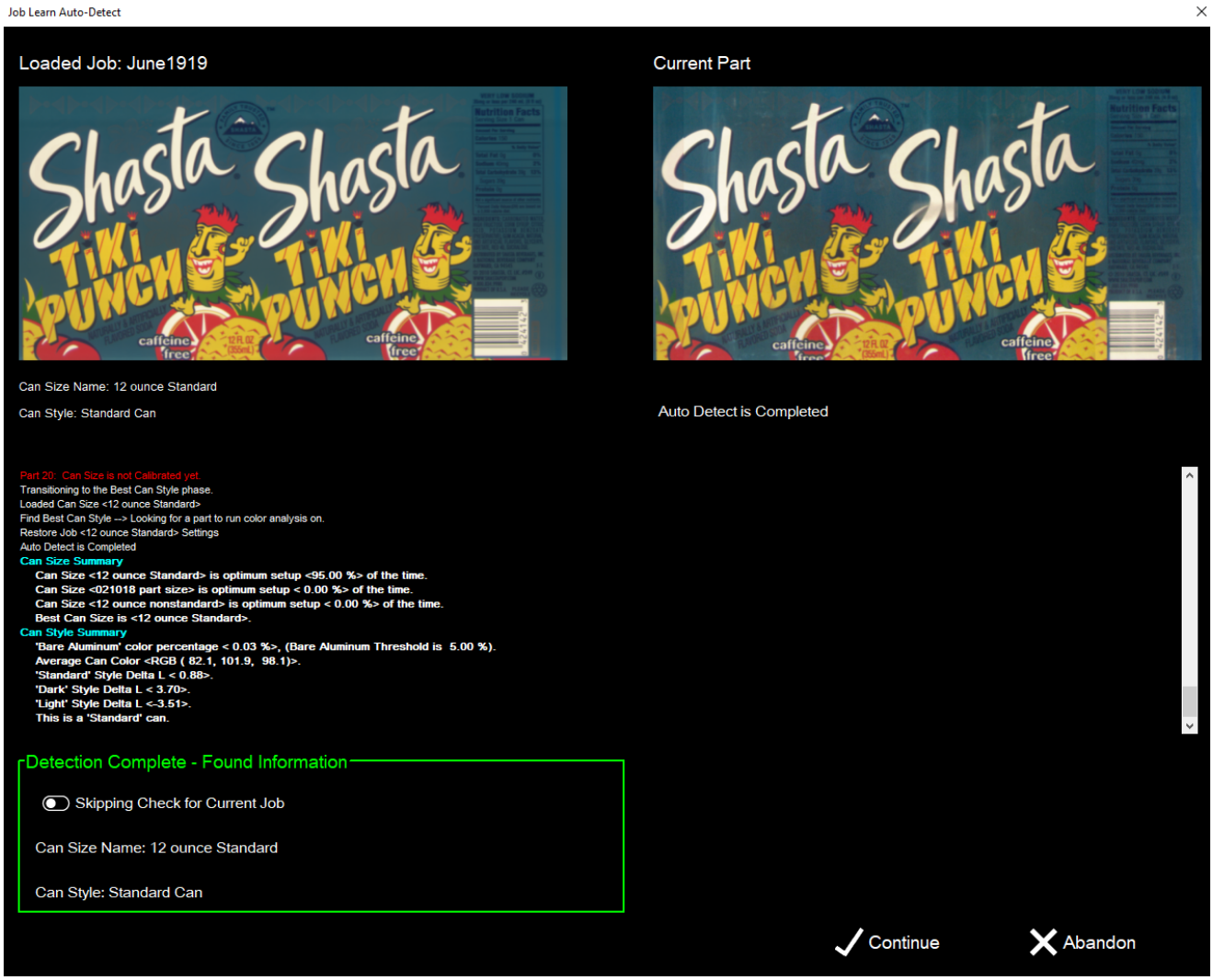
When you select Learn Job* from the Control Panel, the system determines whether the parts are from the same job. It looks for rogue cans (cans that are not part of the current production run).

> **If your Control Panel reads "**Relearn**," then the system will not detect whether parts are from the same job.*

When you create a **new** job, the system skips the phase to determine whether the parts are from the same job. If it is a new job, then the system automatically determines which can size and style works best for the current parts.

To use Learn Auto-Detect:

1. Select **Learn Job** from the Control Panel.
2. Wait while the system automatically detects the parts. The system determines whether the parts are from the same job.
3. If your system is set up to stop learning while you review this dialog, you can review the parts it is learning, select whether to check to see if the cans were from the current job, or select **Abandon** to continue. (If there is only one part size in the system, then the Learn Auto-Detect process is ignored.)



Align the Print Blanket

Align the image on the screen so it looks as close to your print blanket as possible. This step is only necessary if the system prompts you (usually when learning a new part).

> *Note: if your system is configured to "Go Online After Job Learn," then you will not see these screens.*

To get to this screen manually:

1.

Select the Job Menu.
2.

Select Re-Learn. Allow the system to re-learn a set of parts.
3.

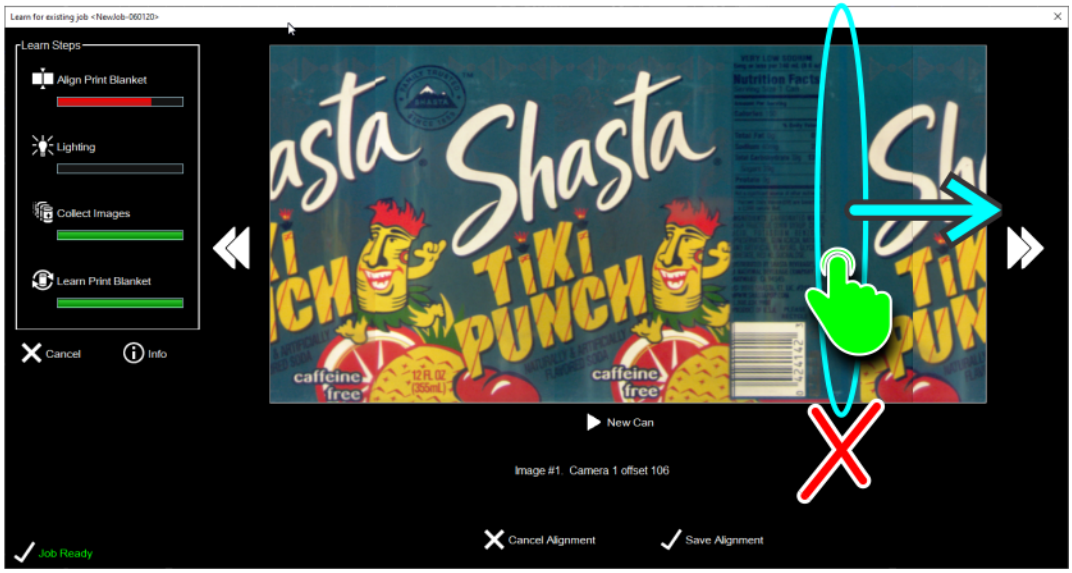
Select Align Print Blanket.

To align the print blanket:

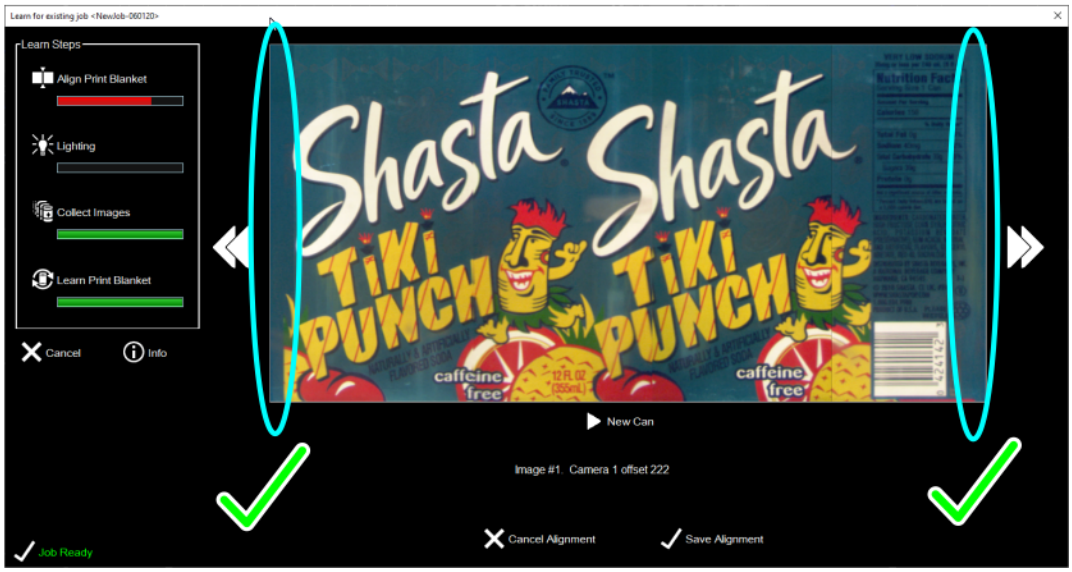
1. Press and drag the image [image 1] (in either direction) so that it looks like your print blanket [image 2]. The ends of the print blanket should fall in the ends of the image.

> *TIP: touch the screen at the location of the seam (as shown below), then drag the image all the way to the left or right. This makes it easy to align the image. Use the arrow buttons to the left or right of the image to fine-tune the position.*
> *Note: Normally, you do not need to select another image. You only need to select New Can if the displayed image did not unroll properly. (example: pieces of the image are missing, or they are shifted vertically)*

1



2



2. Select "Save Alignment."

Show Templates

These screens are available after the system collects part images and aligns the print blanket. If an inspected part does not match the learned templates, that part is considered defective.

> *Note: if your system is configured to "Go Online After Job Learn," then you will not see these screens.*

To get to this screen manually:

1.

Select the Job Menu.
2.

Select Re-Learn. Allow the system to re-learn a set of parts.
3.

Select Align Print Blanket.

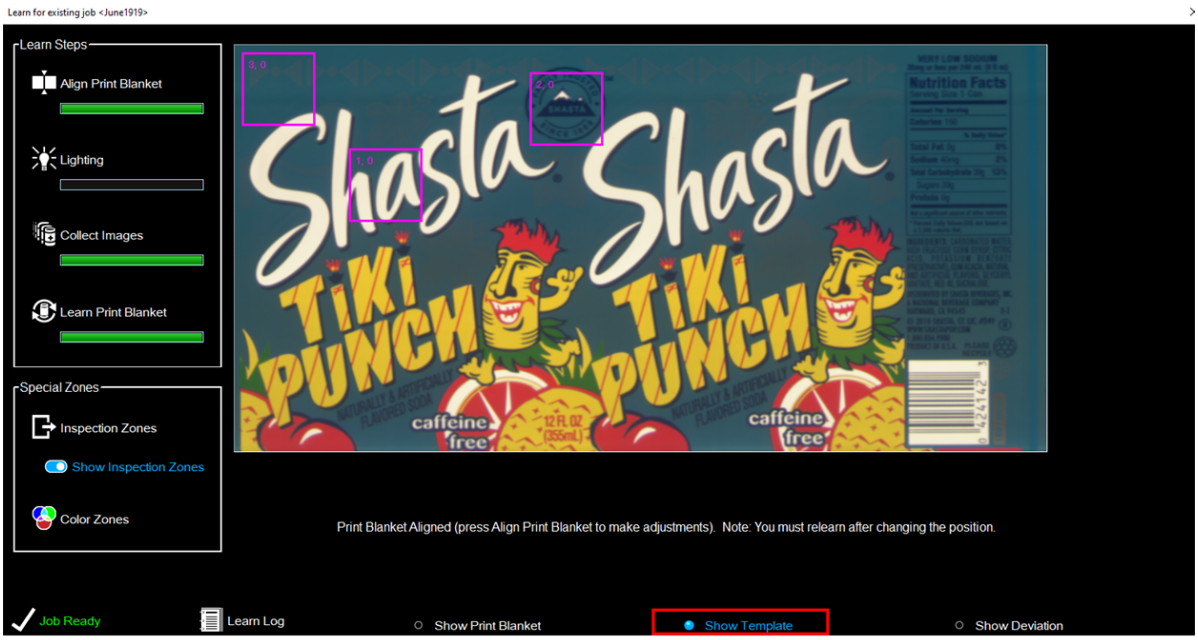
Align the Print Blanket as necessary.

To see the template:

1. Select the **Show Template** button. This becomes active after the system learns parts.
2. Compare the image to the actual part.
3. Relearn the part if the template or deviation is bad.
4. Select **Job Ready** to finish the learn process.
5. Put the system online to inspect parts.

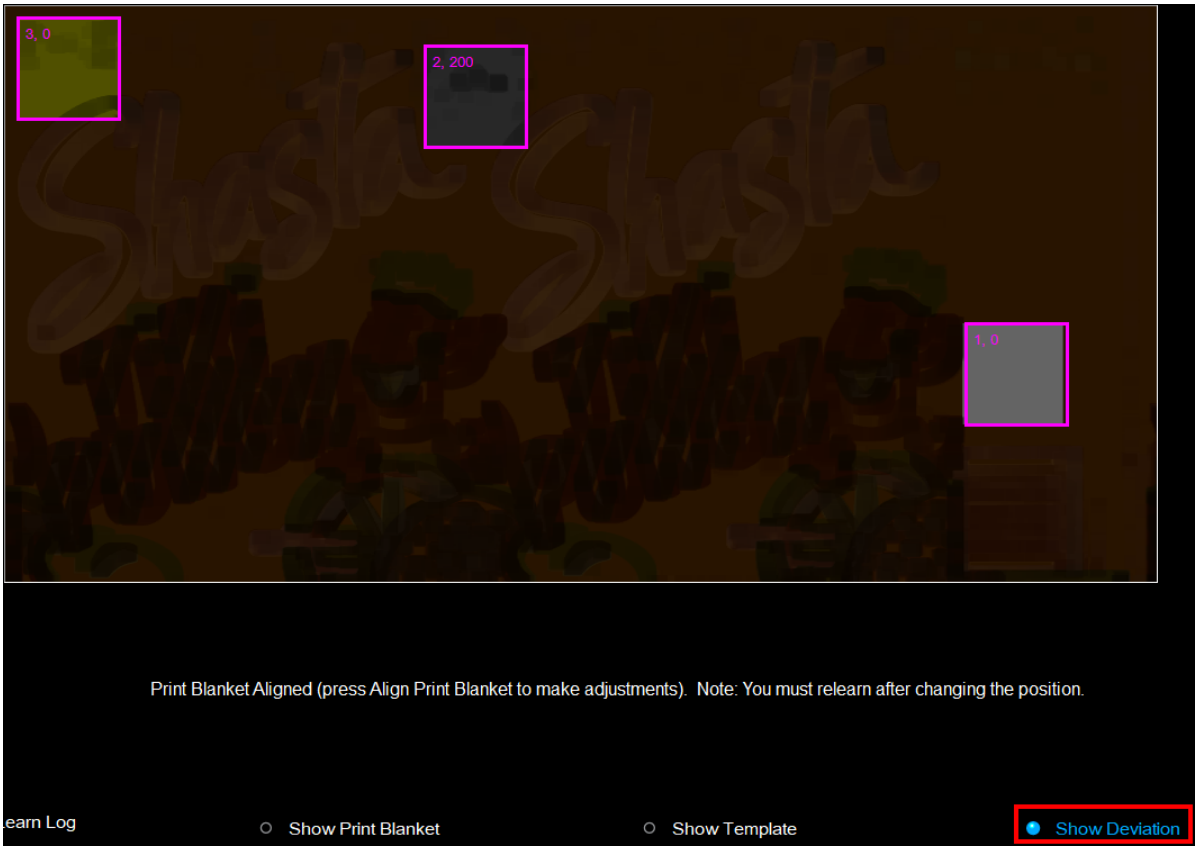
Example templates

The template is OK if the image looks clear and resembles the part.



The template is bad if parts of the image are missing, or the image bleeds through. Relearn the part.

Select "Show Deviation" (below the images). This shows the range of pixels that each inspected part can have. A darker image = more sensitive inspection. (NOTE: if you have Inspection zones set up, pixels might be yellow, depending on sensitivity - this is OK)



Images are bad if:

- the images do not resemble the actual part
- you see 'ghosting,' or a repeated area

Automatic Color Mode - switching to

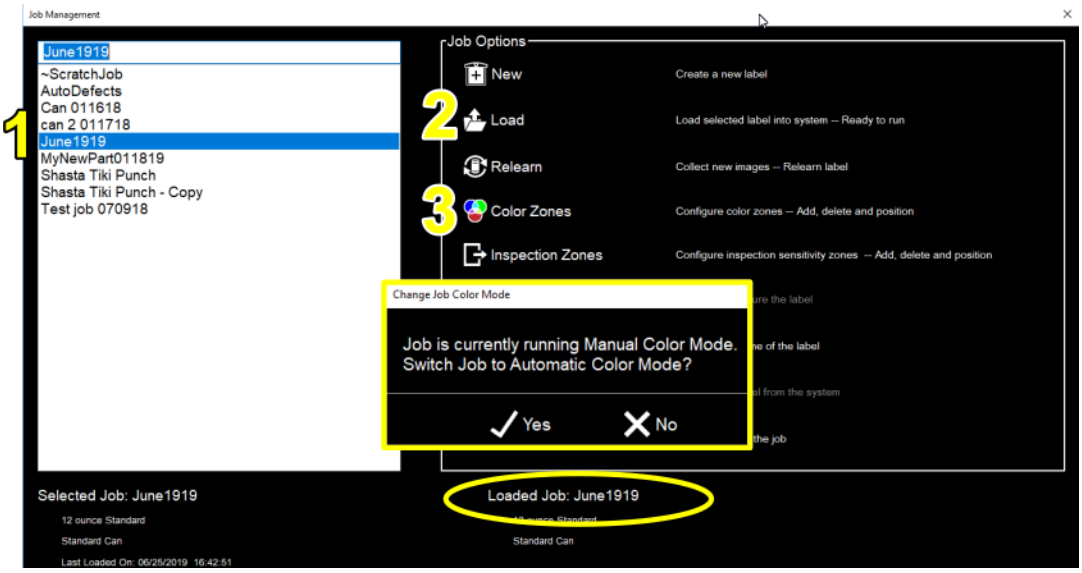
> *Note: your system may be configured so that you do not see the Color Zones menu option. This indicates that the system is configured to use only Automatic Colors, and you will not be able to switch to Manual Color mode. A Pressco technician would need to re-configure your system.*

If your system is configured to "Use Automatic Colors," then the system will automatically identify all the different colors of your cans during the learn process. You may decide which of these colors to monitor. Automatic Color Mode is the default system configuration.

> *Note: using Automatic Color mode may result in missed inspections at higher speeds (over 1,800 parts per minute). It may also be less sensitive to color changes in smaller areas than Manual Color mode, since the automatic color is determined by the overall print blanket colors.*

To switch between manual and automatic color mode (or to see which mode your system is using):

From the job menu:



1. Select the job name in the left column.
2. Select Load if you need to load a new job. If the job is already loaded, it will be listed on the lower right screen.
3. Select Color Zones. The system will ask if you want to switch color modes. In our example above, the job is running Manual Color Mode. If we wanted to switch to Automatic Color Mode, we would select Yes.
    - When you switch to Automatic Color Mode, the system analyzes and selects the colors in the image.
    - When you switch to Manual Color Mode, then you must set up Color Zones.
4.

Go to the Color Analysis screen. You will see the color blocks below the image (in Automatic color mode). These are all the colors that the system found in your part image. You can use Color Display Selection to turn colors on or off.

Color Zones - Manual, optional

> *Note: if your system is configured to "Use Automatic Colors," then you will not see this screen nor set up colors. The system does that automatically. For more information see "Automatic Color Mode - switching to" on the previous page*

Use Color Zones to monitor specific colors over time. You may choose up to eight colors, and the system will monitor how closely each image compares to the original image

Job Name | Color Zones

To set a color zone:

1. Select **New Zone**. An adjustable circle is displayed on the image. This is the template image, so the colors are an average of all the learned parts.
2. Move and/ or resize the inner circle to an area on your part you want to monitor. Try to use an area that contains only one color, not shading nor borders. Use the outer circle as space to allow for part movement. Do not include other colors within the outer circle. You can move and re-size the circle on the full image or the zoomed image on the right.
3. Select the Zone Name to rename the color, if desired. The system will automatically apply a color name based on RGB values if you choose not to add a name. Select Auto Name Color to apply a standard color name. You may type a different name if desired: select the key-board icon. Save.
4. To add another zone, select New Zone again and move or resize the circle as desired. Rename the color.
5. Select Save to save changes and exit. The system will save this information with the job. WAIT while the system updates the parameters.

When the system learns the part, it places the color zone on the same area of all images, regard-less of part movement.

Go to the Color Analysis screen. You will see the color blocks below the image (in Automatic color mode). These are all the colors that the system found in your part image. You can use Color Display Selection to turn colors on or off.

Inspection Zones

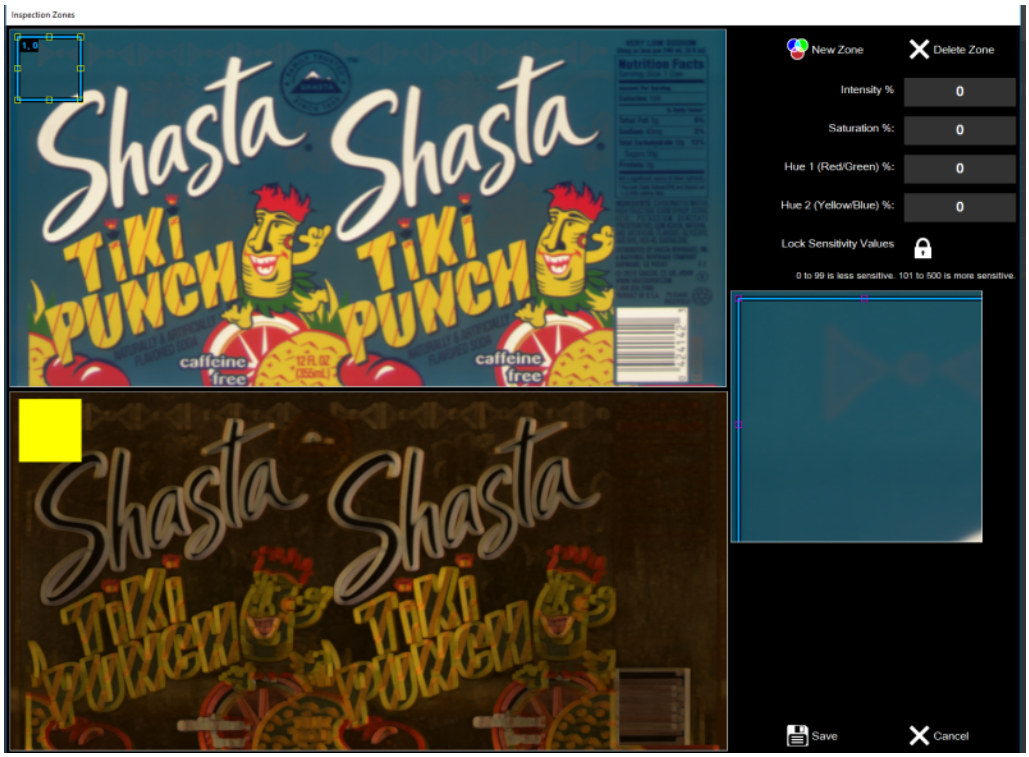
This feature allows you to increase or decrease the sensitivity on specific parts of your label, without affecting inspection on other parts of the label. You can inspect specific areas such as the date code area, or busy printed areas to find washer stains, for example. Each zone has independent sensitivity control.

Once you save the inspection zones, this information is saved with the job, so that it gets used each time you run the job.

To set up inspection zones:

1.

Go to the job menu.
2. Select **Inspection Zones**.
3. Select **New Zone**. A default zone and inspection settings appear on the screen.

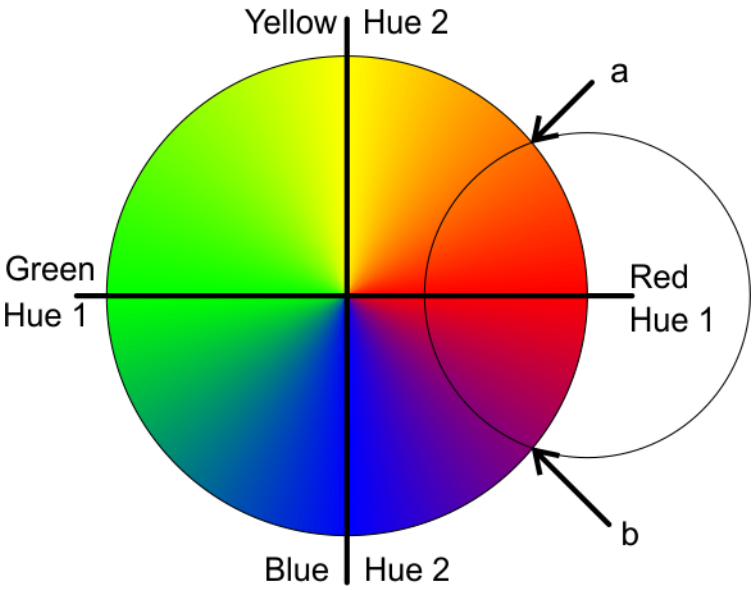


4. Move the zone to where you would like to adjust the sensitivity. (You can set up more than one zone)
5. Adjust the sensitivity. (See below for information about sensitivity)
6. **Save** your changes and exit the dialog.

> *Tip: The sensitivity values are locked together by default, which provides the best overall inspection. Typical settings are 120% for more sensitive, and 80% for less sensitive.*

- Intensity % inspects for shadows and scuffs
- Saturation % inspects for too much color or color voids
- 100% is standard inspection
- 0-99 is less sensitive
- 101-500 is more sensitive. At 500, the inspection block is black (look in the lower image); almost every pixel fails at this setting.

Hue 1 and Hue 2 typically get adjusted the same amount. Try small incremental adjustments.



- a and b represent red as it starts drifting towards yellow or blue
- Hue 1 affects Red and Green. If you expect to see red, but the can color is printing orange or purple, OR you expect to see green, but the can color is printing greenish-yellow or aqua, then increase Hue 1.
- Hue 2 affects Yellow and Blue. If you expect to see yellow, but the can color is printing orange or yellow-green, OR you expect to see blue, but the can color is printing greenish blue or purple, then increase Hue 2.

In our example below, we placed an inspection zone over the bar code, making inspection less sensitive in this area.

See also: "Inspection Zones Example" on the next page

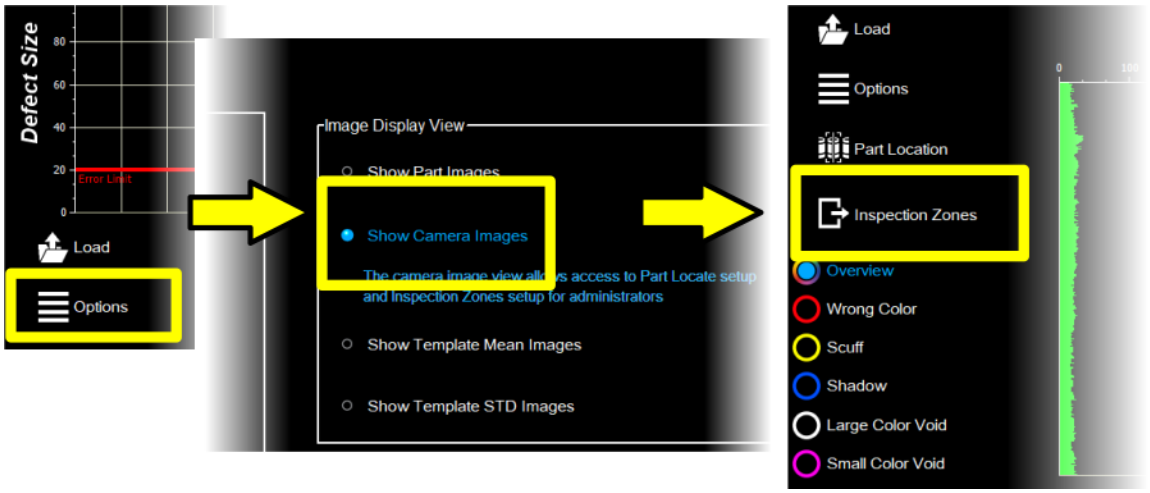
View Inspection Zones from Print Quality Screen

Print Quality To see the inspection zones in action, go to the Print Quality tab. To view anything on this screen, you must load images. See "Load Part Images" on page 91

If you are an Administrator, you can make changes to Inspection Zones in the Print Quality tab.

> *Note: Inspection Zones must be configured in the Job Management menu prior to editing in Print Quality View.*

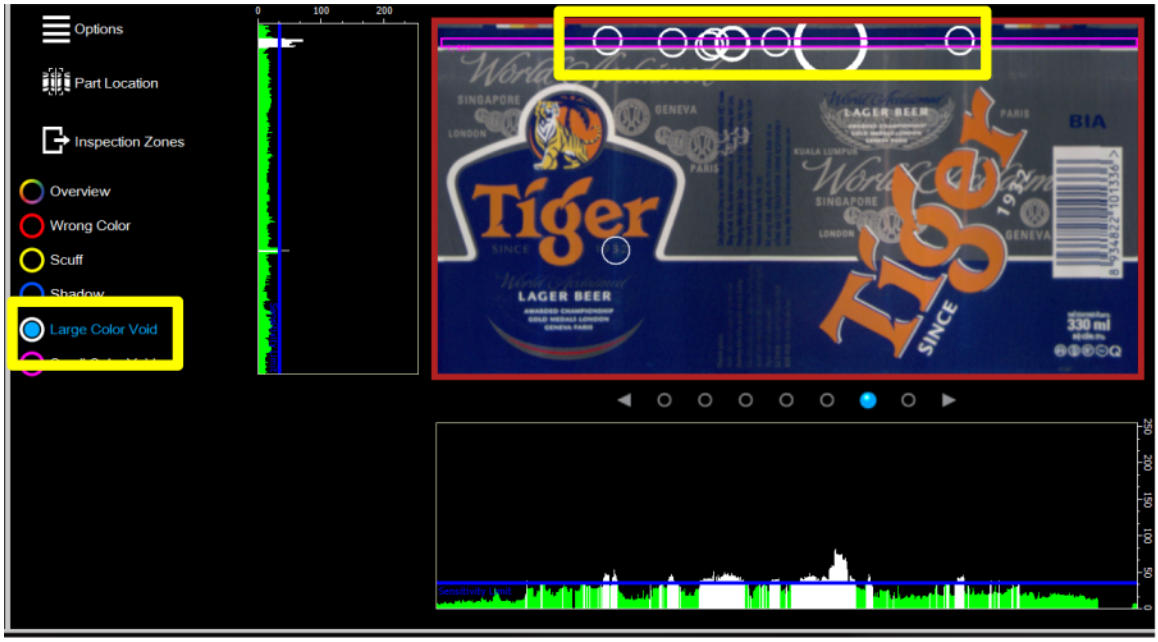
Select the **Options** button, then select **Show Camera Images** on the right side of the dialog. When you exit the dialog, an Inspection Zones button is displayed on the Print Quality screen.



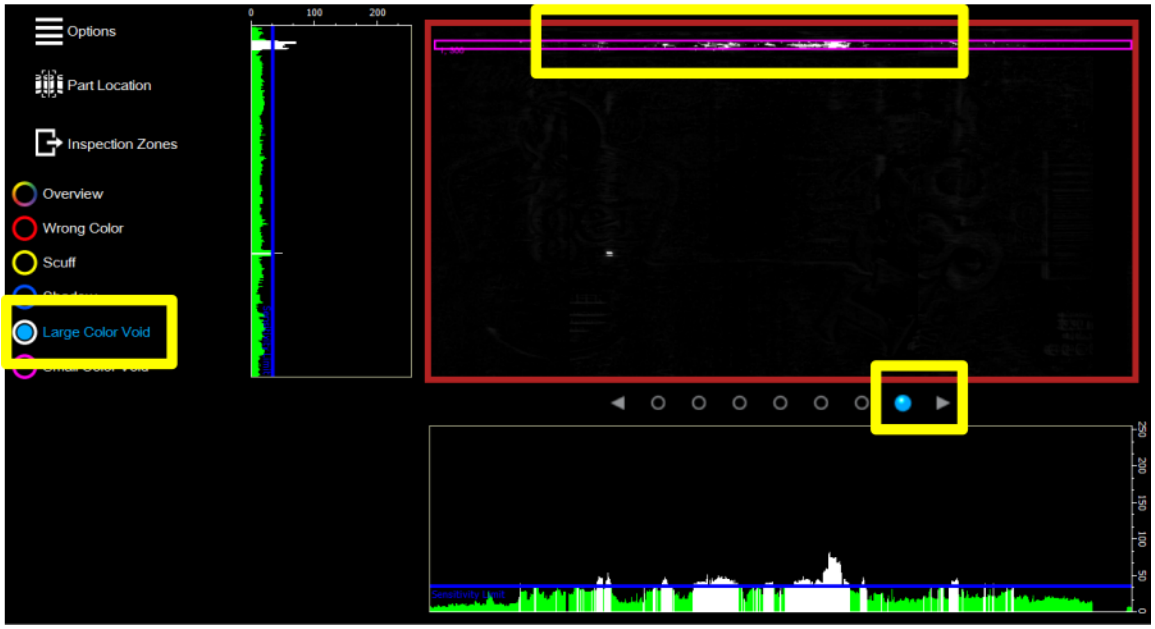
Select the **Inspection Zones** button to configure the zones.

Inspection Zones Example

This example shows that a Large Color Void was found within the inspection zone.



You can see the defect more clearly by looking at the "error" image. Click the appropriate dot under the image.



Confirm a Job Learn

Make sure the job is performing as expected. Check these things:

Reject rate ("Statistics on the Control Panel" on page 34)

- If there are too many defects in the Last 100 parts: see if they really are bad parts or false rejects.
- If you have a high false reject rate, check the sensitivity and defect size. See how: "Adjust Inspection Settings" on page 96

Look at Latest Defects (in "Print Quality Screen" on page 90). Make sure they are really defects.

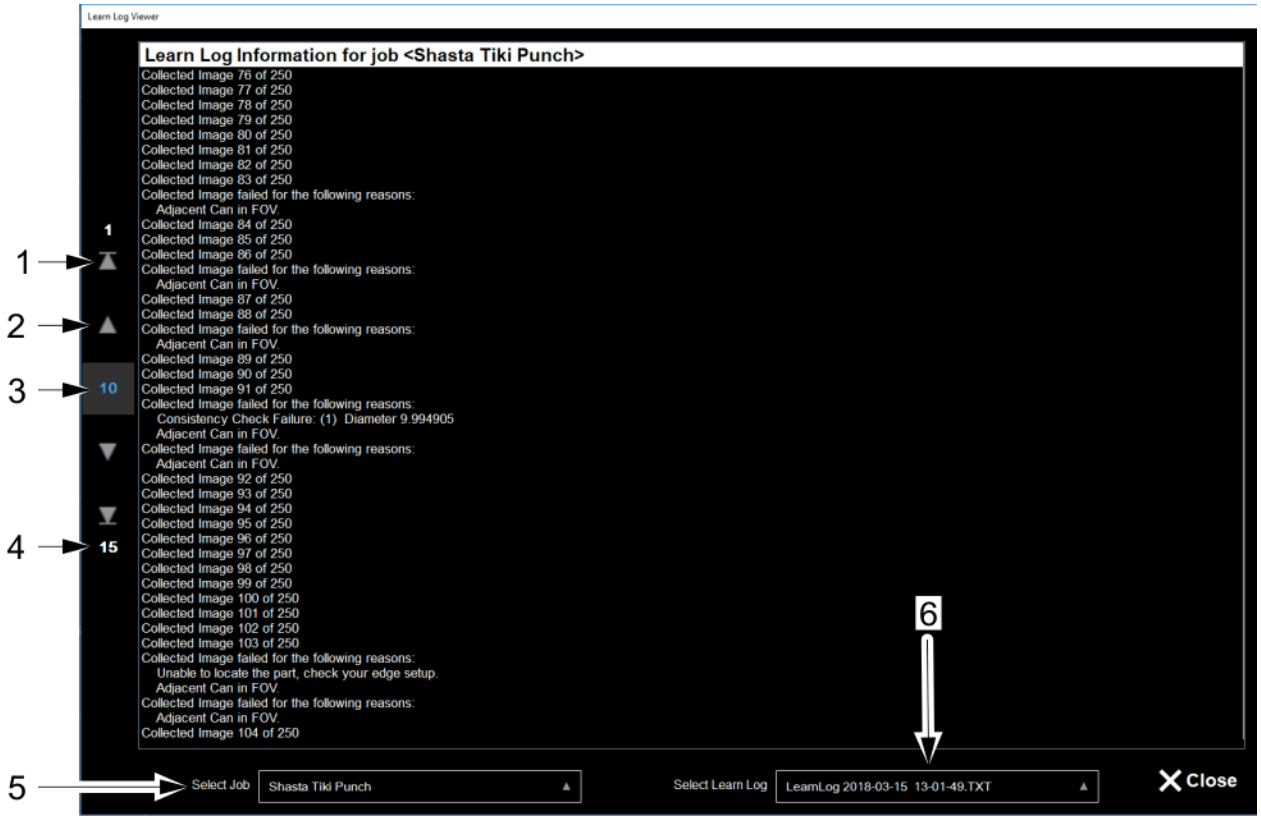
- If the system is rejecting parts with small defects, then adjust sensitivity and defect size.
- If it looks like the parts are mis-aligned on the screen, then relearn the part
- If there are too many false rejects in Last 100 Parts OR Latest Defects, then re-learn the part. Make sure you clean the tunnel windows before re-learning. See "Clean the Tunnel Windows" on page 202

Learn Log Viewer

Administrator only

| System Utilities | Learn Log Viewer.

View the logs from the learn process, including the images that were added to the calibration. Images that were not included in the calibration are listed with the reasons that the images failed. Suggestions for correcting your part setup are included, such as "check your edge setup." A separate text file is created for each job, each time the system learns a part.



1) Go to beginning of the log file

2) Page up

3) The current page of the log file. Press and hold the number to enter any valid page to navigate to.

4) Total number of pages in the log file

5) Select the job for which you want to view the learn file.

6) Select the text file you want to view. The file name is date coded so that you know when the system learned a part.

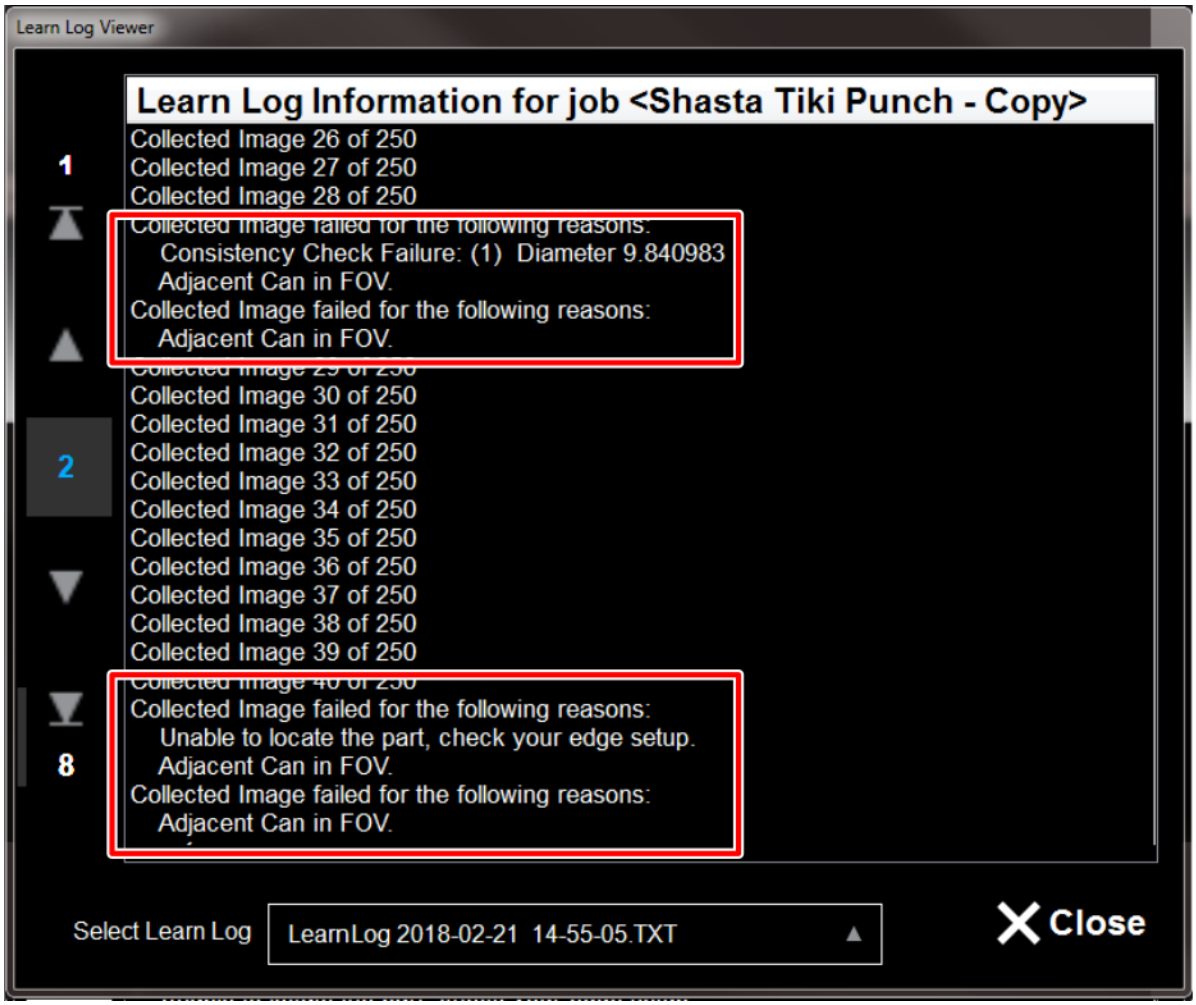
Learn Log After Relearn

> *Note: This version of the Learn Log will only be available if the system is NOT programmed to automatically go online after a learn. An Administrator can enable or disable the automatic online feature from Settings | System Utilities | Go Online After Job Learn.An Administrator can enable or disable the automatic online feature from Settings | System Settings | Configuration Settings | Go Online After Job Learn.*

To access this menu: System is Offline. Select the job name | **Relearn**. You must wait till Relearn is finished.

Then select **Learn Log** from the Learn menu.

Look at the history of Learn processes for the active job. The report includes who initiated the learn and when, as well as information about any images that failed inspection during learn (failed images are not used in creating the learn templates).



Learn Review Report

Administrator only

> *Note: This feature is usually used for special cases. The additional instructions provided here are for those cases. You may choose to enable it if you want to see the report at the end of the learn.*
> *Note: This feature does not work if your system is programmed to go online automatically after a job learn. An Administrator can enable or disable the automatic online feature from Settings | System Utilities | Go Online After Job Learn.An Administrator can enable or disable the automatic online feature from Settings | System Settings | Configuration Settings | Go Online After Job Learn.*

This optional feature allows you to see the cans that went through the system during the learn process. This helps you prevent uninspected and potentially defective cans, from getting to your customers. Parts normally do not get rejected until the system goes online, which happens after the learn process.

Enable the Learn Review Report:

Go to **Settings** | **System Settings** | **Configuration Settings** | **Learn Review Report**. This toggles between **Enabled** and **Disabled**. Toggle it on so the switch is blue. **Save** your settings and exit the menu.

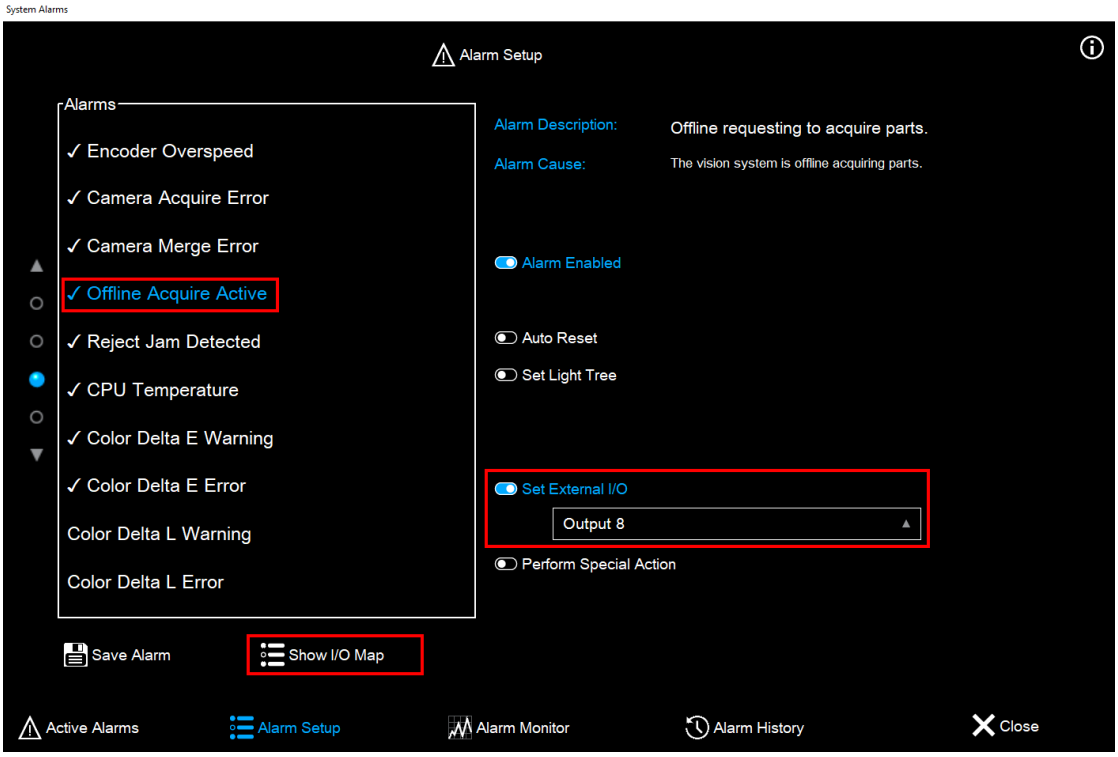
The tool allows you to:

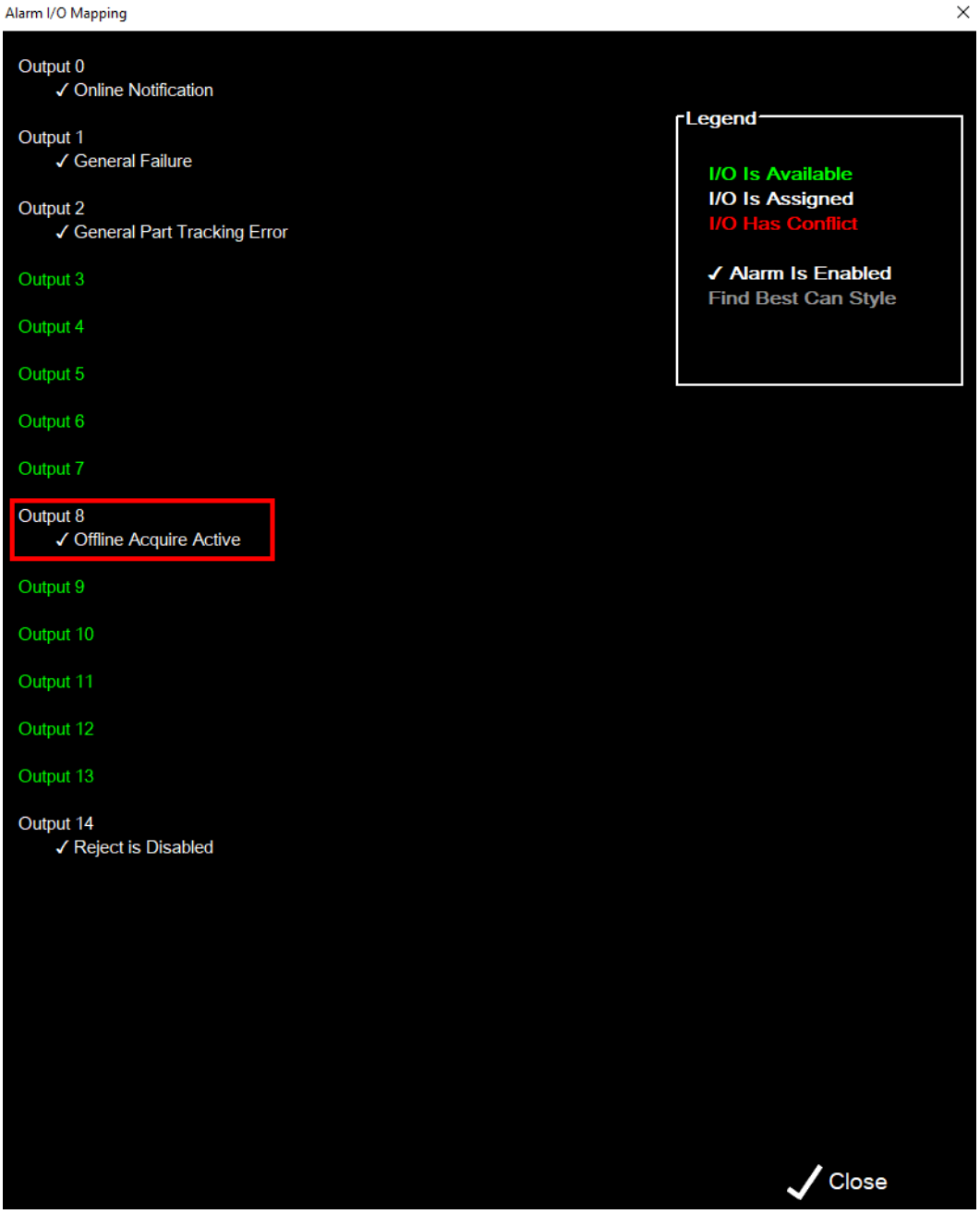
- review the learn results before proceeding to online mode
- collect defective cans that passed through the tunnel during the learn process

To set up the system to slow down while offline:

The purpose of this procedure is to allow you to run the conveyor slower, to manually pull cans during the learn process. This sets up a signal from the DecoSpector 360™ to your plant's PLC to slow the conveyor down when the Deco system is offline.

1. You will need to connect the DecoSpector 360™ Extended I/O board to your plant's PLC.
2. In the Deco system, set up the Offline Notification alarm: Select **Alarm** | **Alarm Setup** | enable the **Offline Notification** alarm.
3. Set the external I/O bit. Choose a bit (not used for any other signal) to signal your PLC to jog the conveyor at a reduced speed. Select the **Show the I/O Map** button to view other I/O ports already in use.





4. Save your changes and exit.

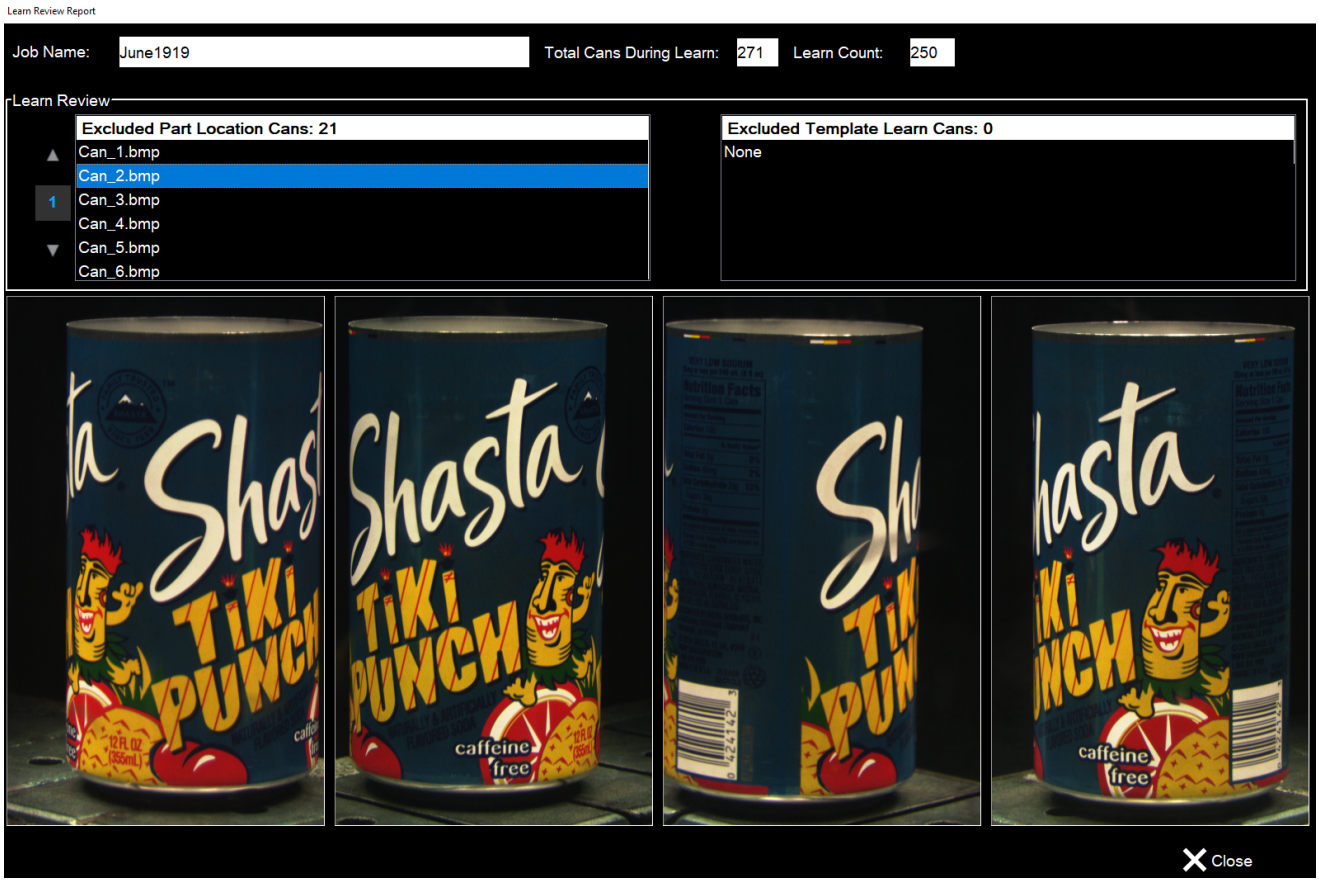
When the Deco system is offline and learning cans, you can look at the report to identify cans that you would like to remove from the conveyor.

To see the Learn Review report:

1. Learn the part (must Relearn from the Job Management menu).
2. **Align the Print Blanket** (even if the system says the Print Blanket was aligned automatically, you must manually align the print blanket). Select **Save Alignment**.

3. Select **Job Ready**. The Learn Review Report is displayed.
4. Scroll through the parts to see the results.

In the example below, 271 cans passed through the system during the learn process. 21 of those cans were excluded because they failed registration (example: they failed because of poor part positioning or missing cans). Note cans with poor part positioning might not be defective.



Can Settings

Administrator only

This topic contains parameter reference, not instructions to set up a new can.

> *Note: this screen is set during installation by a Pressco engineer. Part of can setup requires Pressco Technician access.*
>
> *IMPORTANT: Use this dialog at your own risk. The settings do not normally need to be changed unless you inspect a part size that is not already programmed.*

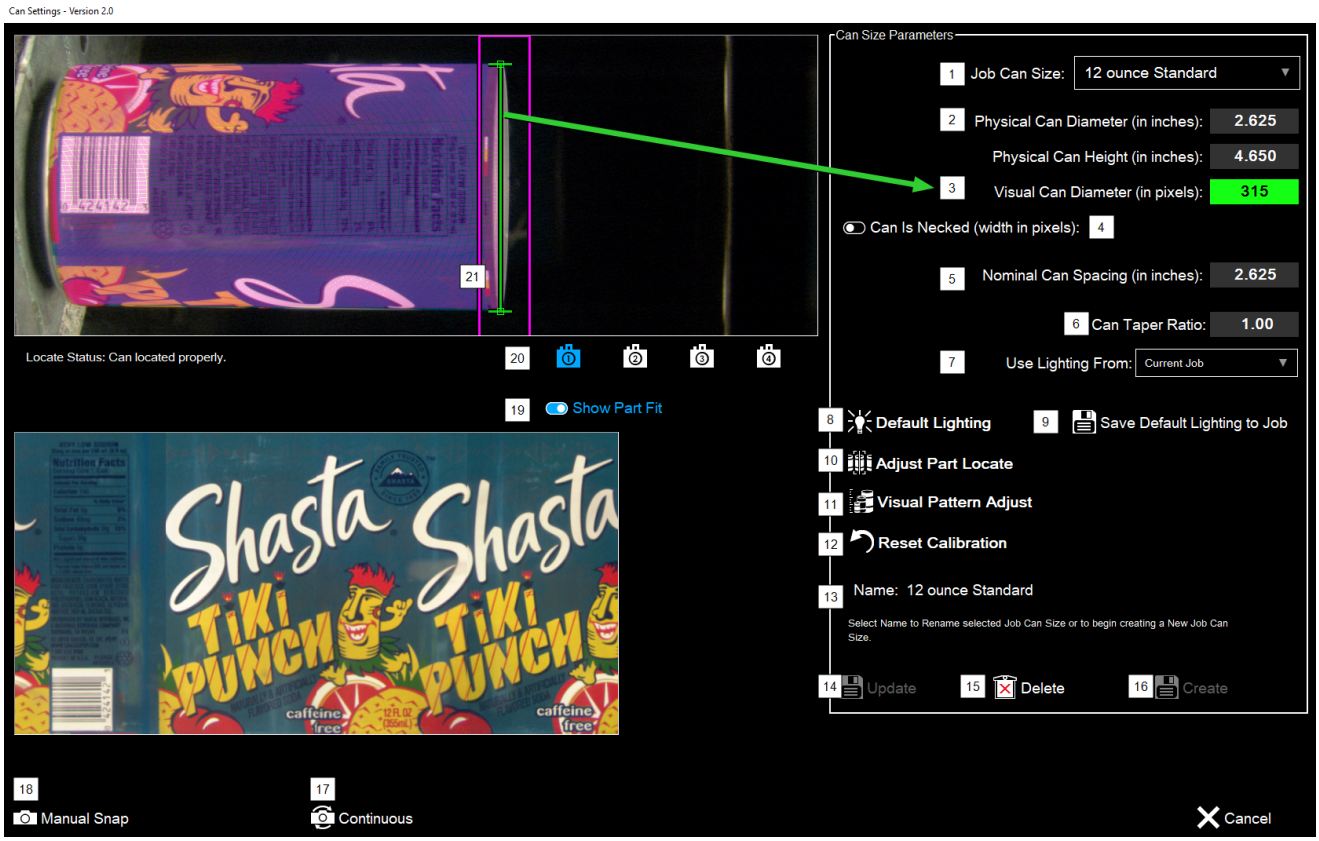
Settings | **Global Utilities** | **Can Settings**.

Notes about Can Settings:

- You need to configure one can size setting for each can size that will be run by the system. You should only need to make minor adjustments to existing can sizes as needed and create

a new can size if you are running a can size not currently supported by the system.

- New Job Can Sizes will each require performing the Can Settings Setup, Pre-Calibrate Learn, Visual Pattern Adjustment, and Full Learn to support the new Can Size. (Pressco Technician access only)
- If you are creating a new job can size based on an existing job can size, and the physical diameter of the new part is different, you will need to run Part Present Delay Calibration to determine part width for the new part.



If you want to save changes to the current job: after making all necessary adjustments, select the "Save to Job" icon at the bottom of the window. These settings are applied to the current job.

Can Size Parameters

These are set during installation and do not need to change unless you change your part size.

1) Job Can Size

The size of the can you are inspecting. Select a Job Can Size that most closely matches the new Job Can Size that you are going to be creating. You can use “12 ounce Standard” if the that is the only “job can size” typically used at the site.

2) Physical Can Diameter and Height

Measure an actual part with calipers, or enter information from your can specifications sheet. Include only the dimensions of the cylindrical area of the part. These values can be adjusted later for best results once the system can register and unroll a part.

3) Visual Can Diameter

Adjust the Visual Can Diameter making sure that the green ruler spans the corners of the part along the silver ring feature at the top of the can body. The system computes the diameter in pixels.

4) Can is Necked (width)

Enabled/ Disabled. If your part is already necked in this inspection process, then enable this parameter. Then use the yellow line so that the top and bottom “T” touch the edges of the “flanged” area. The system computes the diameter in pixels. (Our example can is NOT necked, and the yellow ruler is not shown in our image)

5) Nominal Can Spacing

Nominal Can Spacing is used to indicate the optimal spacing requirements for this particular can size. This allows different applications and different product sizes to define the acceptable can spacing. Note that when parts are spaced less than the nominal distance apart we will start to see reflections and shadows from adjacent cans.

6) Can Taper Ratio

Do not change this setting unless otherwise instructed by Pressco. Taper ratio is set up by Pressco based on the application and sample parts during job can size setup.

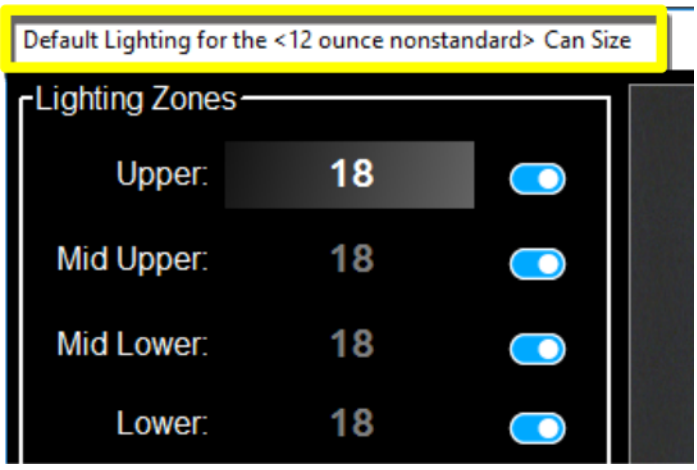
1.0 is no taper or ideally a cylinder. This is the most common setting. Less than or greater than 1.0 will create a taper in the part fit and the inspection area extraction.

7) Use Lighting From

Select the current job or current can size.

8) Default Lighting

This takes you to the Default Lighting setup screen. Adjust if needed. Notice the title of this dialog is "Default Lighting." This is a separate dialog from the standard lighting settings dialog.



- Default lighting for New Job Can Sizes is 18 for all zones unless otherwise specified by Pressco.
- Note: Shorter cans will not need the Upper zone turned on and may only need fixed dwell on the Mid Upper lighting zone. This minimizes stray light to reduce reflections from adjacent cans.
- If you make changes to Default Lighting, then in Can Settings: select "Update" and "Save Default Lighting to Job."

9) Save Default Lighting to Job

If you made changes in the Lighting screen (by selecting Default Lighting), you can save those changes to the current job.

10) Adjust Part Locate

> *Tip: Make sure "Rough Top Locate Registration Window [21]" is properly set before using Part Locate*

This menu ensures that the system properly locates each part. See "Part Locate Settings" on page 68

11) Visual Pattern Adjust

Use this to make sure the system is inspecting the label and not the unprinted top or bottom of the can. If you are setting up a new part size, then you will not see a part image. You will have to wait until the system runs a Pre-Calibration. See "Visual Pattern Adjust" on page 67

If a change is the made to the Visual Pattern offsets, existing job including the current job must be relearned to apply the change to job learned inspection templates. If the physical can height or diameter are changed, the calibration must be reset and then pre-calibrate learn must be performed to update the job can size and current job.

12) Reset Calibration

This is a flag that forces the next job learn that uses this can size to do a Pre-Calibration and Calibration to correctly measure the part. If you have moved any cameras or mirrors in the inspection tunnel, the part image may change, and the system will have to be re-calibrated.

13) Name

Type a name when you are creating a new part size.

The Name field can also be used to rename the selected job can size, in which case the Update is used instead of the Create to update the name of the job can size.

14) Update

This is only available after making changes in this dialog. Update changes to the Job Can Size.

15) Delete

WARNING - Deletes the selected Job Can Size.

16) Create

This is only available when you are creating a new Job Can Size. Select Create to create a new “job can size," using the new Can Size settings.

17) Continuous

Snap images continuously.

18) Manual Snap

Snap one part image.

19) Show Part Fit

Enable this to see the graphics that show how the system registers the part. You will not see these graphics until the system has performed at least an initial learn.

20) Select Camera

Select which camera image to display at the top of the dialog.

21) Rough Top Locate Registration Window

Adjust this to find the top of the part. Allow some room for part movement. An example of proper setup is shown in the above image.

> *IMPORTANT: This is a critical setup component. Make sure that the window defines the proper search window that will be used by Part Locate Settings. If the window is too small or not positioned correctly, then the system will have difficulty with properly locating the part.*

Allow some room for part movement “and slight alignment differences between cameras.” Tip: Check all four camera views before settling on the size and position of the Rough Top Locate Registration Window.

Visual Pattern Adjust

This needs to be done only when you are setting up a new part size. This screen is accessed from "Can Settings" on page 62.

Select Visual Pattern Adjust only after you adjust 1) Can Settings, 2) Part Locate Settings, and 3) Pre-Calibration. The system needs to locate and learn the part, and unroll the image before this tool works.

Adjust Top Offset and Bottom Offset to allow for part movement, and to block off the top and bottom areas of the can. The system does not inspect anything above nor below the lines. If the part is necked, you should set the Top Offset lower than the neck area.

The system measures the can height.

Select Update to go back to Can Settings. Close Can Settings.

Part Locate Settings

Administrator only

This menu ensures that the system properly locates each part. The cans need to be centered and spaced well. This ensures:

- good inspection results
- minimal false defects
- cans are inspected. If the cans are too close together, it can cause cans to not be inspected and therefore rejected.

Important - make sure your parts have 2mm bare aluminum at the top of the can - see "Deco Can Printing Position Requirement" on page 228

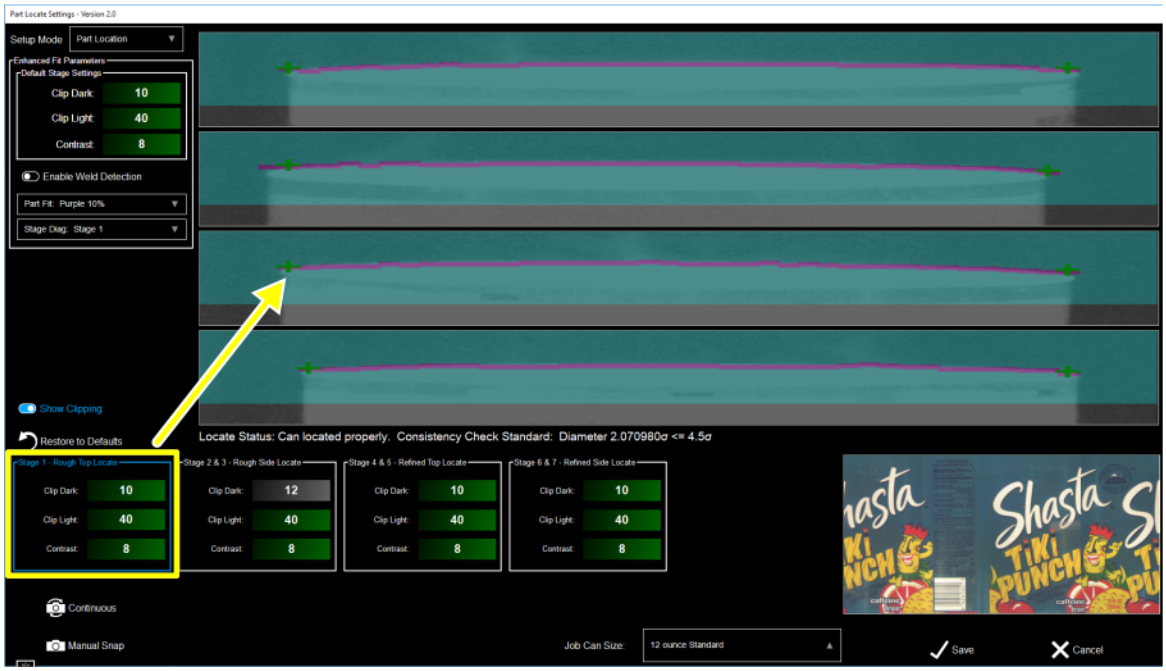
Important - Debris and contamination could build up the glass inspection module surfaces. This dirt could appear in the images, causing false rejects of parts, missed registrations, or it could degrade lighting. Clean the inspection module glass surfaces regularly. See "Clean the Tunnel Windows" on page 202

To get to this dialog: **Settings** | **Global Utilities** | **Part Locate Settings**.

TIP: if the system shows an error: "Locate status: Unable to locate the part, check your edge setup," this could mean that Can Settings have not yet been set up for the part. Check the Can Settings.

To adjust part locate settings:

1. Select **Manual Snap** [1] to get an image on the screen.
2. Select **Part Location** for **Setup Mode** [2].
3. Work the Stages from left to right, using the following steps.
4. Select inside the Stage 1 box [3]. The system looks for the top edge of the can. If this looks OK (see picture below), then move to Stage 2. Otherwise, adjust the values in Stage 1 until the magenta edges fall near the top edge of the can as shown below.

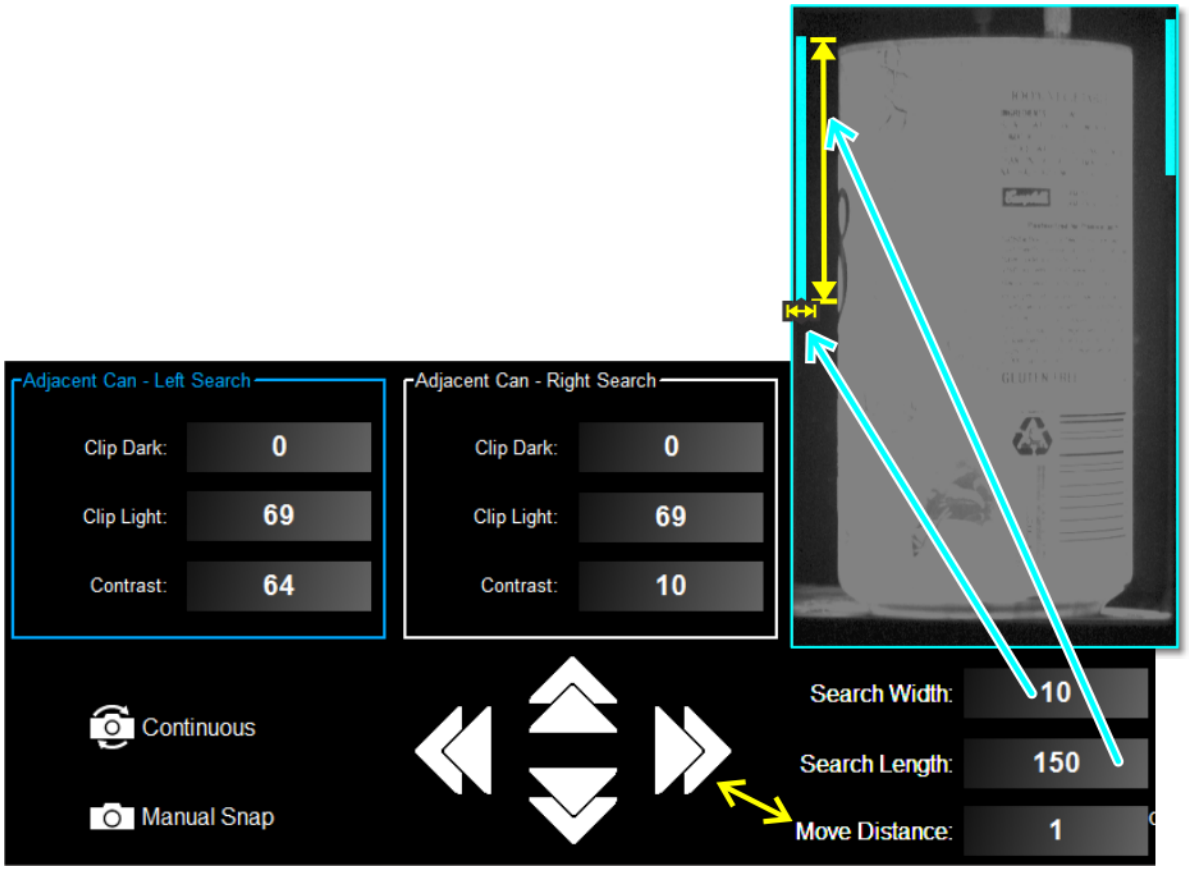


5. Select inside the Stage 2 & 3 box [4]. The system looks for the part from the sides. If this looks OK as shown below, then move to Stage 4 & 5. Otherwise, adjust the Stage 2 & 3 values until the system finds the sides of the can on all four images properly. You can move the search regions with arrows at the bottom of the screen once you click inside the Stage 2 & 3 box.

6. Select inside the Stage 4 & 5 box [5]. The system looks for the top edges of the can, with more sensitivity. If this looks OK as shown below, then move to Stage 6 & 7. Otherwise, adjust the Stage 4 & 5 values until the system finds the top of the can on all four images properly. You can move the search regions with arrows at the bottom of the screen once you click inside the Stage 4 & 5 box.

7. Select inside the Stage 6 & 7 box [6]. The system looks for the side edges of the can, with more sensitivity. If this looks OK as shown below, then move to step 8. Otherwise, adjust the Stage 6 & 7 values until the system finds the sides of the can on all four images properly.

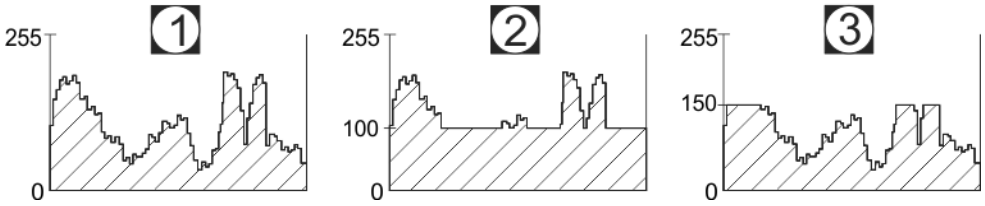
8. Select Adjacent Can for Setup Mode [2].
9. Make sure Perform Adjacent Can Check is enabled. This checks for adjacent cans and makes sure that the system does not reject parts based on reflections or shadows on the sides of the can (which are caused by adjacent cans).
10. Select inside the Adjacent Can - Left Search box to move and adjust the size of the left search region. Adjust clipping as necessary (described below). Move and re-size the adjacent can search regions so that they capture adjacent cans in the images. You will adjust these based on your production line.



11. Select inside the Adjacent Can - Right Search box to move and adjust the size of the right search region. Adjust clipping as necessary.
12. Select Save to save changes and exit the menu.

Clipping

Clipping is used to change gray shades to a specified value. It allows the system to ignore light reflections or normal grain in a part, to provide easier defect detection. When you enable Show Clipping you will see the results of this parameter.



[1] = no clipping

Clip Dark [2] – set a dark gray shade value. A value of 100 makes all pixels with gray levels of 0-99 a gray level of 100.

Clip Light [3]– set a light gray shade value. A value of 150 makes all pixels with gray levels of 151-255 a gray level of 150.

Part Position Feedback

This tool helps determine the position of the part flow, and quality of material handling, within the DecoSpector 360™ tunnel. There are three views:

- Part Position
- Camera Tilt
- Part Spacing

To access the tool:

Go to **Settings** | **System Calibration** | **Part Position Feedback**. Part Position is the first view.

To navigate between the different views:

Part Position:

- By clicking anywhere other than a camera you will switch to the Part Spacing view.
- By clicking on any camera the view will be changed to show the specific Camera's Tilt data.

Part Spacing:

- By clicking anywhere you will switch to the Part Position view.

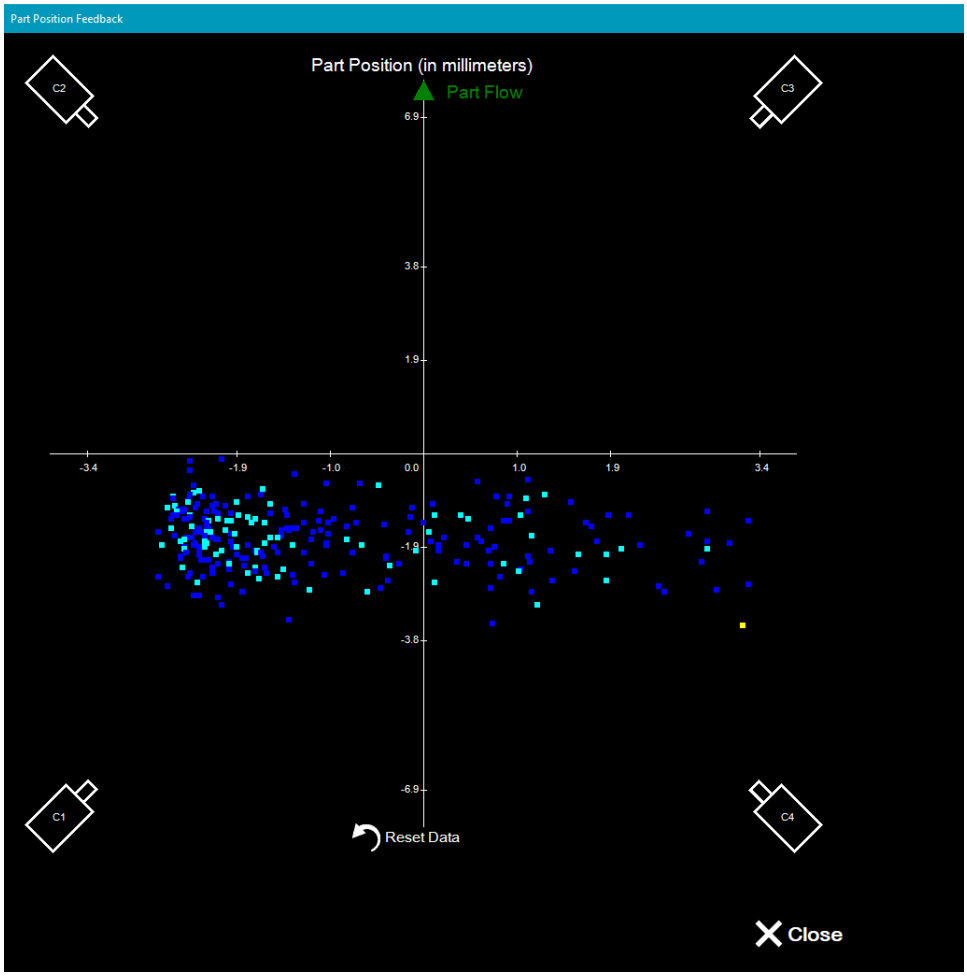
Camera Tilt:

- By clicking anywhere other than a camera you will switch to the Part Position view.
- By clicking on the displayed camera you will switch to the Part Position view.
- By clicking on any other camera the view will be changed to show the specific Camera's Tilt data.

> *Note: to switch between inches and millimeters, go to **Settings** | **System Settings** | **Configuration Settings** | **Units**.*

Part Position

> *Note: It is important that the mechanical position of the inspection tunnel be installed with the correct camera orientation with respect to part flow. When done correctly, the cameras, position, and flow information will match the physical installation of the product.*
> *Note: Part Present Delay should be set, at least roughly, before this tool can help refine the position of the part. The Part Position data is only collected once the system is properly configured to inspect parts while online. If the part position is too far off, then the system cannot find and unroll can images, so there would be no available part position information to plot.*



Part Position Title - The title indicates if the information is shown in inches or millimeters.

Green Part Flow Arrow - This shows the direction of the production flow under the tunnel.

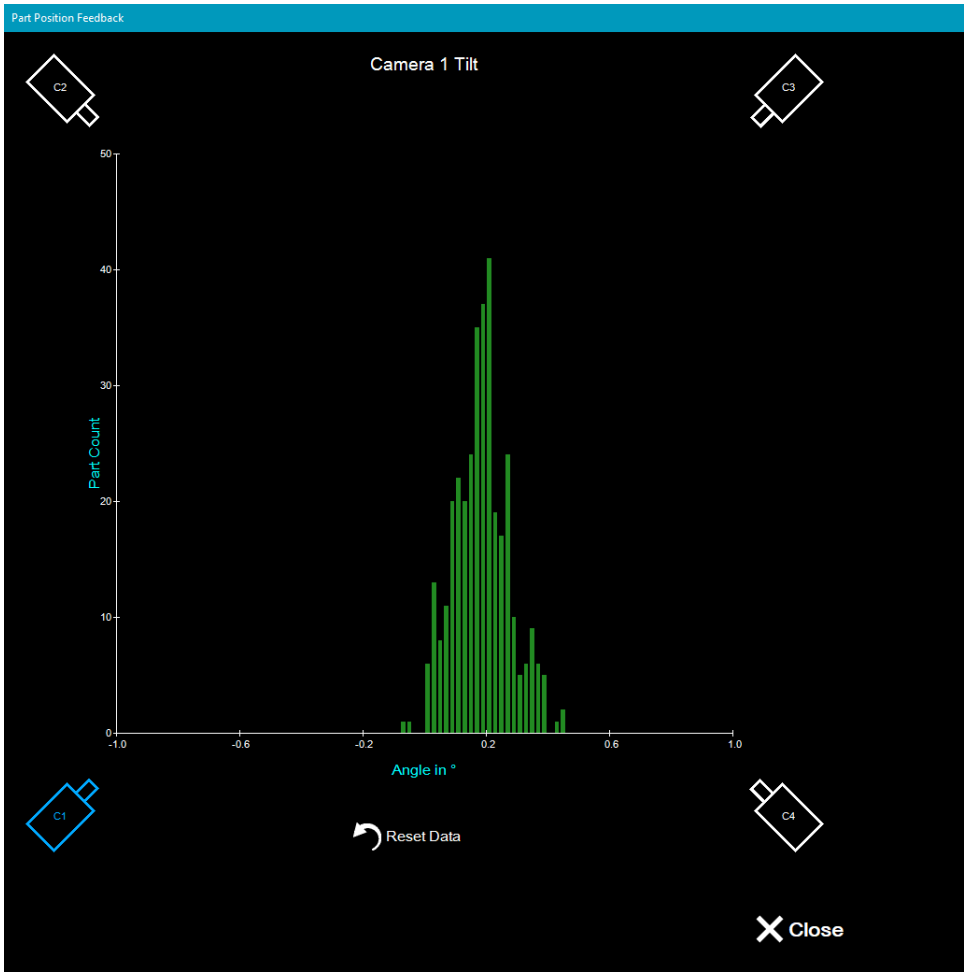
Color Coding - Dark blue indicates at least one part at that position. Lighter blue (cyan) indicates a higher concentration of parts at that position. Yellow indicates the highest concentration of parts at that position.

Reset Data - Pressing this will clear out the collected data for all plots (not just the current view).

C1 through C4 - These are the cameras and act as a button to switch to the specified camera tilt plot.

Camera Tilt

> *Note: The way that the system computes the tilt information for each camera causes opposite pairs to have the exact same angle measurements but with opposite signs. So if the measured angle in C1 is 0.25, then C3 will measure -0.25.*
> *Note: Part Present Delay should be set, at least roughly, before this tool can help refine the position of the part. The Part Position data is only collected once the system is properly configured to inspect parts while online. If the part position is too far off, then the system cannot find and unroll can images, so there would be no available part position information to plot.*



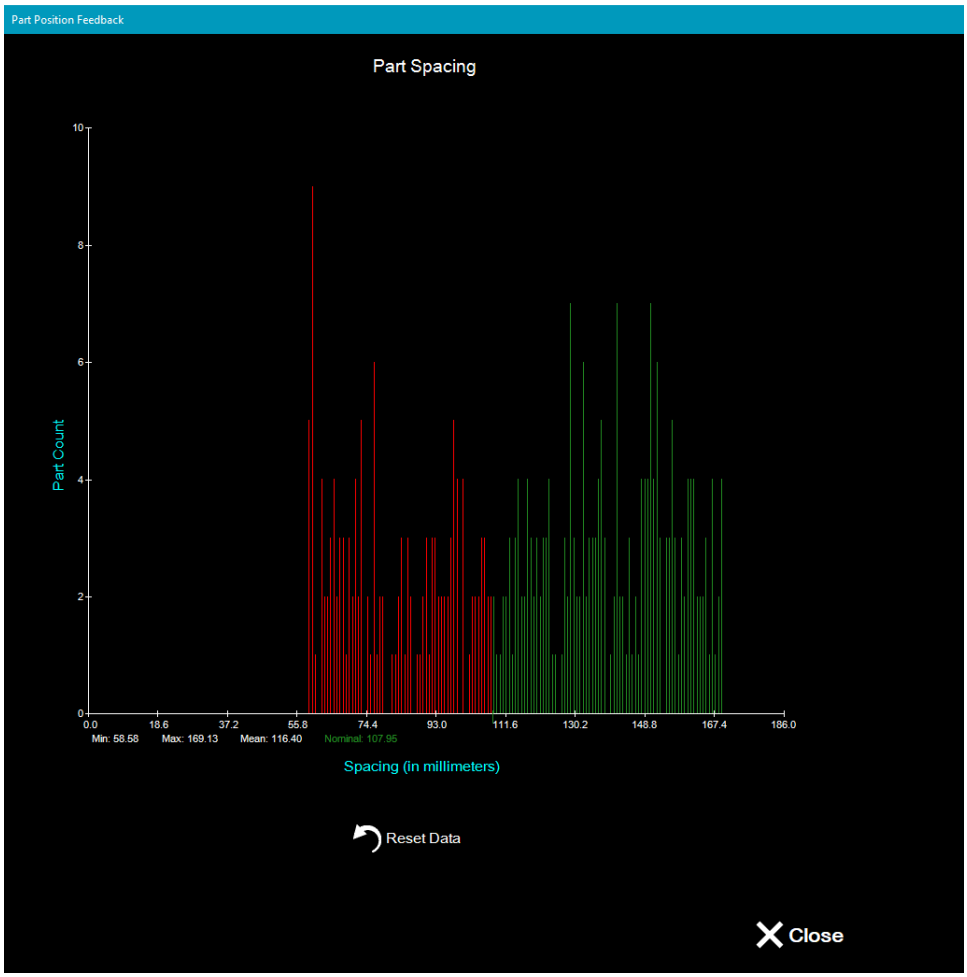
Reset Data - Pressing this will clear out the collected data for all plots (not just the current view).

C1 through C4 - These are the cameras and act as a button to switch to the specified camera tilt plot.

Part Spacing

The part spacing plot collects information about how far apart consecutive cans are based on the part present signal for each part. This information is scaled to real distances by having a good can width calibration (Part Present Delay). The part width is measured in encoder ticks, which allows the system to convert the spacing (measured in encoder ticks) into the desired units.

> *Note: The Part Spacing data does not require proper location and unroll of parts. This is strictly a measure of the acquisition change in encoder ticks. So the spacing data will be accurate even without proper part present positioning. What is critical to the part spacing is the can width. If the can width has not been calibrated for the given part size, then all distance measurements will be inaccurate.*



Y-Axis - The Y-Axis (vertical) of the graph indicates the number of parts that are at a specific distance.

X-Axis - The X-Axis (horizontal) indicates the physical spacing between consecutive parts.

Color Coding:

Red - This indicates that the distance between parts is less than the nominal spacing desired for the given can size. Reducing the number of parts that are too close to each other will help eliminate reflections and shadows caused by the material handling of the part.

Green - This indicates that the distance between parts is greater than the nominal spacing desired for the given can size. These parts should have minimal reflections and shadows caused by material handling of the part.

Blue - This indicates a part that is measuring a distance of less than 0 (smaller than the given part width; most likely you would need to calibrate the part width to get accurate data) or larger than the largest plotted value.

Statistical Data:

Min - This is the smallest measured part spacing found in the displayed graph.

Max - This is the largest measured part spacing found in the displayed graph.

Mean - This is the average part spacing for all of the parts in the displayed graph.

Nominal - This is the current distance that is used to color code the graph results to help visualize when parts are not sufficiently spaced apart. This can be adjusted for each can size in the system through the Can Size Settings dialog.

Reset Data - Pressing this will clear out the collected data for all plots (not just the current view).

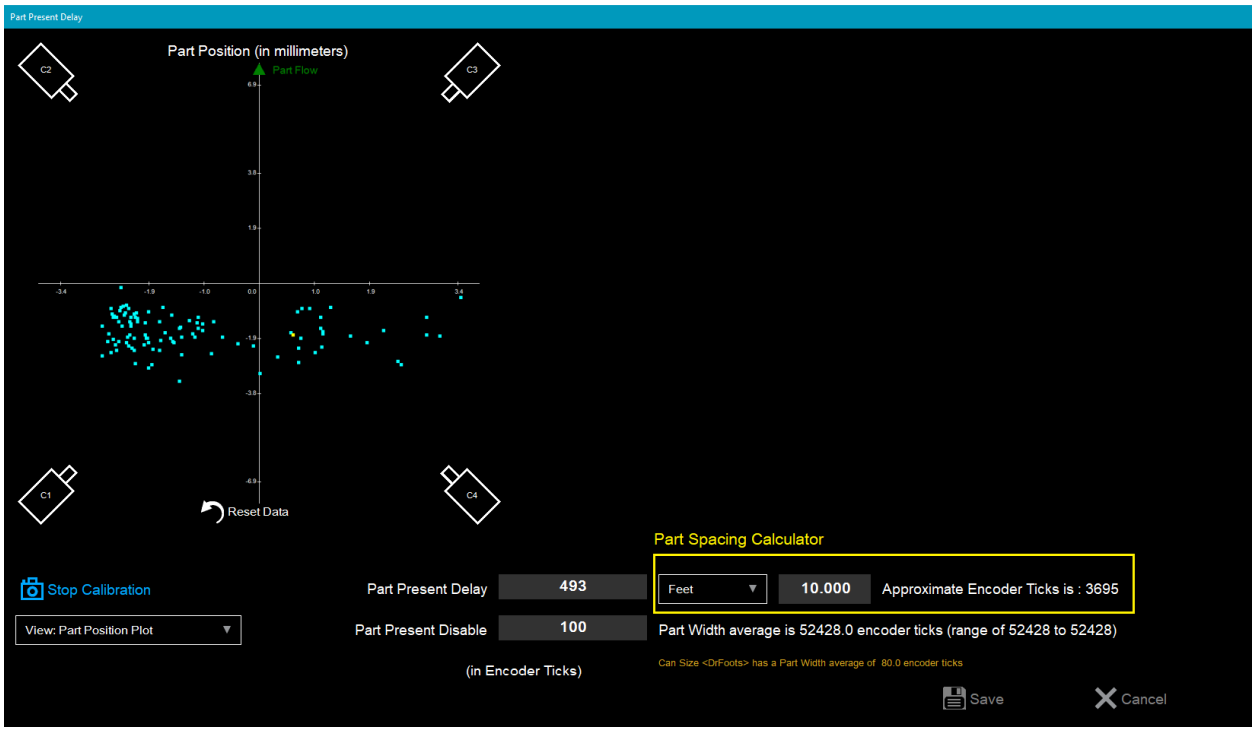
Part Spacing Calculator

Administrator only

With the Part Position plot and the calculator you can see where the population of parts is being acquired. The system estimates the actual distance from being perfectly centered from the plot. Then use the calculator to indicate how many encoder ticks this distance is. Then add or subtract the given count from the current delay to better center the parts.

To see this screen, go to **Settings** | **System Calibration** | **Part Present Delay**. In the lower left corner of the screen next to **View**, select **Part Position Plot**.

The calculator is placed just to the right of the Part Present Delay value field (note: the yellow box and text are not in the actual dialog). You can choose the conversion unit: inches, feet, millimeters and centimeters. The value field is the distance you want to convert to encoder ticks. And finally, the approximate encoder tick count is displayed. The value is an approximation since fractional encoder ticks are not possible.



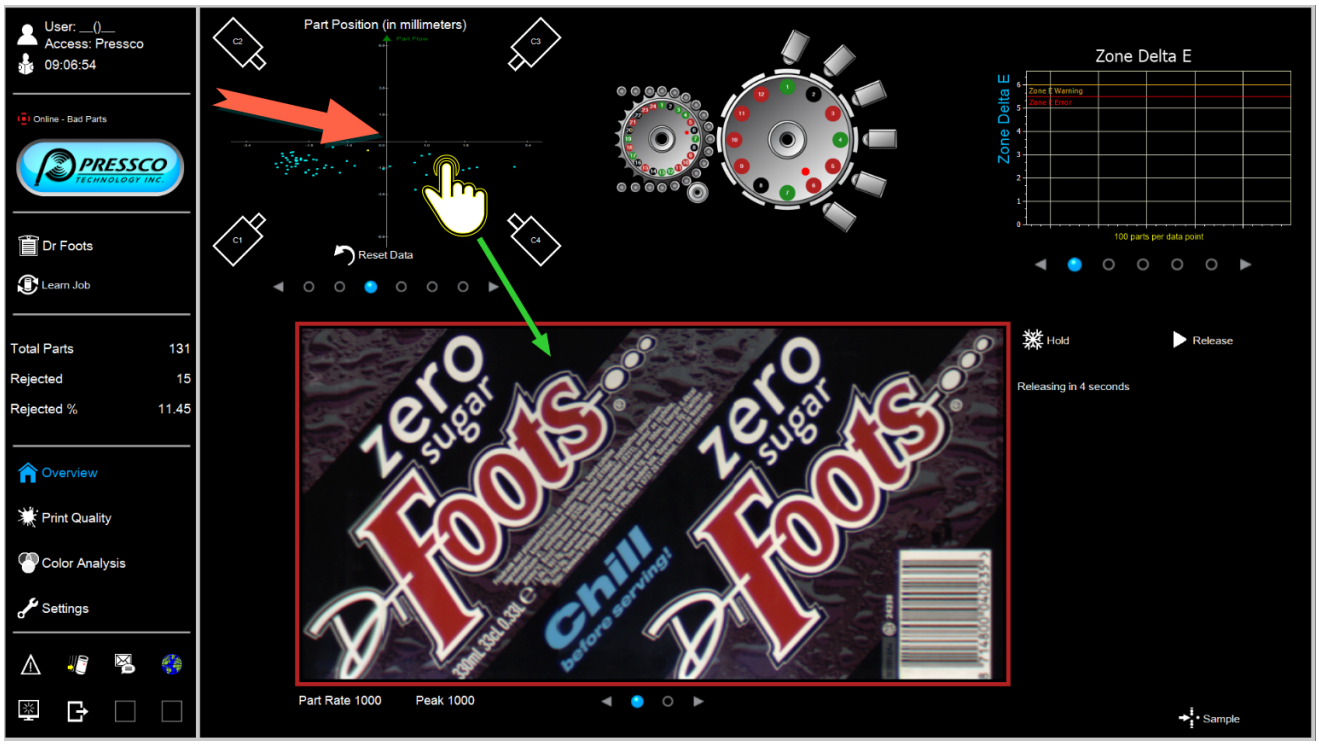
Part Position Tool - Different Ways to View

This topic shows how you can view this tool within the DecoSpector 360™ system. For details about the tool, see "Part Position Feedback" on page 73.

The part position tool collects data in two ways. The first is online production data, which most views use to populate the display. The second is offline part present delay tool and the data is only based on parts run through that specific dialog.

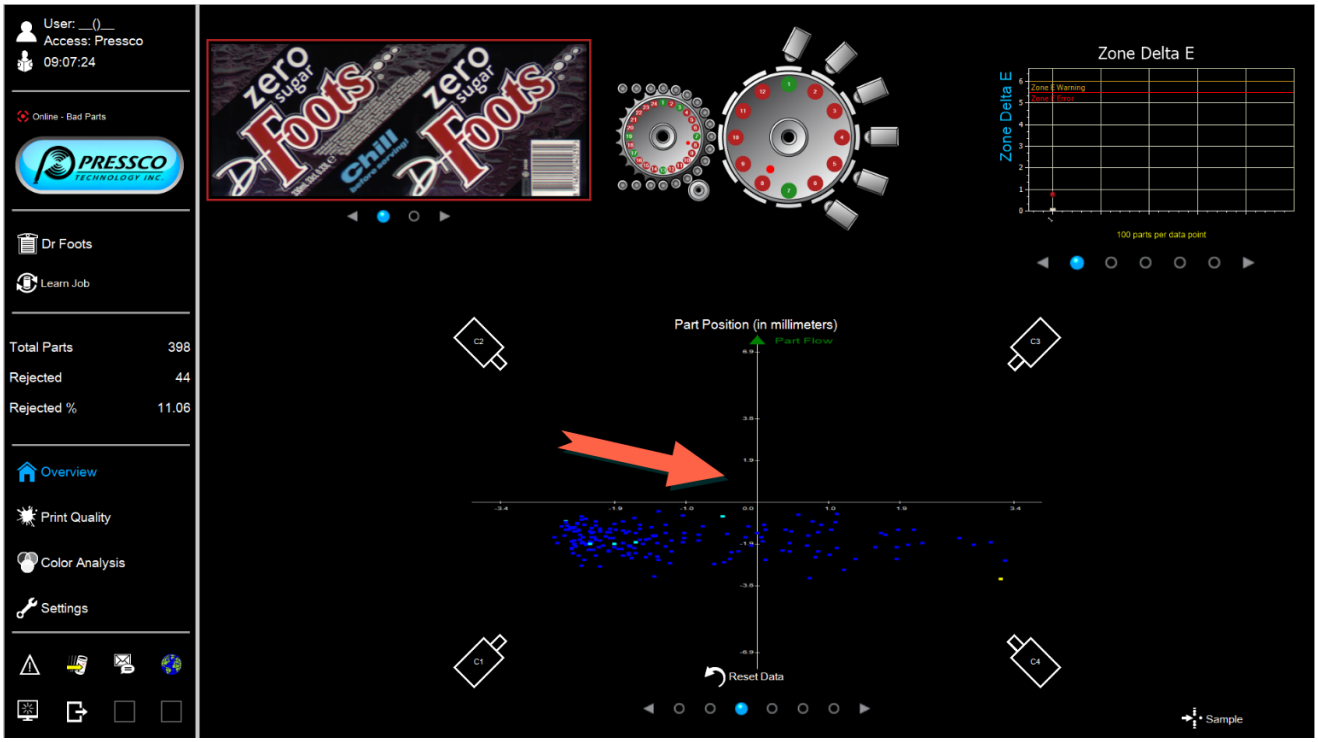
System Overview - Small Graph View

The small graph view allows you to see the online Part Position information. The ability to change the view (part position, camera tilt, etc.) can only be done in the large graph view. (click the small graph to display the large view) The selected view from the large graph view will be displayed in the small graph view.



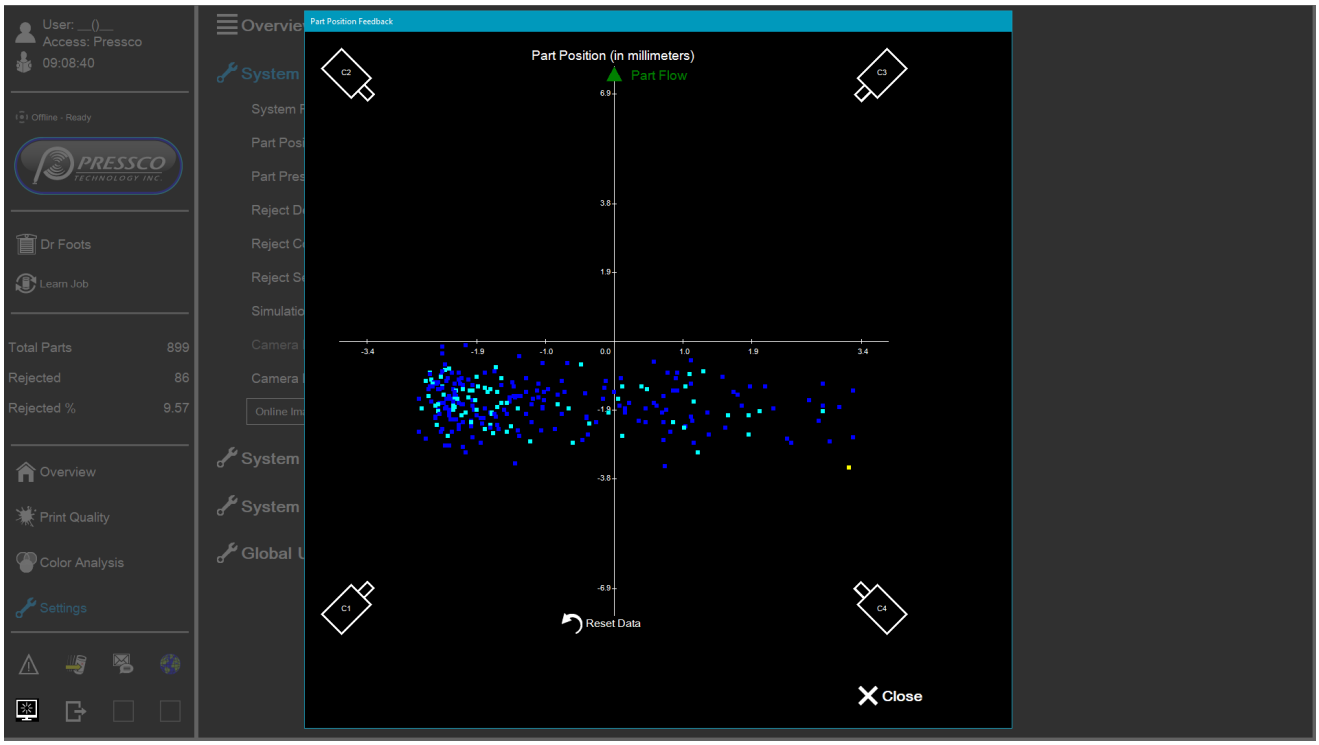
System Overview - Large Graph View

The large graph view allows you to see the online Part Position information. The information is identical to the view that is shown under System Settings – System Calibration. (click the part image to switch the large graph back to small graph view)



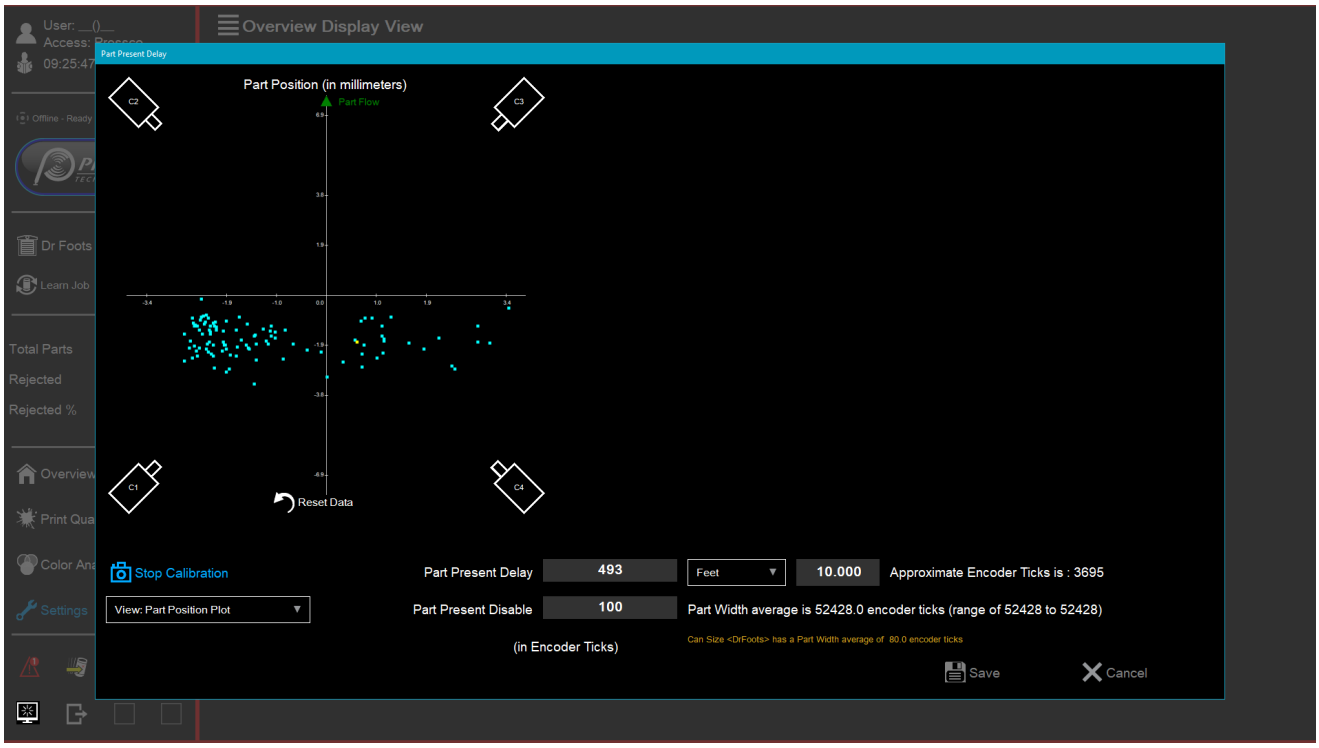
System Settings - System Calibration - Part Position Feedback

This allows you to see the online Part Position information.



System Settings - System Calibration - Part Present Delay

Select the View drop-down in the lower left corner, then select Part Position Plot. This allows you to see Part Position information collected while calibrating either the part width or adjusting the part present delay. This gives immediate feedback on how changes impact position data.



Lighting Settings

Administrator only

Adjust lighting, only if lighting is not adequately set up during Auto Learn.

Settings | **Global Utilities** | **Lighting Settings**. Select **Manual Snap** to see a part image.

1) Lighting Zones

Adjust lighting manually if auto-adjust lighting does not work properly. For shorter cans, you might shut off lighting for the Upper Zone, to reduce reflections from adjacent cans.

Check the Saturation in the graphs at the bottom of the screen to make sure the image is not too bright.

Use the lock button to adjust all lighting zones together, or unlock it to adjust lighting zones independently.

2) Auto-Adjust Lighting

The system attempts to adjust lighting for the best image. It uses hard-coded settings.

3) Show Color Correction - not currently used

4) Saturation

Select a color to display the saturation pixels. The pixels should stand out against the color of your part.

5) Shape

This shape is used to define the area used to measure lighting.

Select a rectangle or a line for the shape of the image analysis tool. You can click and drag the shape to measure the lighting in the area. If using a rectangle, adjust it to cover most of the part. Once this is set, you normally do not need to readjust it for future jobs.

6) Continuous

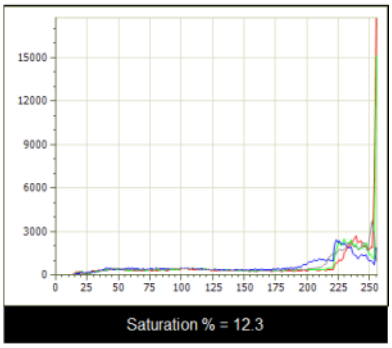
Continuous - snap images until you select the Pause button.

Manual Snap - snap one image.

7) Saturation %

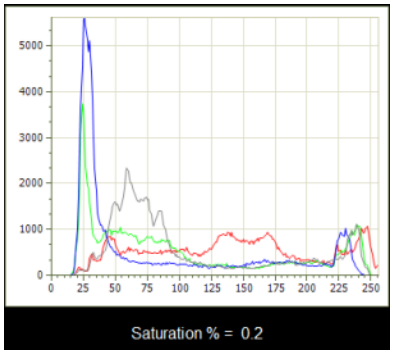
The system measures the percentage of pixels above 240 (on the range of brightness from 0 - 255). If the percentage of saturation is too high (because the lighting is too high), then the system will not properly detect color differences. There are additional Advanced Lighting Auto-Adjust Settings that may be adjusted (Pressco Technicians only).

In the example below, this can is saturated with too many white pixels. We have saturation displayed in magenta. The graph shows that many pixels are located at 255 (max level).



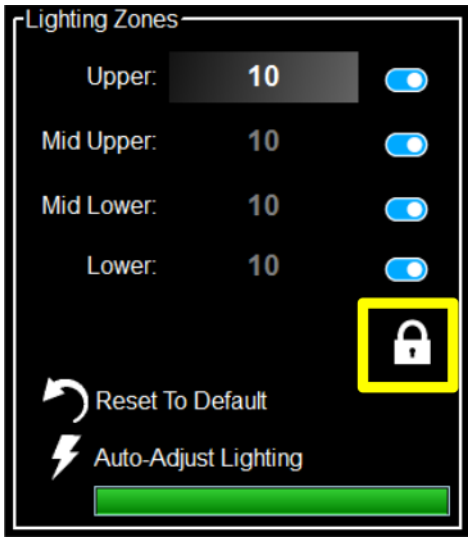
To adjust lighting:

1. Select Continuous [6]. You should see images updating on the screen.
2. (If needed) Adjust yellow rectangle or line [3] so that it does not fall outside of the parts. You may need to unlock the rectangle or change shapes [5].
3. Select Auto-Adjust Lighting [2]. Wait for the lighting to adjust.
4. Check Saturation below all four graphs [7]. Saturation should be < 1%. You can click the text at the bottom to view different lighting statistics.



5. If saturation >1%, select Continuous. Manually adjust Lighting Zones [1] so saturation < 1% under all four graphs.

   Tip: The locked icon allows you to adjust all the lighting zones at once.



6. Select Save to save changes and exit.

Chapter 5 View Defects and Part Images

You can view defects and part images in three screens:

Overview "Overview Panel" on page 27

Print Quality "Print Quality Screen" on page 90 - Use Print Quality to view inspections on recent or saved images. This is where you can adjust inspection sensitivity.

Color Analysis "Color Analysis" on page 106 - You can adjust color sensitivity in this screen.

View Live Images and Defects

Overview - View live inspection images.

PRESSCO TECHNOLOGY INC. Put the system online to inspect parts. The live images are updated in the part area. Swipe in the image area or tap the dots below the image to switch between the inspected image and the "error" image. The error image shows only the defects, if any.

To zoom in on the image, use two fingers on the screen and drag apart to see the zoomed image. Then you can pan around the image by holding the image and dragging it on the screen.

To zoom in using the keyboard, double-left-click on the area desired. To zoom out, double-right-click.

To hold images on screen, use the Freeze on Defect option. See "Hold an Image On Screen" on the next page

Example of an error image: "View Defects on Images" on page 93

Hold an Image On Screen

Overview Use the Freeze on Defect option to hold images on screen.

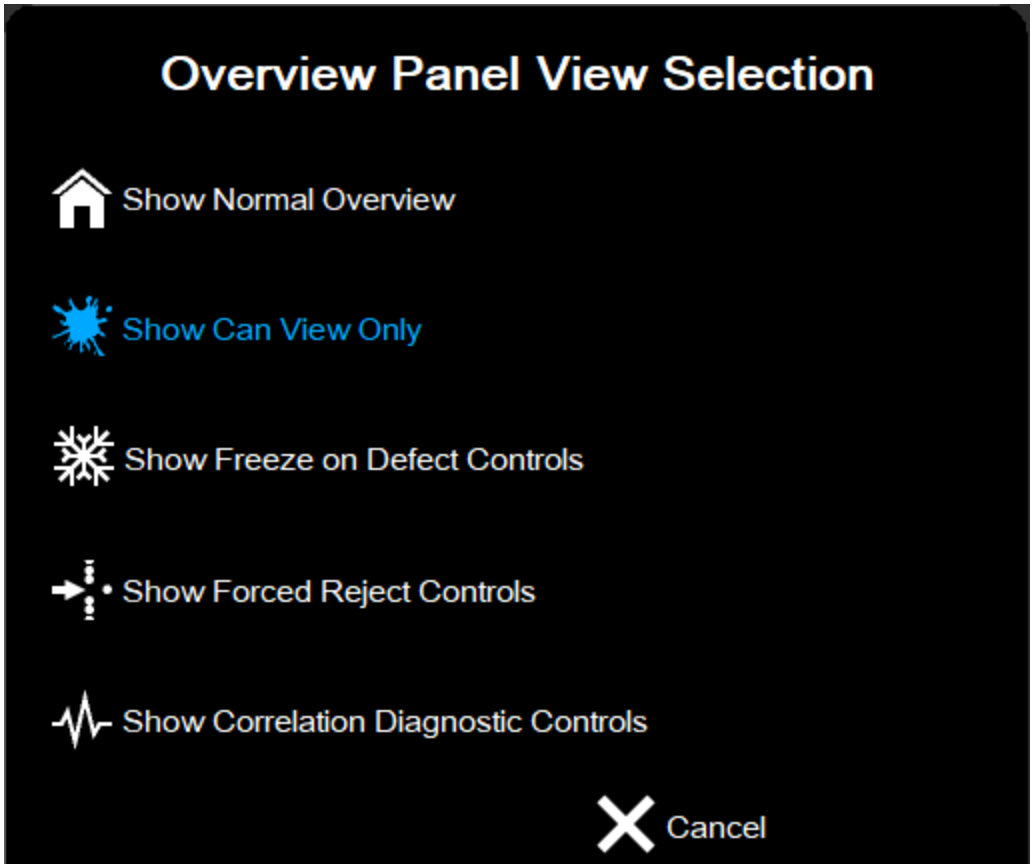
Hold	Image is not held. Tap to manually hold.
Hold	Image is held.
Release	Tap Release to release the image.

For more options (such as holding defect images automatically), see "Freeze on Defect Controls" below.

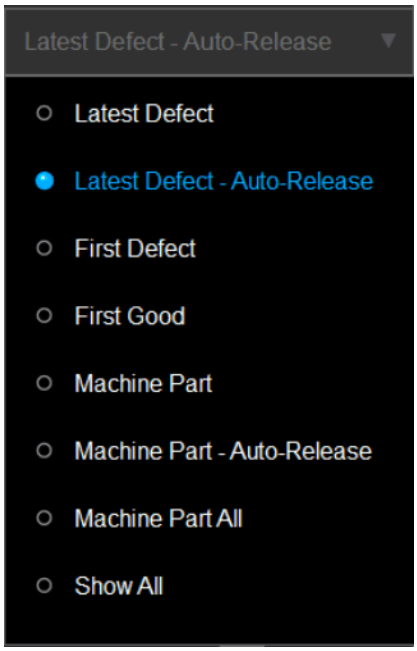
Freeze on Defect Controls

To enable Freeze on Defect Controls:

Settings Overview Display View Enable the controls from the Settings menu: **Settings** | **Overview Display View** | **Show Freeze on Defect Controls**.



The Freeze on Defect Controls are displayed on the home screen. Select when to freeze a defect on screen.



Latest Defect - Freeze the image of the last defective part. Each subsequent failing part freezes on the screen until another part fails.

Latest Defect - Auto-Release - Freeze the last defective image for up to the specified number of seconds, which is selectable next to Release Time.

First Defect - Freeze the image of the first defective part after going online. The image remains on screen until you release it or change Freeze Mode.

First Good - Freeze the image of the first good part after going online. The image remains on screen until you release it or change Freeze Mode.

Machine Part - Freeze the next defective part image correlated to the selected machine part. It remains on screen until the next part correlated to the machine part becomes available and is replaced by the new image. Use the Select button to choose the desired machine part(s).

Machine Part - Auto-Release - Freeze the next defective part image correlated to the selected machine part. It remains on screen for the specified time, or until the next part correlated to the machine part becomes available, whichever comes first. Use the Select button to choose the desired machine part(s).

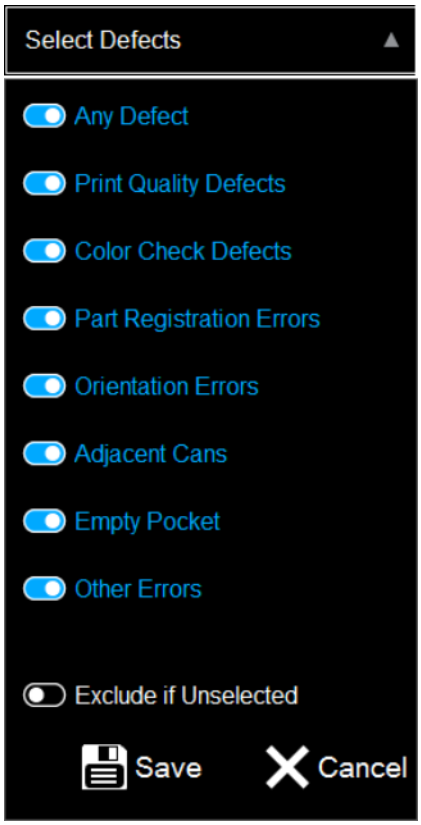
Machine Part All -

Show the part image from the specified machine part(s), whether it passes or fails. It remains on screen until the next part correlated to the machine part becomes available. Use the Select button to choose the desired machine part(s).

Show All - Show all part images, not just the frozen images.

Select Defects controls

Select the type of defects to freeze on screen (used with Freeze on Defect).



= on.

Any Defect - Display any defect.

Print Quality Defects - Display only Print Quality defects, which include: wrong color, scuff, shadow, color void, and too much color.

Color Check Defects - These defects occur when the part fails the tests for Color Zones. Color Zones are optional and are based on your plant specifications.

Part Registration Errors - A registration error occurs when the system does not find the top or side edges of a part.

Orientation Errors - An orientation error occurs when the part is tilted too much. This is also the reason for failure if the system detects a 'tramp can' or wrong label. This check is done automatically by the system.

Adjacent Can Errors - An adjacent can error occurs when the system sees another can (in addition to the can being inspected) in the field of view. The adjacent can may cause shadows or reflections on the part being inspected.

Empty Pocket - The system tests to see if a part is present before proceeding with inspection. If a part is not present, then this is called an Empty Pocket. For accurate production numbers, we need to locate empty pockets. No inspection takes place (for the current part) if the system finds an

empty pocket. Empty pockets are found when the system does not locate any feature edges during part location. This can happen if the part is too short, too dark, or there is another severe defect that causes the system not to find the part.

Other Errors - Display other errors that do not fall into the other specified categories.

Exclude if unselected - Do not show the defect types (above) if they are turned off in the menu.

Show Can View Only

This view allows you to view just the can image with details about the part. To see this view, select **Settings** | **Overview Display View** | **Show Can View Only**. The can takes up the entire width of the screen, minus the control panel.

The parts of the screen include:

1. **Print Quality Status** - This section displays whether the part passed. If not, you will see what made it fail (in this example, a scuff mark).
2. **Correlation** - This displays the machine parts correlated to the current part shown on screen.
3. **Color Analysis Status** - If you have color zones set up, you can see whether the part passed color analysis. If you have Show Detailed View enabled (as in our example), you can see the color analysis details for each of the defined colors.

4. **Show Detailed View** - Shows the color zone information for each of the defined colors (shown in item 3). For more information about Delta E and other values, see "Color Measurements" on page 106.
5. **Hold** - This is the manual hold button for Freeze on Defect.
6. **Release** - This is the manual release button for Freeze on Defect.
7. **Latest Defect Hold - or other** - This shows the Freeze on Defect mode you are currently running.
8. **Sample** - This allows you to reject one or more parts based on your Forced Reject settings.

> *Note: To change the Freeze on Defect mode, you will need to go back to the normal home screen.*

To go back to the normal home screen: Select **Settings** | **Overview Display View** | **Show Normal Overview**.

To change Freeze on Defect settings:

From the Home screen, select **Settings** | **Overview Display View** | **Show Freeze on Defect Controls**. These controls are shown to the right of the part image.

See "Freeze on Defect Controls" on page 85 for more information.

To change Forced Reject settings:

From the Home screen, select **Settings** | **Overview Display View** | **Show Forced Reject Controls**. These controls are shown to the right of the part image.

See "Forced Reject" on page 168 for more information.

Chapter 6 Print Quality Screen

This screen allows you to view recently inspected parts through the Retro-Spec interface. This allows you to see trends in inspection. It also allows you to change inspection settings and try them on images without interfering with current inspection.

You must be an Administrator to save changes.

> *To view anything on this screen, you must load a fresh set of images. See "Load Part Images" on the next page.*

From the Print Quality screen, you can:

- "View Defects on Images" on page 93
- View "Defect Classification" on page 95
- "View Inspection Results" on page 97

As a system administrator, you can also: "Adjust Inspection Settings" on page 96

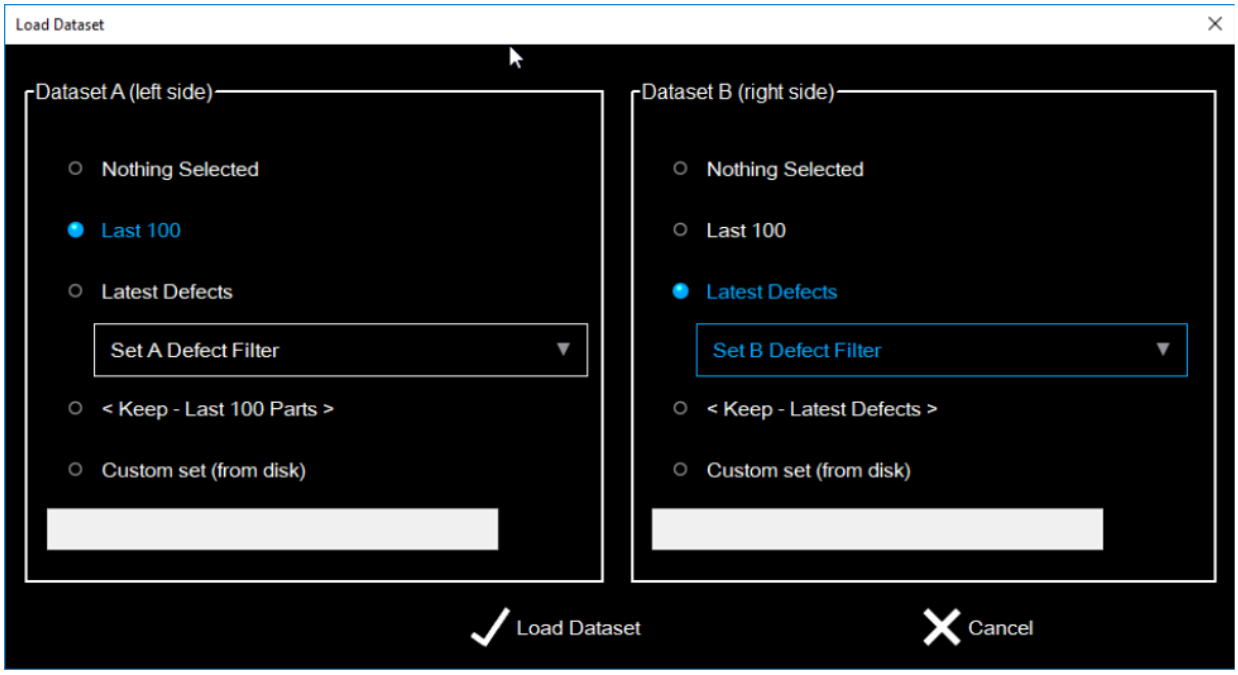
Load Part Images

> *Note: The images must already be saved to system hard drive, or have occurred within the last 100 parts inspected.*

To load part images (in Print Quality or Color Analysis):

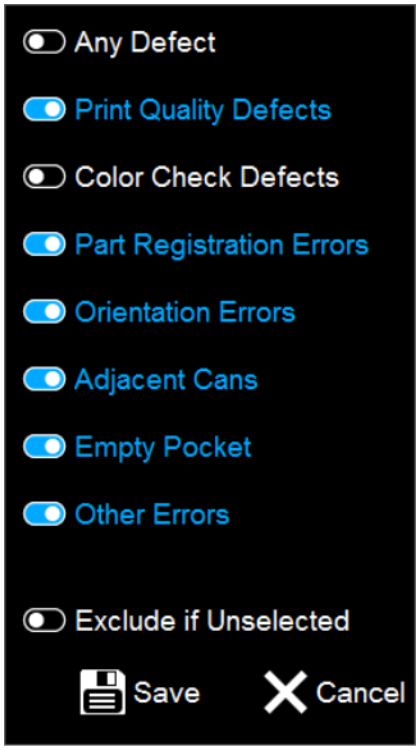
1. - Tap the load icon.
2. Select images to load for Data Set A (left side of the graph) and Data Set B (right side of the graph).

   > *Note: when you select Custom Set (from disk), up to 49 images from the selected folder are loaded.*

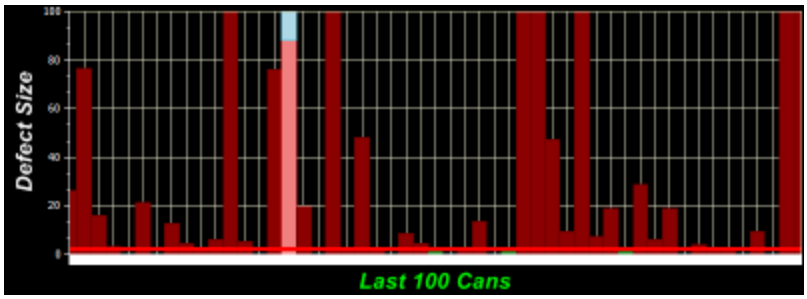
   > *Tip: Look at the Last 100 images, in addition to Latest Defects. If you only look at the latest defects, you may be missing parts that are just barely passing, that you want to reject.*

3. If you select Latest Defects, you can filter which defects you want to see. Make your selection from the drop-down menu:



Any Defect switches all options on or off.

4. After the images are loaded, tap one of the bars at the top of the screen to see the corresponding image below the graph. In the Color Analysis screen, the graph looks different than below. You can select any point on the graph to select a part.
5. Select Load Dataset and WAIT until the system finishes loading the images. (***LOADING*** is displayed during the load process. The name of the data set is displayed when loading is complete)

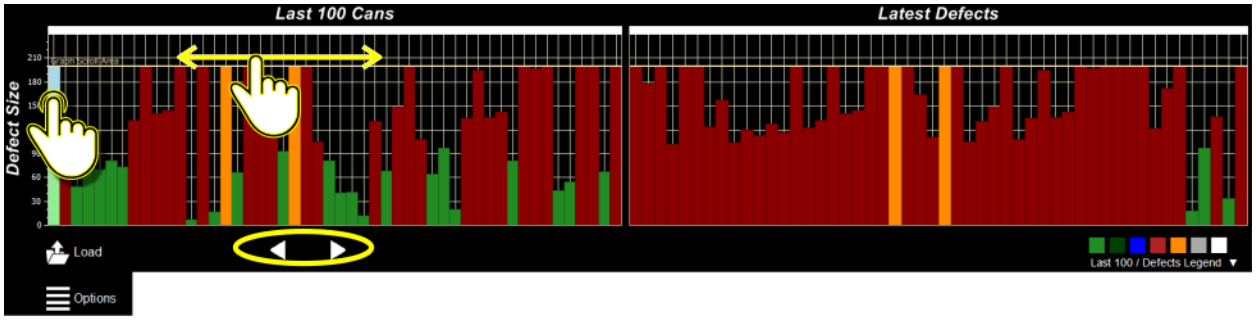


Retro-Spec Graph

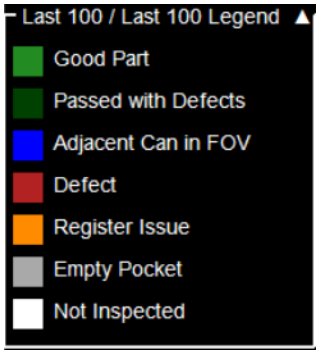
- Tap the Print Quality icon to see the Retro-Spec interface.

To view parts on the Print Quality screen, "Load Part Images" on the previous page.

The Retro-Spec graph can load up to 200 parts at a time, 100 in each Data Set (A and B). Each bar on the graph represents a different part. Select a bar to see the part image below the graph. Approximately 50 parts per graph are shown at a time. To scroll, press and drag on the graph or use the arrows under the graph.



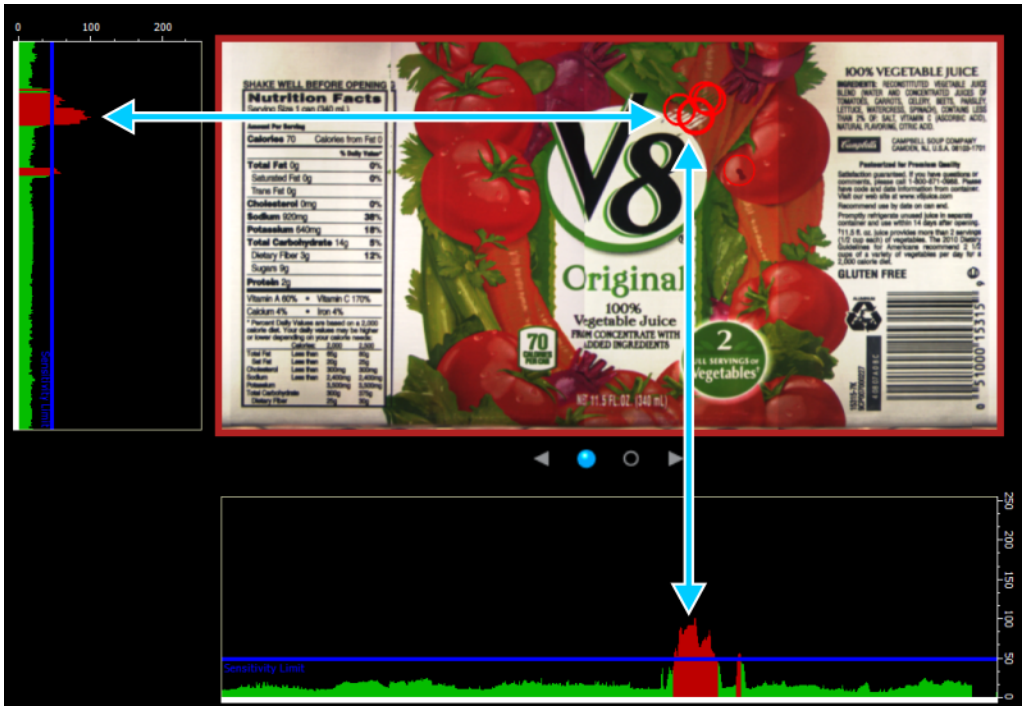
The bars on the graph are color-coded, and the legend is displayed below the graph (if enabled). See also "Color Borders Around Images" on page 31.



View Defects on Images

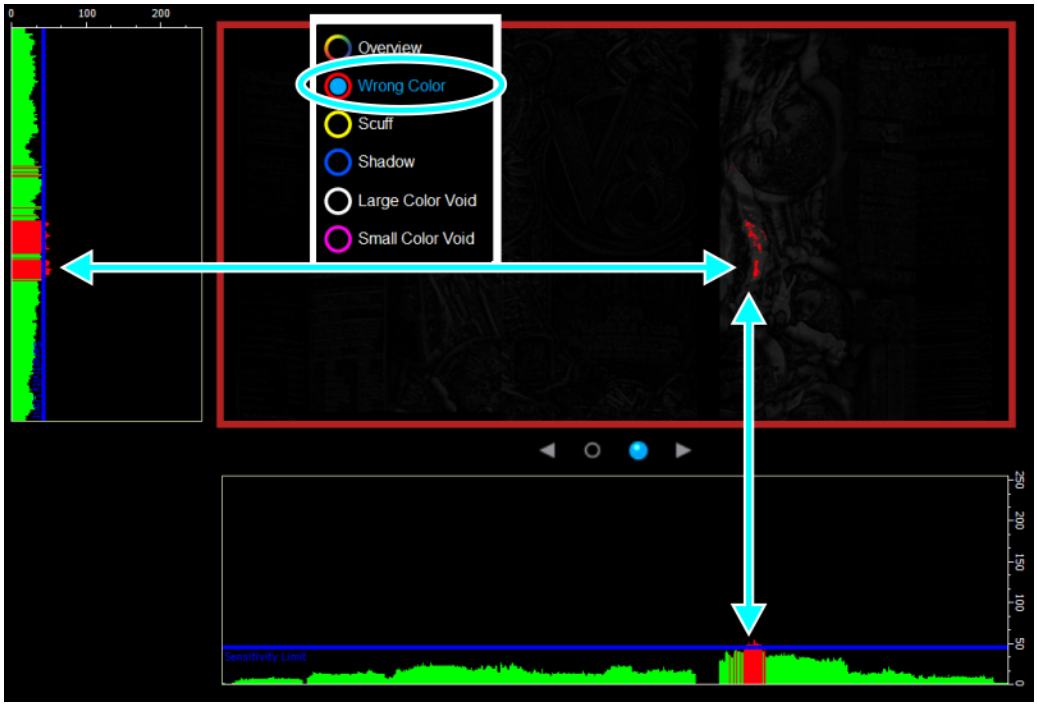
There are two images available for each part: 1) part image, and 2) error image. Swipe, or use the navigation dots or arrows under the image to switch between images.

A part image is shown below. The circles on the image indicate where the defects are found.



An error image example is shown below. The arrows (drawn for illustration purposes) indicate where the defects were found.

Look at the classification legend to see what type of defect was found. The colors correspond to the colors in the error image. See also "Defect Classification" on the next page



Defect Classification

Print Quality

When you view the Error image in the Retro-Spec interface, you can see what type of defect occurred on each part. The defects are color-coded in the Error image. You can select the type of defect to view.

Note: one defect can fall into more than one classification.

Note: The system determines the strongest classification for each pixel and colors it accordingly. You may see one defect show up in multiple classification views (example, shadow and too much color). This means the pixels in the defect area had strong characteristics in multiple classifications.

Overview - This selection shows all defect types.

Wrong Color - The system found color somewhere on the label where it was expecting a different color, such as finding green when it was expecting to see red.

Scuff - The system found an area on the label that was too bright.

Shadow - The system found an area on the label that was too dark.

Large Color Void - The system found no color where it was expecting to see color, in a relatively large area.

Detecting Large Color Voids

To detect color voids you will need to reduce the sensitivity and greatly increase your defect size. Color void is looking for large area changes and not good at detecting small pixel sized defects.

Example: If you are using a sensitivity close to 50 for all the classification sensitivity values, then you may want to try a color void sensitivity around 40 and adjust up or down from there as needed. The defect size will be anywhere from 100 to 500 depending on how sensitive you have made the classification and what size defect you want to catch.

Note: See "Adjust Inspection Settings" below for information about changing sensitivity.

Small Color Void - The system found no color where it was expecting to see color, in a relatively small area.

Adjust Inspection Settings

Administrator only

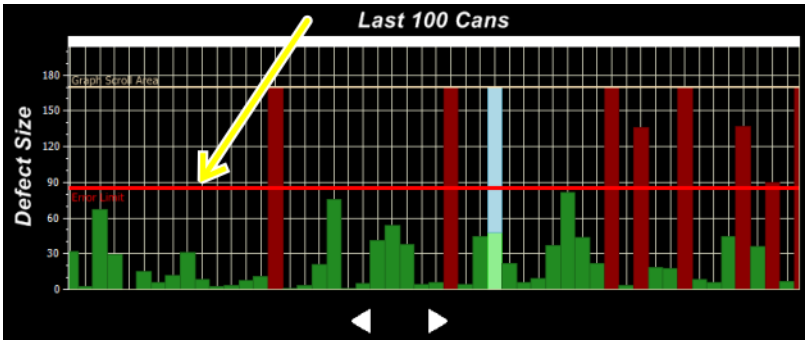
Inspection settings can be adjusted while you examine print quality.

Tap the Print Quality icon to see the Retro-Spec interface. Tap the load icon to load images. For information about loading images, see "Load Part Images" on page 91.

Make changes as necessary.

Defect Size

Adjust sensitivity to defect size by dragging one of the horizontal red bars in the upper graphs (except when Overview is selected in Classification Display). Or press and hold the red bar to enter a numerical value through a pop-up keyboard.

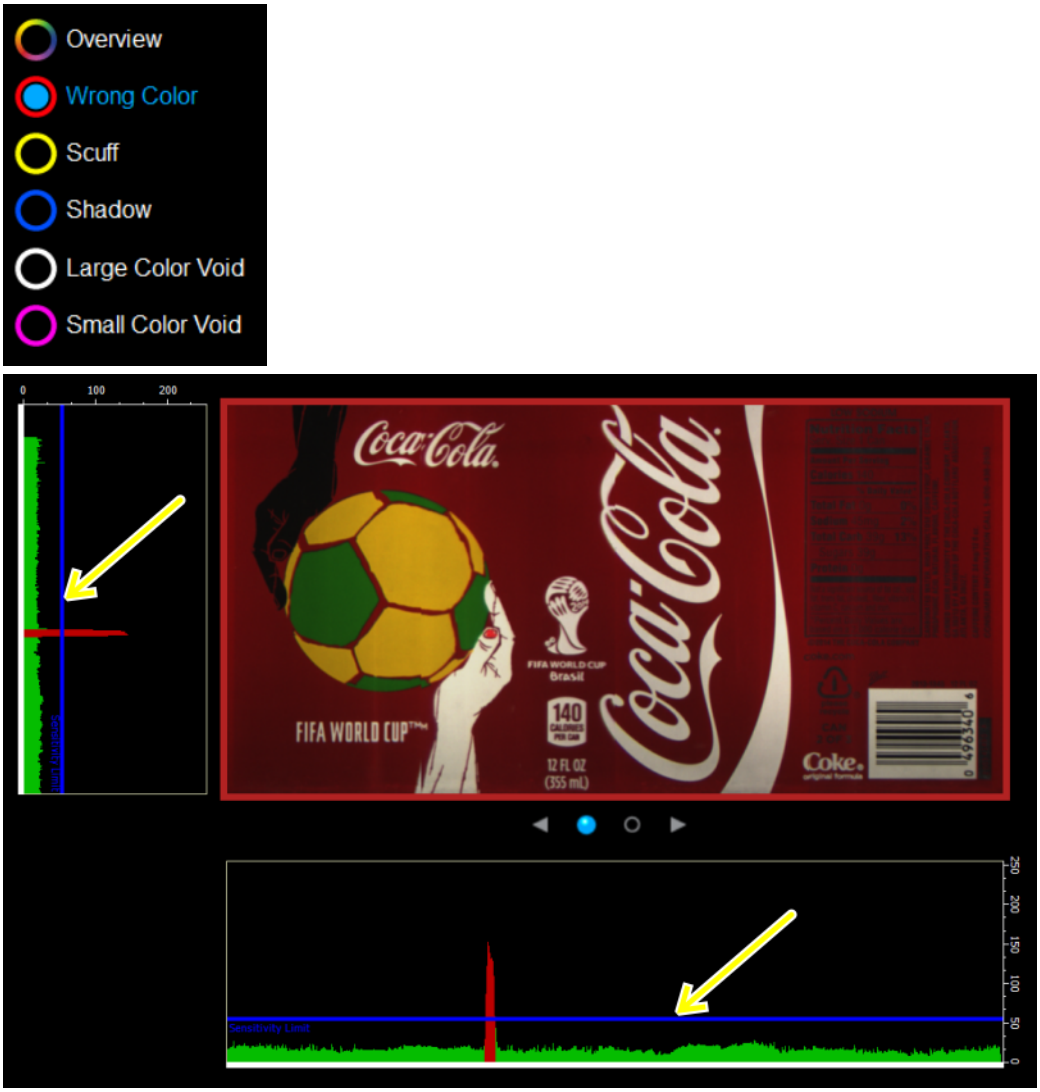


Look at the bars that are not green, and determine whether those parts should be failing. If the defects are acceptable, you can drag the bar up so that those bars become green (this lowers sensitivity). If you have parts that should be failing but are not, then drag the bar down so that those bars become red (this increases sensitivity).

Defect Sensitivity

Select a part in the top graph, then adjust defect sensitivity by dragging one of the blue bars in the lower graphs. Both bars move together.

You can adjust sensitivity for each defect type (wrong color, etc.) by selecting the defect type (except Overview).



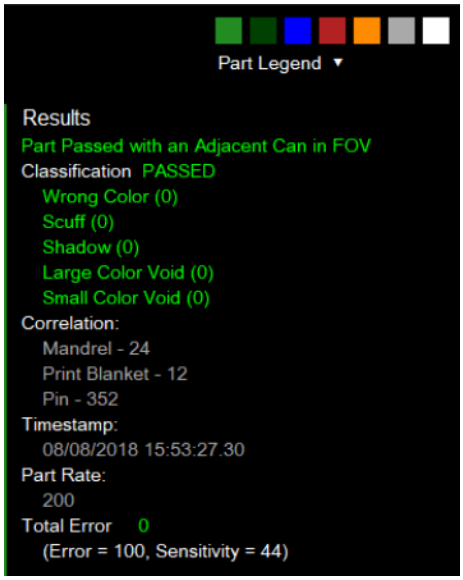
Tap the Save icon after you make changes to save the new settings to your job.

View Inspection Results

View the inspection results of each part.

Options Use the Options button (from the Print Quality screen) to select which results to view.

If the Results are not on your screen, enable it by selecting **Options** | **Show Results Window** | exit the menu.



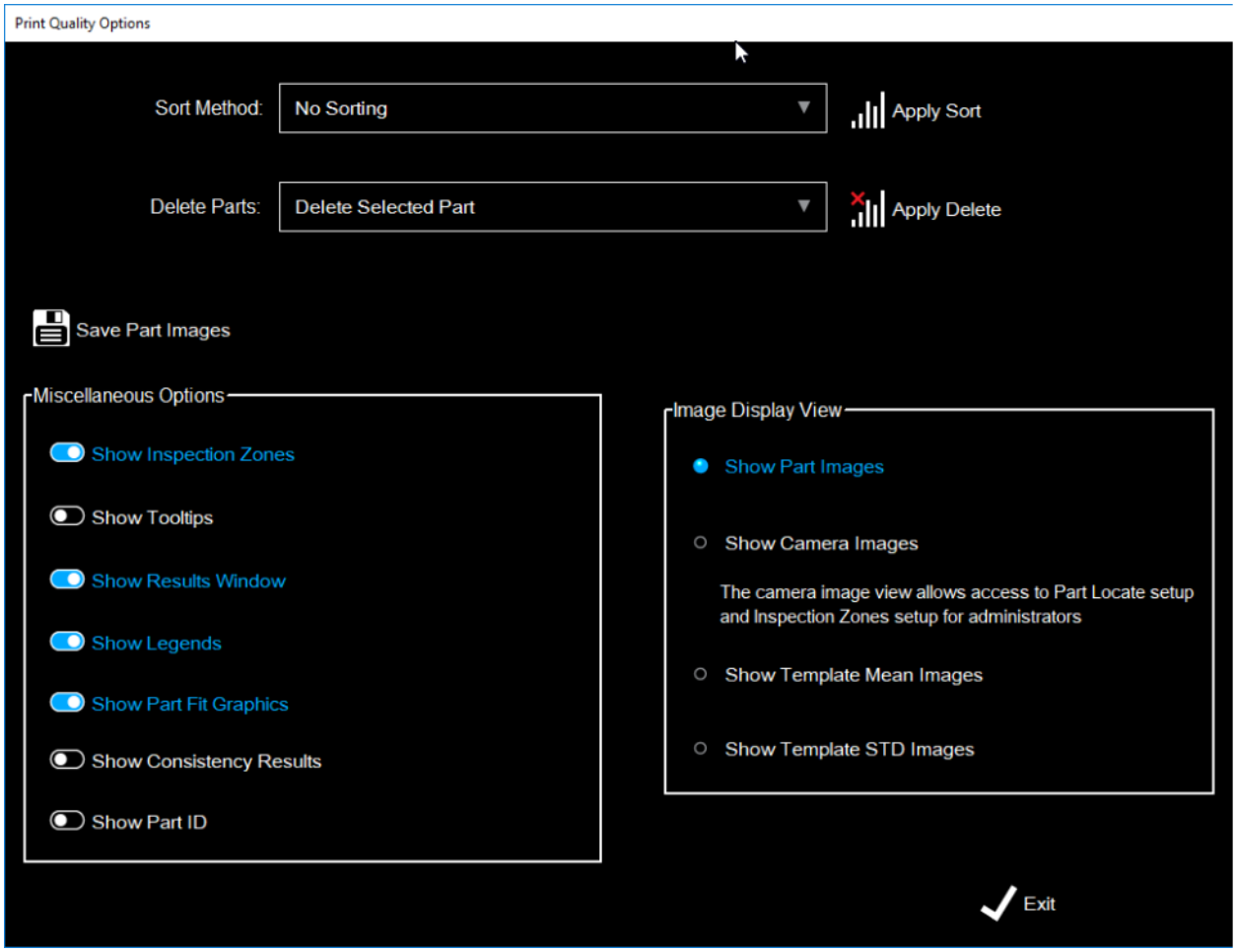
Tip: look at the camera images. This helps you determine print quality on the parts.

To see camera images:

Options Select **Options** | **Show Camera Images** (from the right side of the menu). Select Exit.

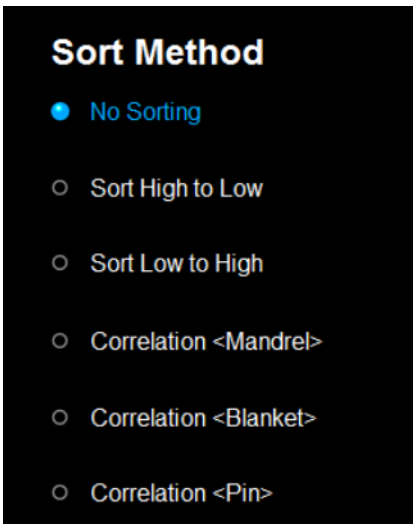
Options on Print Quality Screen

Options Tap **Options** to see Retro-Spec options on the Print Quality screen.



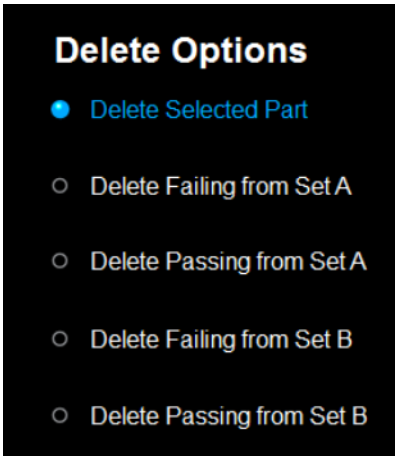
Sort Method

Sort the parts in the Retro-Spec graphs in the upper part of the screen to view them the way you want to. Select **Apply Sort** to see the sorted graphs.



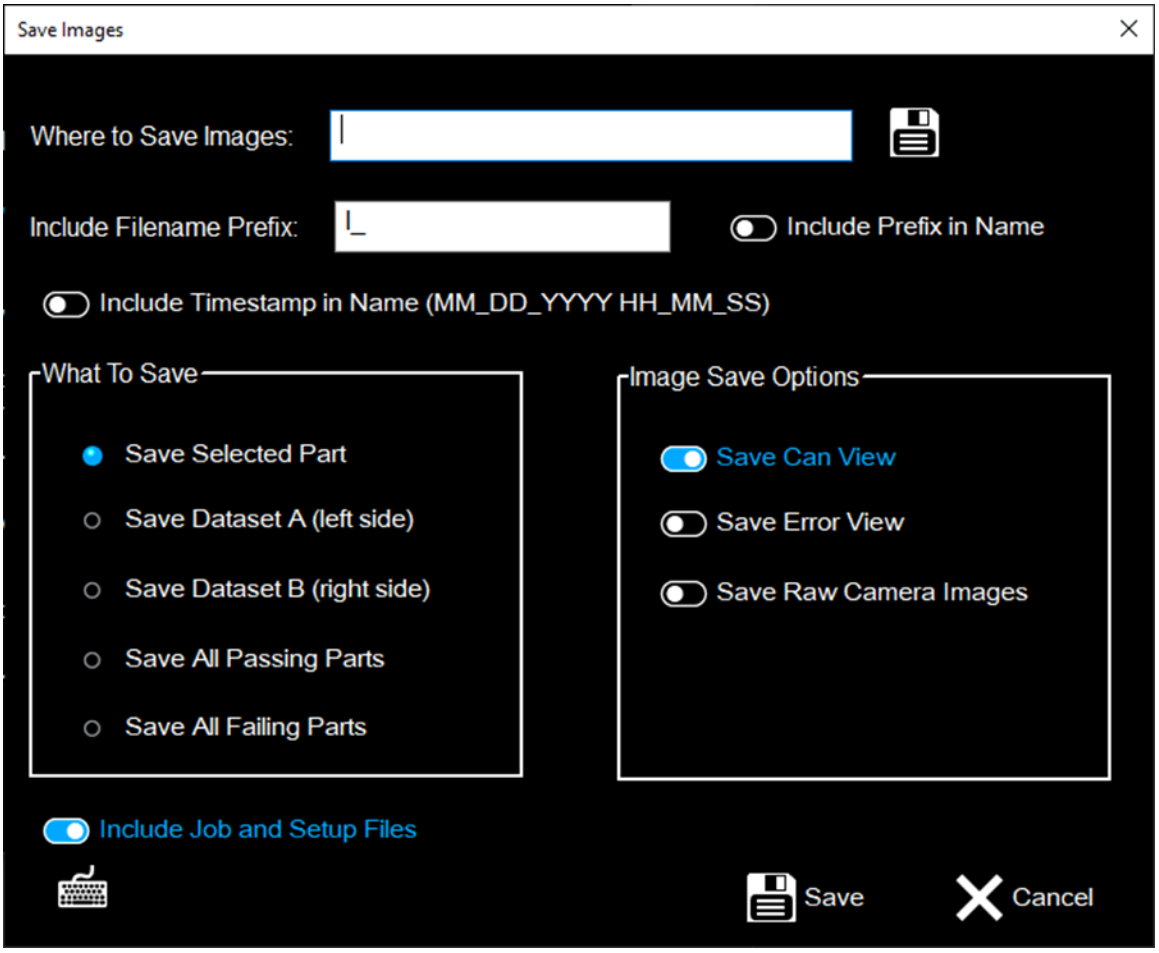
Delete Parts

Delete specific types of parts from the Retro-Spec graphs. Select **Apply Delete** to see the updated graphs. Part images are not deleted from the hard disk - they are only removed from the current graph.



Save Part Images

Save images to disk to reference later, or send to Pressco Technical support for assistance. See also "Save Images to USB Drive" on page 37.



Note: when you enable any "Show" option, select another part on the Retro-Spec graph to see the updates on the screen

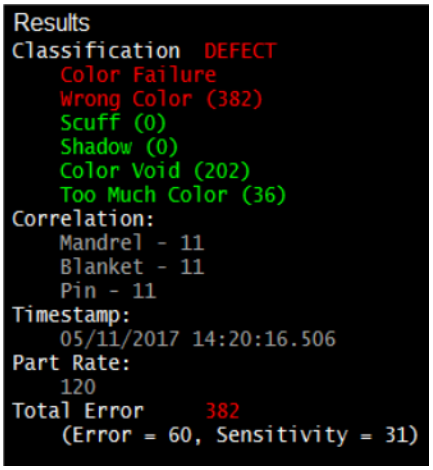
Show Inspection Zones

Show the boxes where you set up "Inspection Zones" on page 53.

Show Tooltips - not used

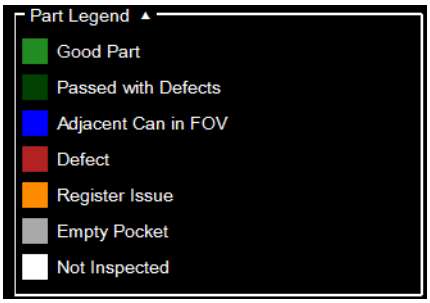
Show Results Window

Show the inspection results after loading images or applying updated inspection settings.



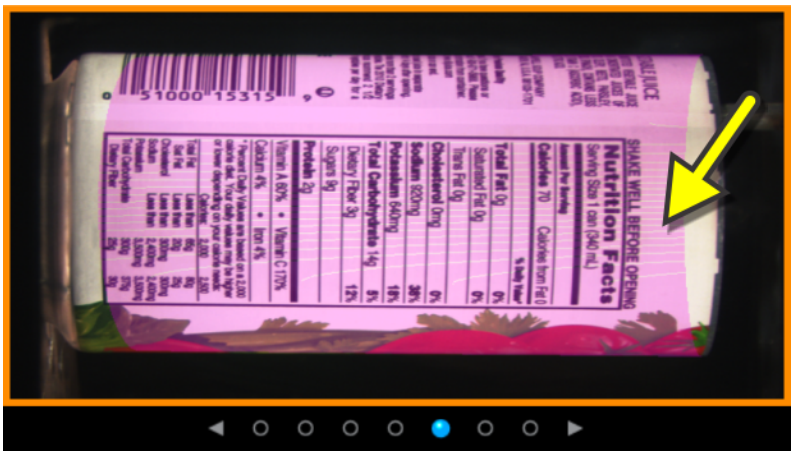
Show Legends

Show the color-coded Part Legend.



Show Part Fit Graphics

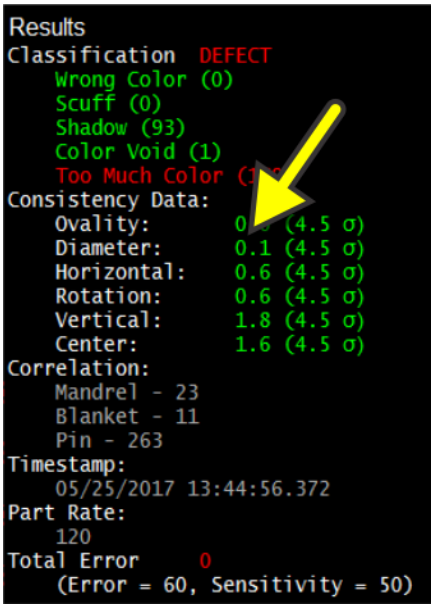
You must also enable **Show Camera Images** on the right side of the menu. This allows you to view the part registration graphics.



Enabling Part Fit Graphics also provides access to "Part Locate Settings" on page 68 and "Inspection Zones" on page 53.

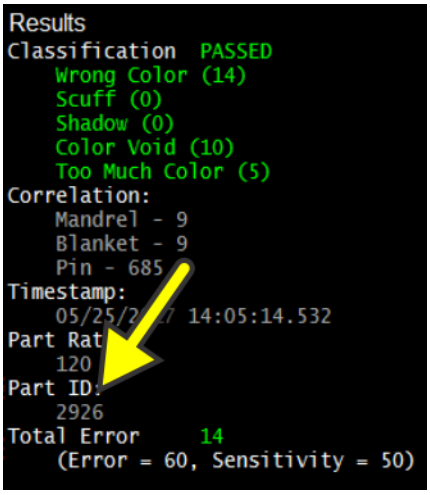
Show Consistency Results

This data is automatically displayed if the part failed for part registration consistency. To view it otherwise, **Show Consistency Results** in the Options. You must also enable **Show Results Window**. To see this feature update on screen, you may need to select a different part from the Retro-Spec graph.



Show Part ID

You must also enable **Show Results Window**. This allows you to view the part ID number. The system tracks each part as it goes through inspection. Parts may be correlated to specific machine parts such as print blankets. To see this feature update on screen, you may need to select a different part from the Retro-Spec graph.



Show Part Images

Show the default inspected image.

Show Camera Images

Show the different views of the part. **Show Camera Images** must be enabled each time you enter the Options menu. It does not stay enabled.

Show Template Mean Images

Show the template images that were created when you learned this part. For more information, see "Show Templates" on page 49.

Show Template STD Images

Show the standard deviation images that were created when you learned this part. For more information, see"Show Templates" on page 49.

Chapter 7 Color Analysis

This section describes how the system monitors your part's colors. The colors (or zones) need to be defined when the job is created or updated.

> *To view anything on this screen, you must load a fresh set of images. See "Load Part Images" on page 91.*

The system sets up colors using either Automatic or Manual colors. This is set up during installation.

- See "Automatic Color Mode - switching to" on page 51
- See "Color Zones - Manual, optional" on page 52

Color Measurements

The DecoSpector 360™ takes several color measurements. Use the measurement that best matches your plant's color measurement process.

In the following examples, the "standard color" is Blue: RGB: 28, 82, 162. The color squares represent different measured values. The numbers under the squares represent the number shown on the scale to the left of the DecoSpector graph.

Your standard colors are computed when the system "learns" your parts.

> *Note: if Simplified Delta E mode is enabled, then you will only see Delta E measurements in the system. For more information see "Color Delta E Settings" on page 139.*

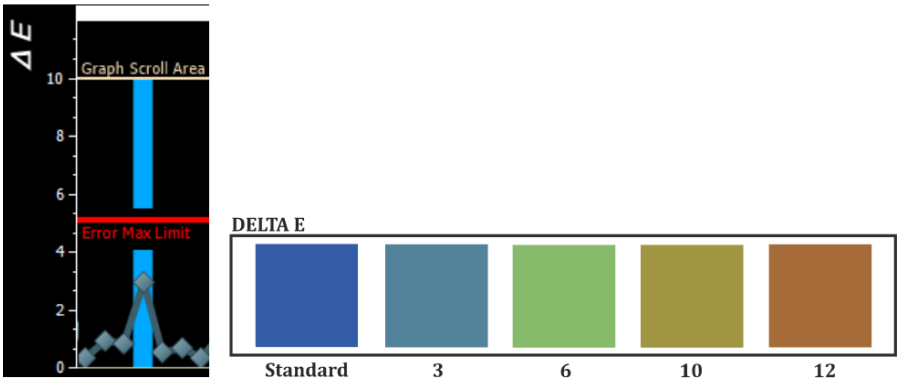
Delta E

Delta E is a measurement used to indicate how much a color deviates from an accepted standard.

The inspection provides Delta E detection by measuring color separation on a scale of 0 - 100. A value of zero indicates that there is no discernible difference in color from the reference value. A value of one indicates the minimum human perceptible difference in color. The colors are measured in RGB, and converted to L*a*b* color space for Delta E measurements.

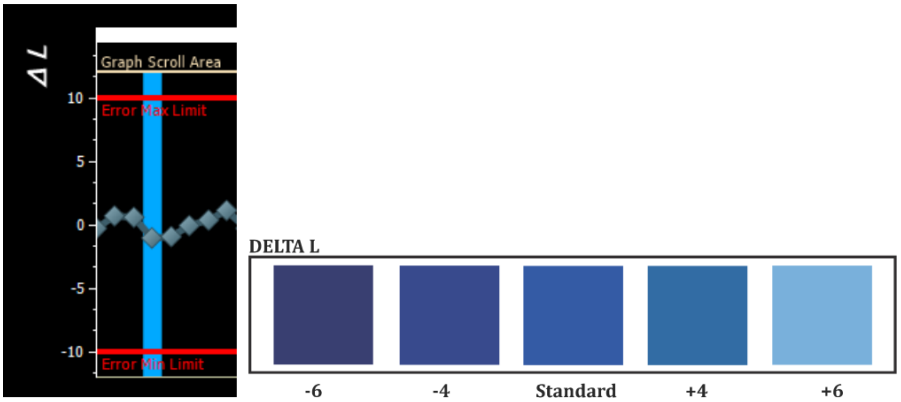
On the Delta E graph, the further away a measured color is from the standard, the more different the color.

Delta L, Delta H, and Delta C are all components of the Delta E measurement.



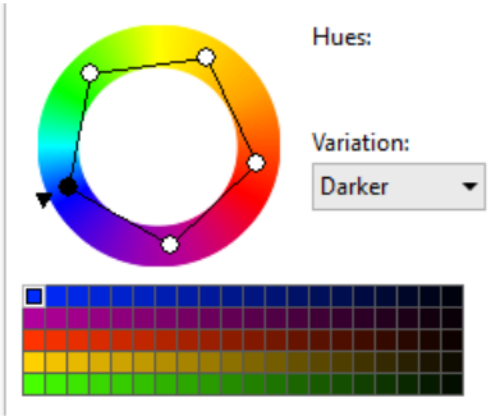
Delta L

Lightness. On the Delta L graph, a negative number represents a color that is darker than the standard. A positive number represents a lighter color than the standard.

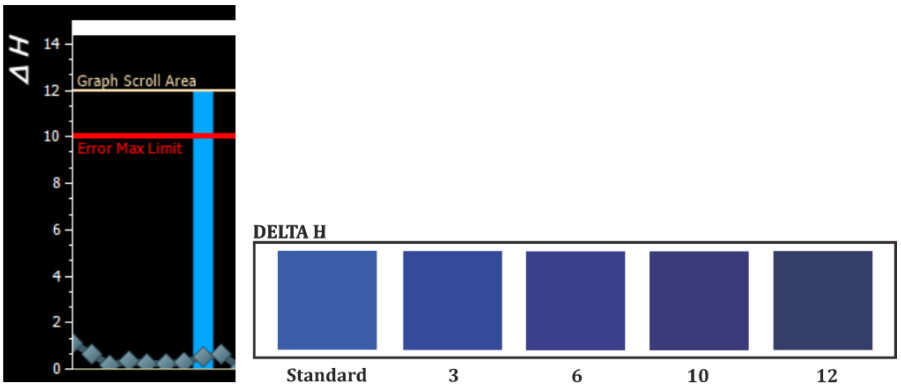


Delta H

Hue. The attribute of color that enables an observer to classify it as red, green, blue, purple, etc., and excludes white, black, and shades of gray. [Source: http://www.thefree-dictionary.com/hue]

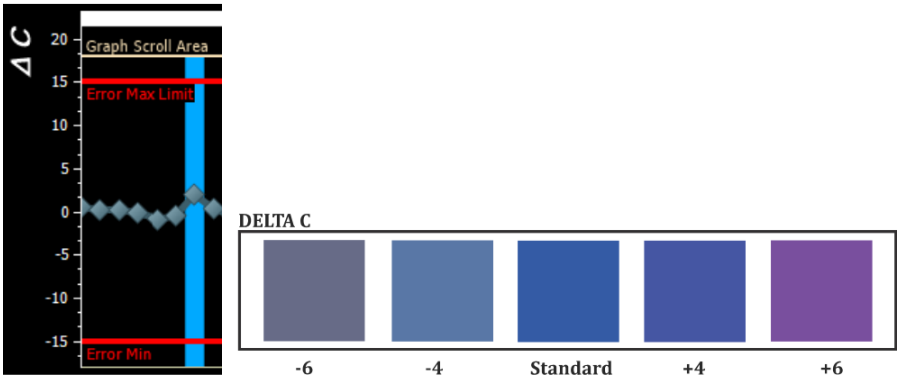


On the Delta H graph, the higher the number, the further away that color is from the standard.



Delta C

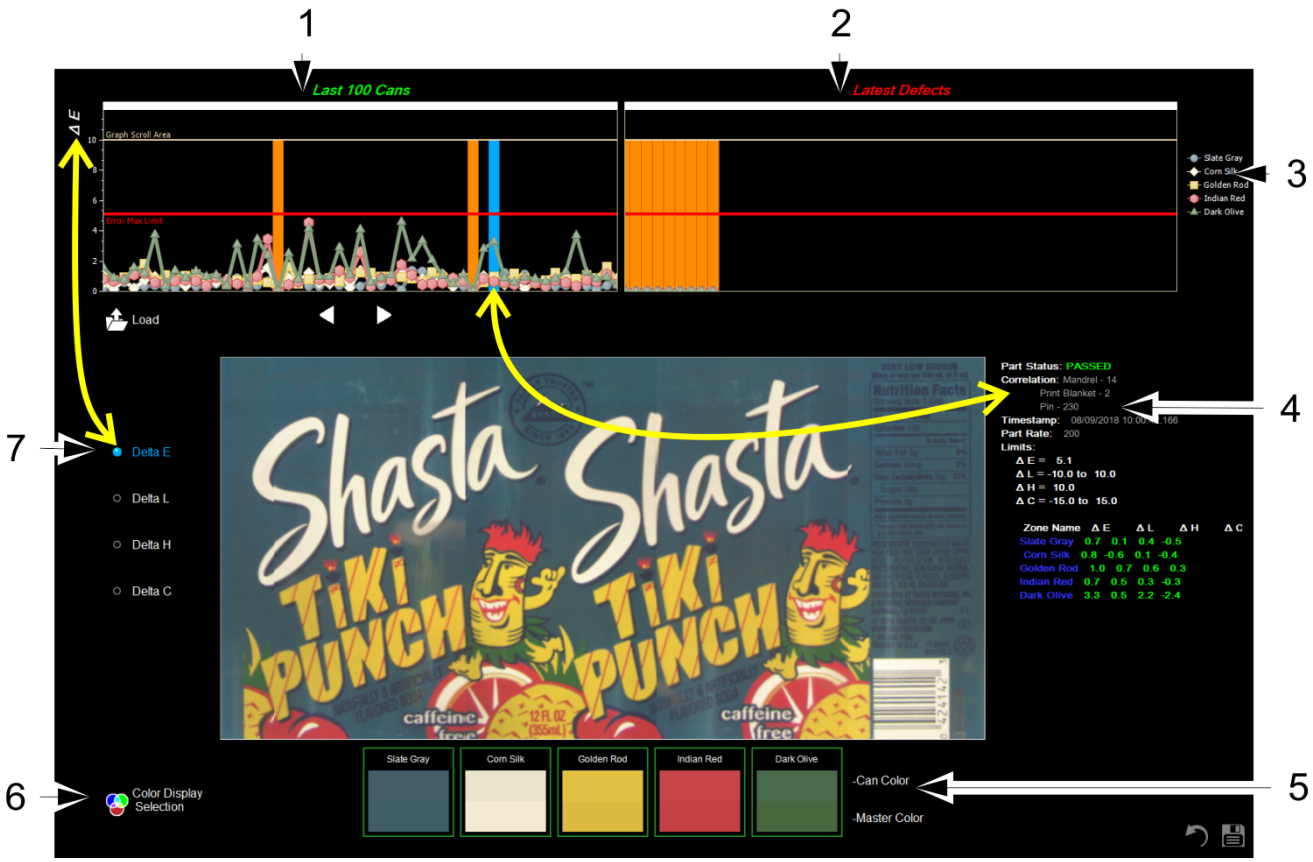
Colorfulness. The system may find an area to be more blue or less blue, for example. On the Delta C graph, a negative number means that the measured area is less colorful than the standard. A positive number means that the measured area is more colorful than the standard.



Color Analysis Graphs

This example graph shows the default setup. To see parts, select the Load icon and select a set or sets of part images.

> *Tip: If your system is excessively rejecting a specific color, select **Color Display Selection**. Then disable the problem color.*



1) Data Set A - our example loaded Last 100 Images

2) Data Set B - our example loaded Latest Defects - Any Defects

3) Color key

4) Inspection results for the selected part

5) Can Color = the measured color on the selected part. Master Color = the learned color that the part should match.

6) "Color Display Selection" on page 111 - Select the colors you want to display or measure

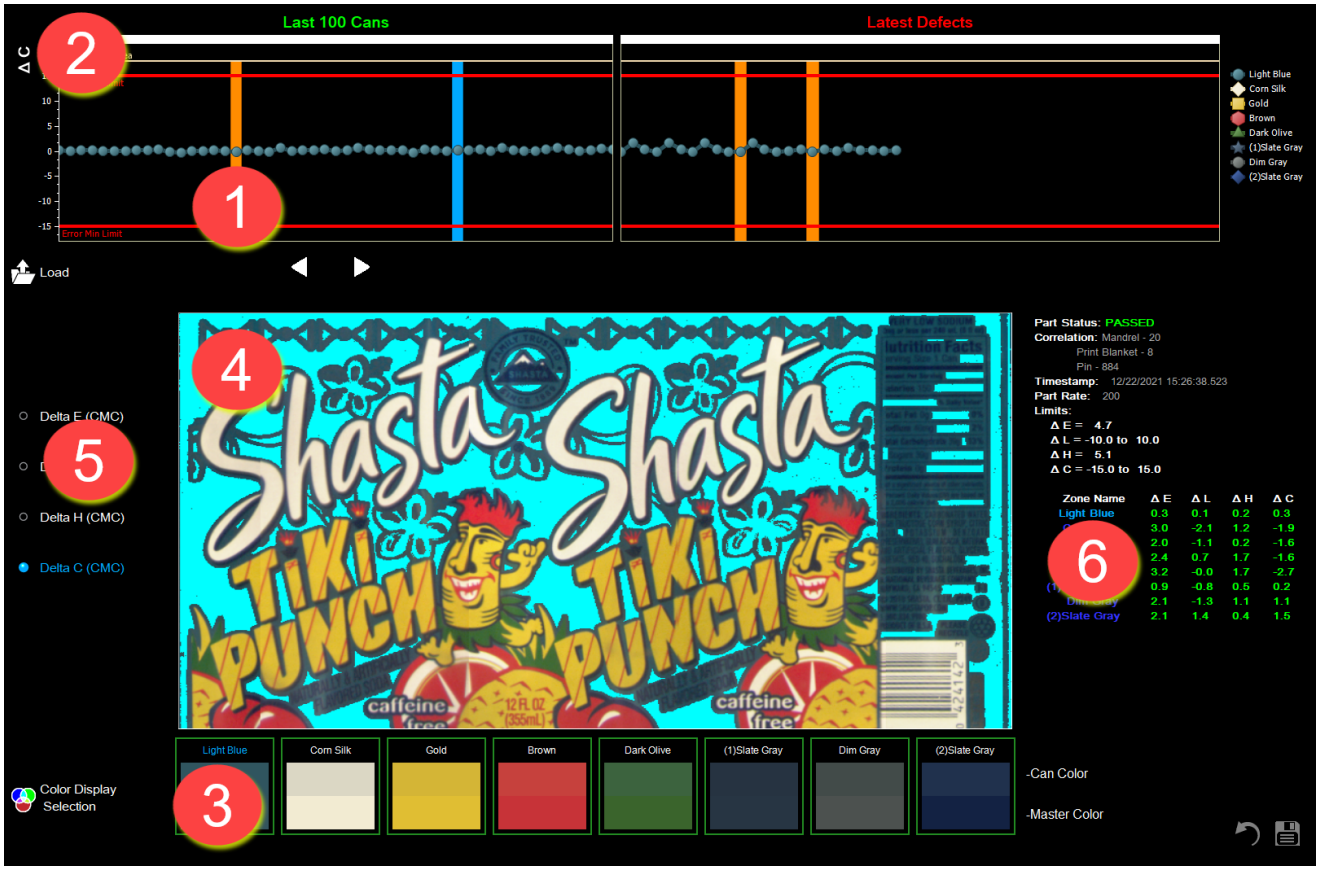
7) Use the radio button to select which color measurement graph you want to display. For more information see "Color Measurements" on page 106.

Color Analysis with Simplified Delta E enabled

When Simplified Delta E mode is enabled, the graphs show only Delta E measurements. For more information see "Color Delta E Settings" on page 139.

Color Analysis for One Color - Automatic Color Mode

You can view the inspection results for one color. To see parts, select the Load icon and select a set or sets of part images.



To see the information for one color:

1. Select one part (bar) in the Retro-Spec graph.
2. Only the selected color measurement graph is shown at the top of the screen (Delta E, etc.).
3. Select the desired color block from under the part image (example, Light Blue).
4. The selected color is highlighted in cyan on the image (the highlight is cyan, regardless of the color you are looking for).
5. You can select any color measurement to the left of the image (Delta E, etc.).
6. The selected color is highlighted in the results section.

When you select the image or color block again, the display reverts to all displayed colors.

Color Display Selection

This icon is displayed in the lower left corner of the Color Analysis screen.

Select which colors your want to view or analyze. Choose from colors that were previously set up through Automatic Colors or Manual Color Zones.

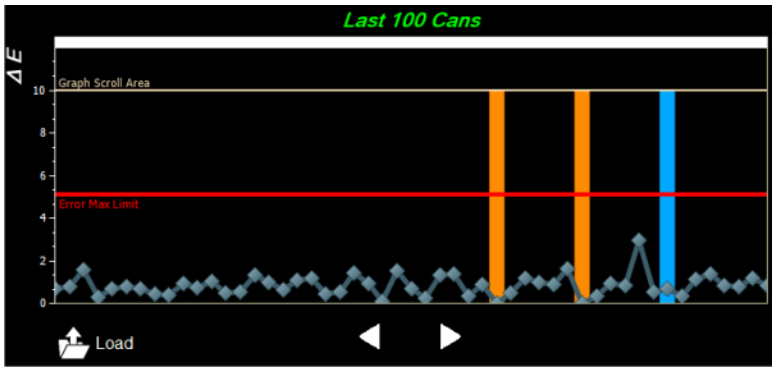
Select the **Color Display Selection** icon. Then, from the popup dialog, select the color(s) you want to view (the colors with a check mark will be displayed). Save changes and exit.

Is Enabled - [Only when using Automatic colors] If a color is enabled, then the DecoSpector will analyze that color. If the color is disabled (the switch is not blue), then the system will not analyze that color. You can have the system analyze a color, but not show it in Color Analysis if you choose.

The selected colors will be displayed below the image as Can Color and Master Color.

When you select one of the color blocks, it will be outlined in cyan.

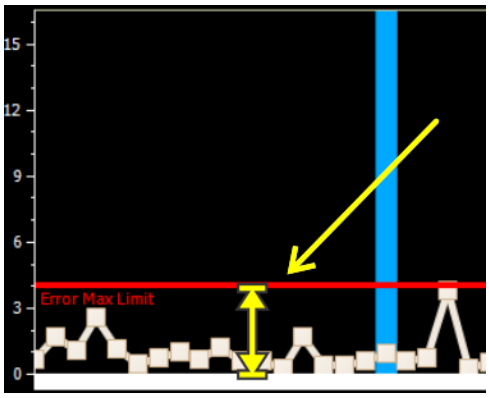
The graphs at the top of the screen will show only the selected color(s) from the Select Display Colors dialog box. If a color is not checked, then you will not see it in the Color Analysis graphs, nor under the image.



Adjust Color Inspection Sensitivity

Administrator only

Move the red bar(s) to adjust inspection sensitivity. In the Delta E graph, moving the red line up decreases sensitivity (fewer failed parts). Moving the red line down increases sensitivity (more failed parts).



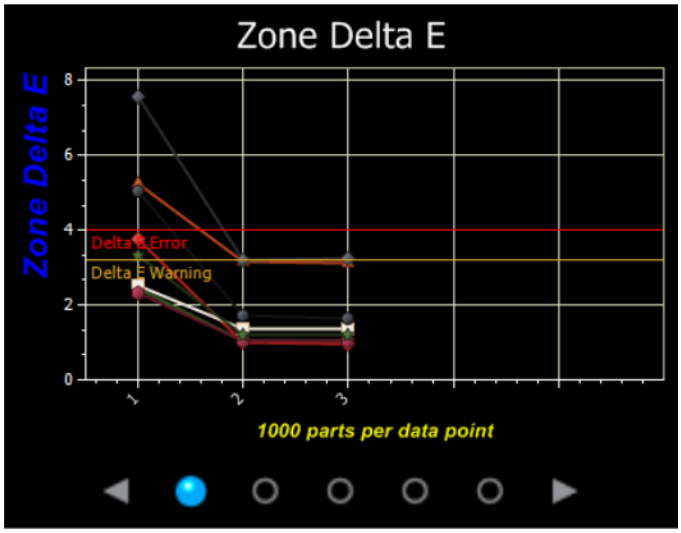
> *Note: when you move the Error Limit bar, it affects all monitored colors. To see all color plots on the graph, click on the image outside of a color zone.*

You can adjust sensitivity for other color measurements. The Delta L and Delta C graphs have positive and negative sensitivity levels. For information, see "Color Measurements" on page 106.

Color Trend Graphs

Overview On the home screen, you can view several color monitoring graphs. Swipe over the graph or select one of the dots under the graph to select different graphs. A dot is added to the chart every 1000 parts to indicate how the color is trending.

> *Note: If you want to see only Delta E and not Delta L, H, or C, then enable Simplified Delta E mode - see "Color Delta E Settings" on page 139.*



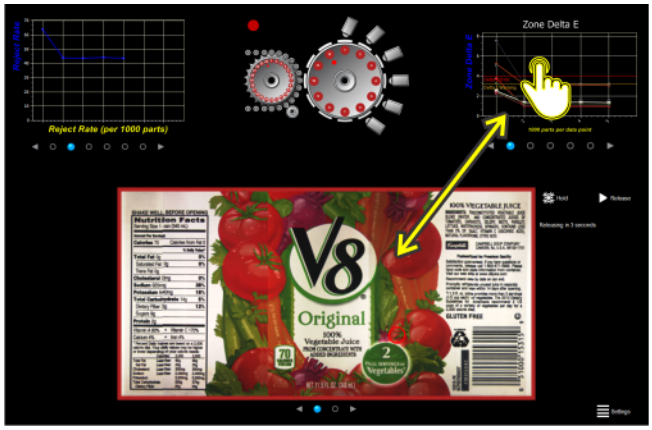
Color Analysis You can set the Error and Warning limits for these graphs in the Color Analysis screen. Use the Retro-Spec graph at the top of the screen to adjust the limits. See also "Adjust Color Alarm Limits" on page 119.

You can select a specific color graph to display using the following steps.

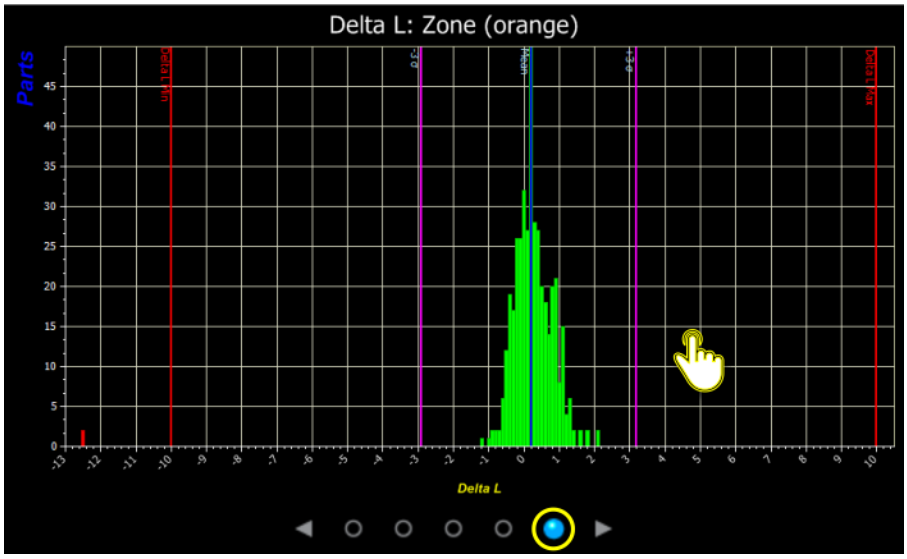
> *Note: Before selecting a graph you must: Set up Color Zones or use Automatic Color Zones*

To choose a graph:

1. Overview Select the graph in the upper right corner of the home screen to view it as a large graph in the center of the screen.

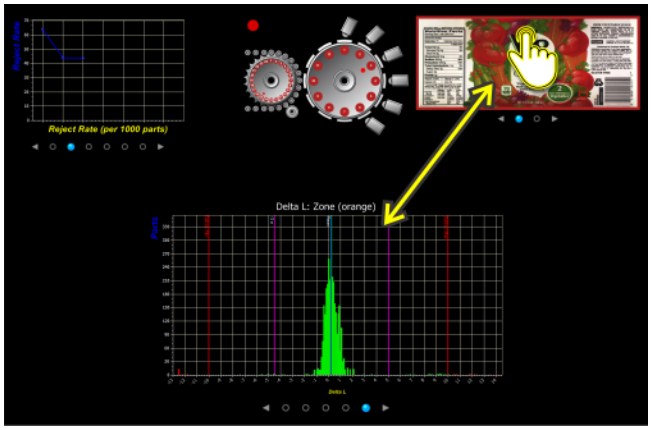


2. Select the rightmost dot to view the user-selectable graph.

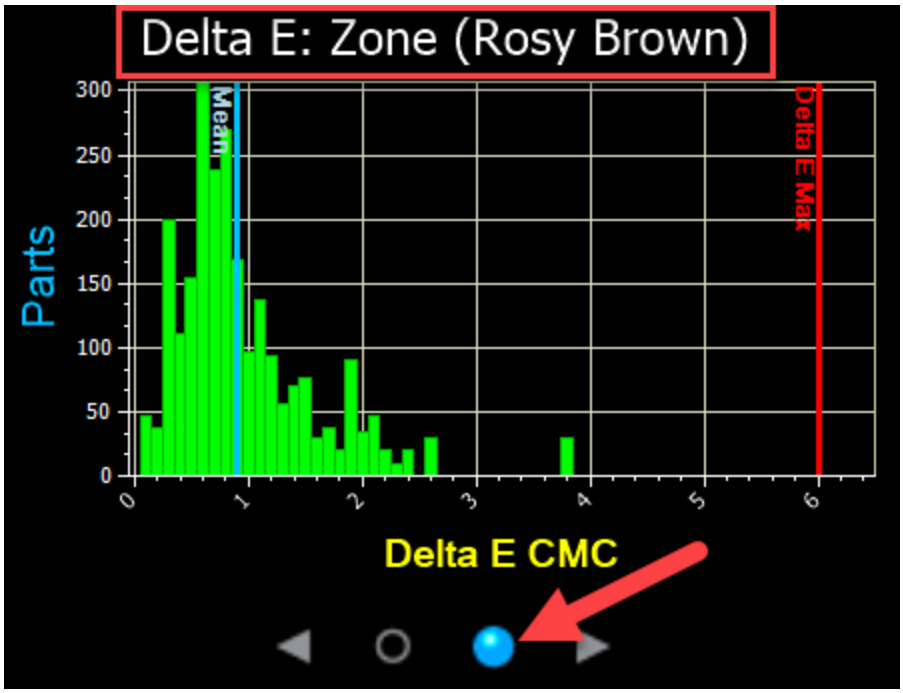


3. Click on the graph to bring up the Zone setup screen.
4. Select one of the zones from the Zone setup screen (see below for information about selecting zone using automatic colors, simplified Delta E, or manual color zones).
5. Select OK and exit the Zone setup screen.

To move the graph to the upper right of the home screen, select the part image. The graph and the part image will switch places.



You might need to select one of the other dots underneath the graph to view the color zone graph that you selected.



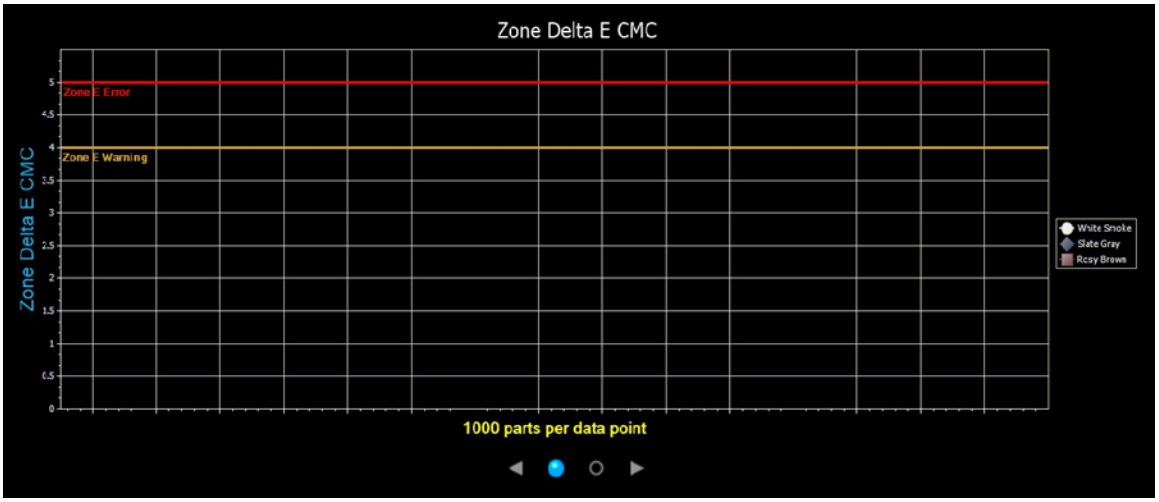
If you are using Automatic Colors:

- Select a color from the drop-down menu.
- Select a color measurement (Delta E, Delta L, Delta H, or Delta C).
- Select OK to save changes and exit. The selected graph is displayed on screen.

When Simplified Delta E mode is enabled:

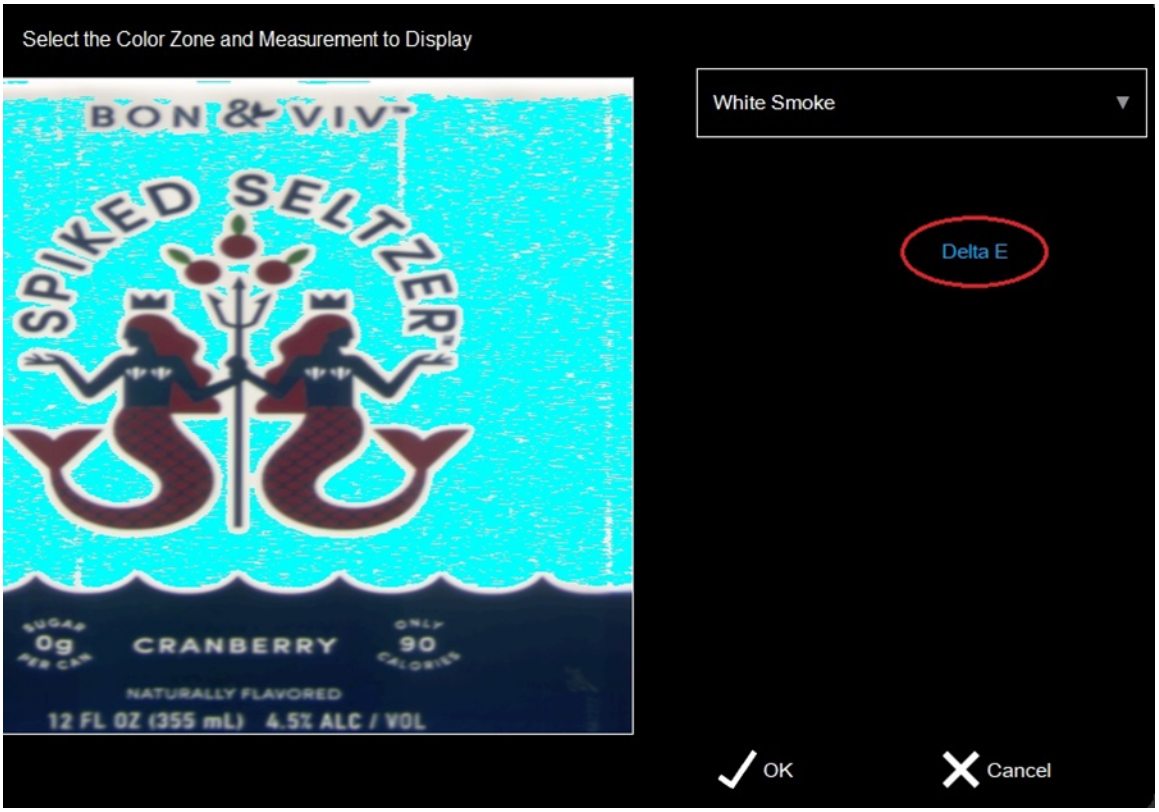
For more information about this mode, see "Color Delta E Settings" on page 139.

Trend graphs will only display Delta E when Simplified Delta E mode is enabled:



Instead of being able to scroll through five screens, you will only scroll through two screens: Delta E and a color/ measurement-specific graph.

In the **color/ measurement-specific graph**, when you click on the graph, the dialog box also hides Delta L, Delta H, and Delta C options.



If you are using Manual Color Zones:

- Select one of the color zones on the image (yellow circle turns blue when you select it). The Zone Name is displayed in the upper right of the screen.
- Select a color measurement (Delta E, Delta L, Delta H, or Delta C).

Color Alarms and Specification Limits

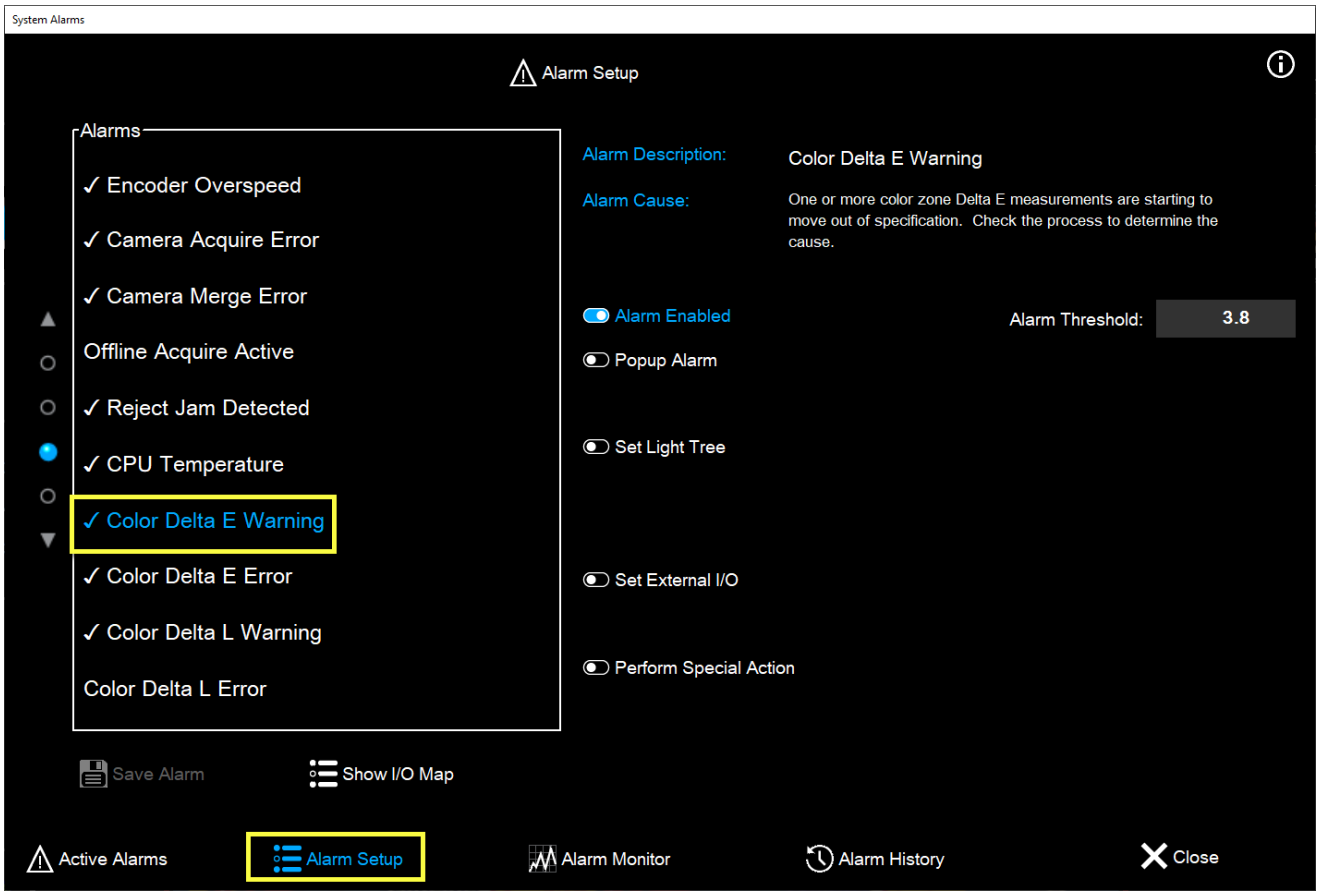
The Color Warning and Color Error alarms are used to notify you when the colors are going out of specification. The alarms use the average Delta E value for each color zone to determine when the colors are exceeding your set limits.

The Color Error alarm is linked to the Color Analysis Delta E limit line. Administrator-level users can adjust the limit in the Alarm Setup dialog, or in the Color Analysis graphs: "Adjust Color Alarm Limits" on the next page.

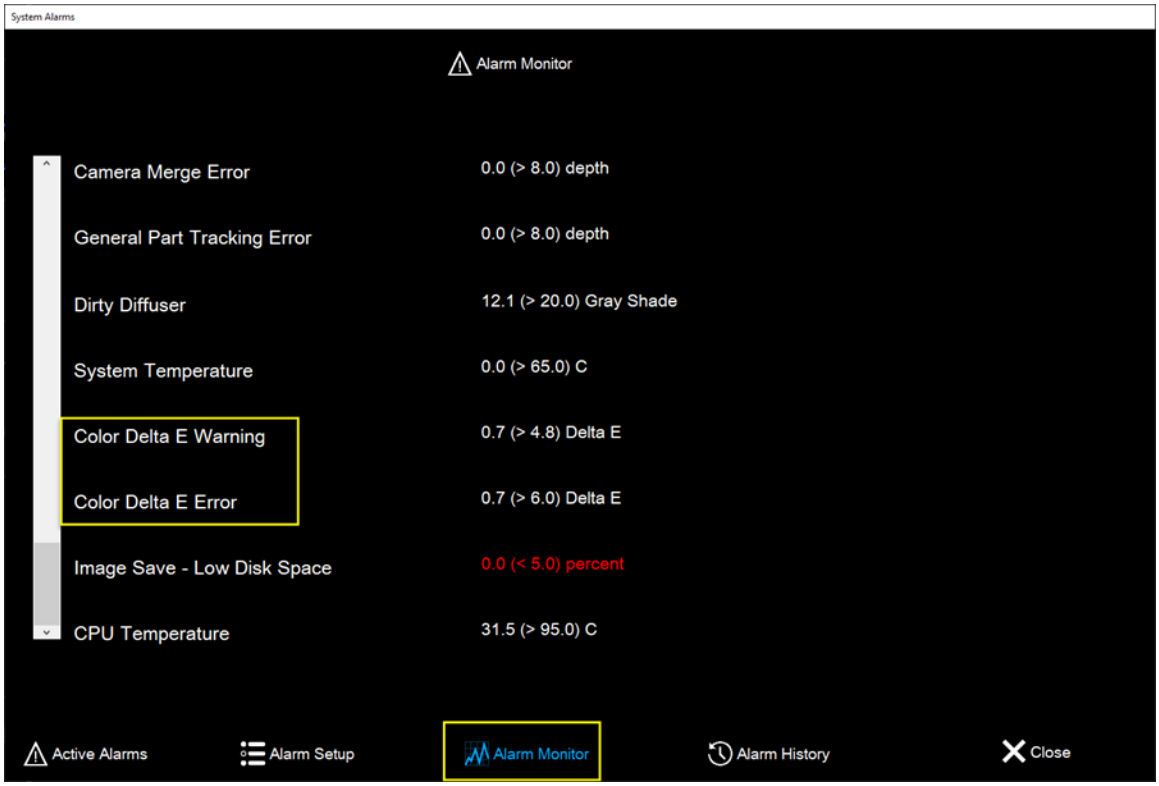
The Color Warning alarm is also linked to the Delta E limit line, but is automatically reduced to 80% of the set limit.

Note: There are also alarms and warnings for Delta L, Delta H, and Delta C.

Alarm setup: *Administrator only*



You can also monitor the values when you use Alarm Monitor. It monitors those color alarms and warnings that are enabled through Alarm Setup.



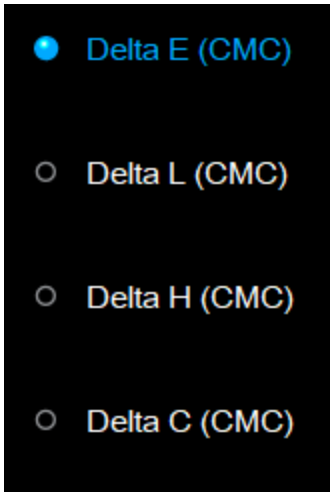
See also "Alarms" on page 171.

Adjust Color Alarm Limits

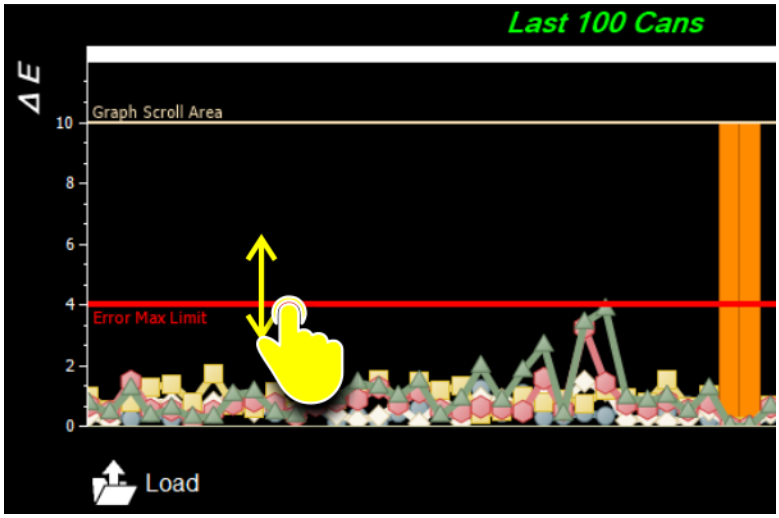
Administrator only

The Delta E Error Limit determines the alarm value for the Color Merit Error alarm. See also "Color Alarms and Specification Limits" on the previous page.

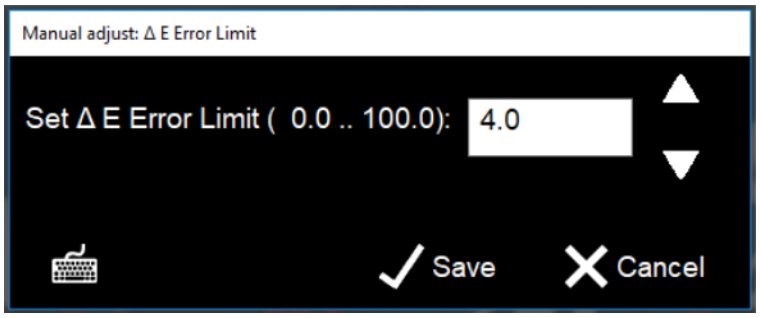
In the Color Analysis screen, Load images, and make sure Delta E is selected to the left of the part image:



Use the Retro-Spec graphs to adjust the Delta E limits. Click and drag the limits bar.



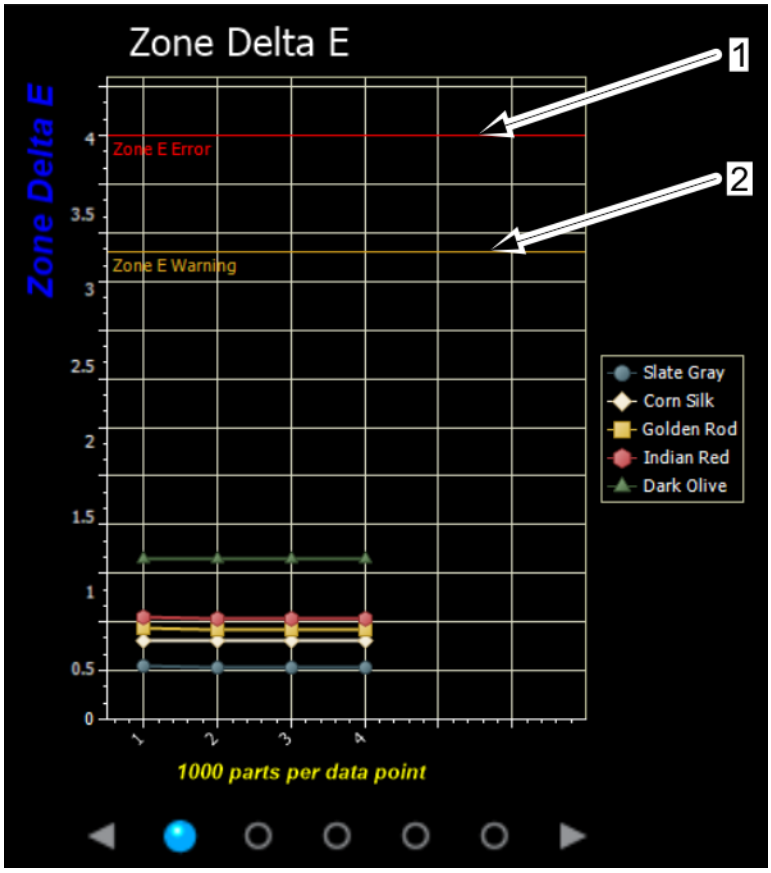
Or press the red line and hold, to enter a number.



This value matches the Zone E Error limit bar.

The Color Warning value (in Alarms) [also called Zone E Warning in the Overview Panel graph] is automatically computed (it is 80% of the Zone E Error value).

The graph below is displayed on the Overview Panel.



1) Delta E Error Limit 2) Delta E Warning Limit (automatically computed)

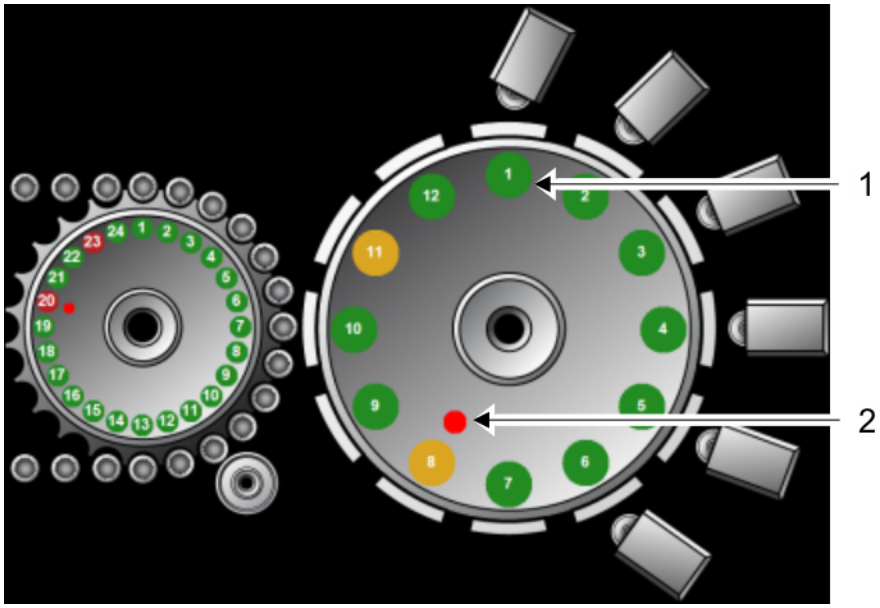
The other color measurements, Delta L, H, and C, also have limit adjustments through the Retro-Spec graphs. Those limits are displayed in the corresponding graphs on the Overview Panel.

Chapter 8 Correlation

The DecoSpector system provides correlation to the following machine parts: Mandrel, Print Blanket, and Pin Chain

> *Note: Correlation is set up using "Correlation Settings" below. This is usually performed during installation by Pressco.*

The correlation graphic on the Home (Overview) screen shows the status of machine parts.



1) The large dots with numbers show the alarm condition of the machine part. The color is dependent on the defect % of each component, and is hard-coded in the software. Clearing statistics resets the color to green.

- Red = alarm condition [> 10% defects]
- Yellow = warning [5% - 10% defects]
- Green = OK. No excessive machine part defects. [<5% defects]

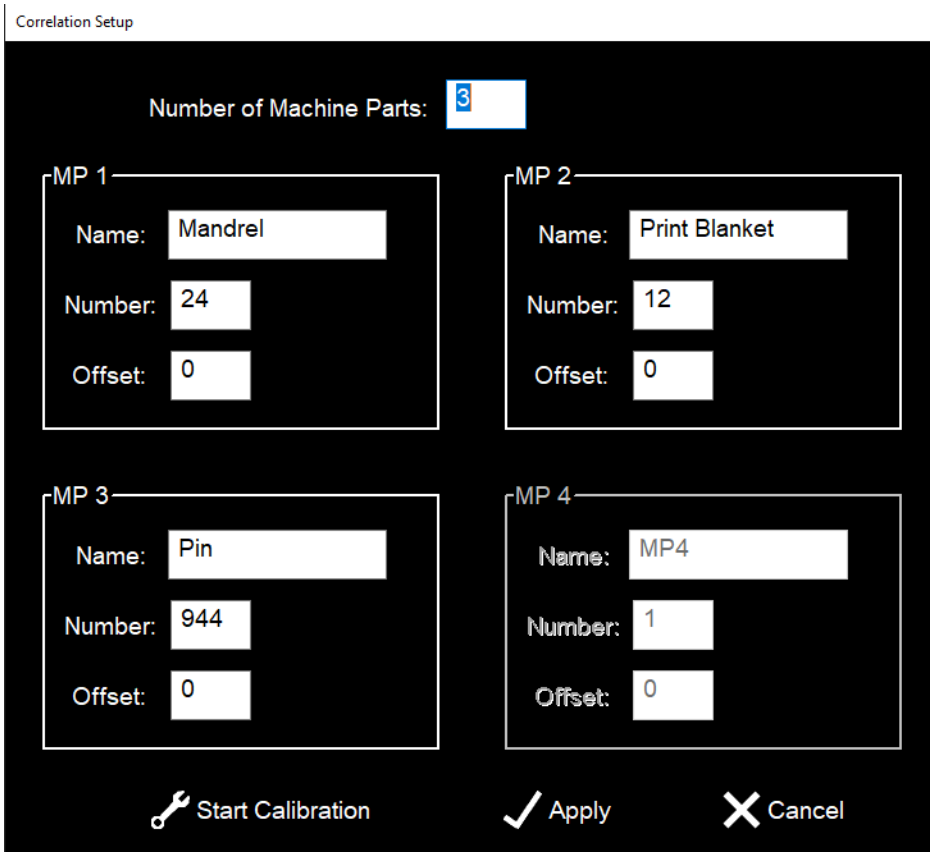
2) The small red dot indicates where the last failing part came from.

Correlation Settings

Administrator only

When a Pressco engineer installs your system, he sets up the machine parts through the Correlation Settings menu. Usually, no further adjustment is necessary, unless you have replaced sensors.

Settings | Global Utilities | Correlation Settings.



MPx - The MP item numbers correspond to the sensors connected to your production line.

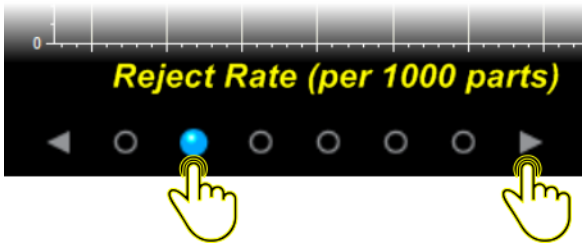
Number - The number of machine parts (example, 12 blankets).

Offset - This is only used if the sensor is not pointing to item 1 of the machine part. For example, the sensor may pick up mandrel 4 as the first mandrel. In this case, use an offset of 4 to tell the DecoSpector system that the actual first mandrel is 4 positions away from the sensor.

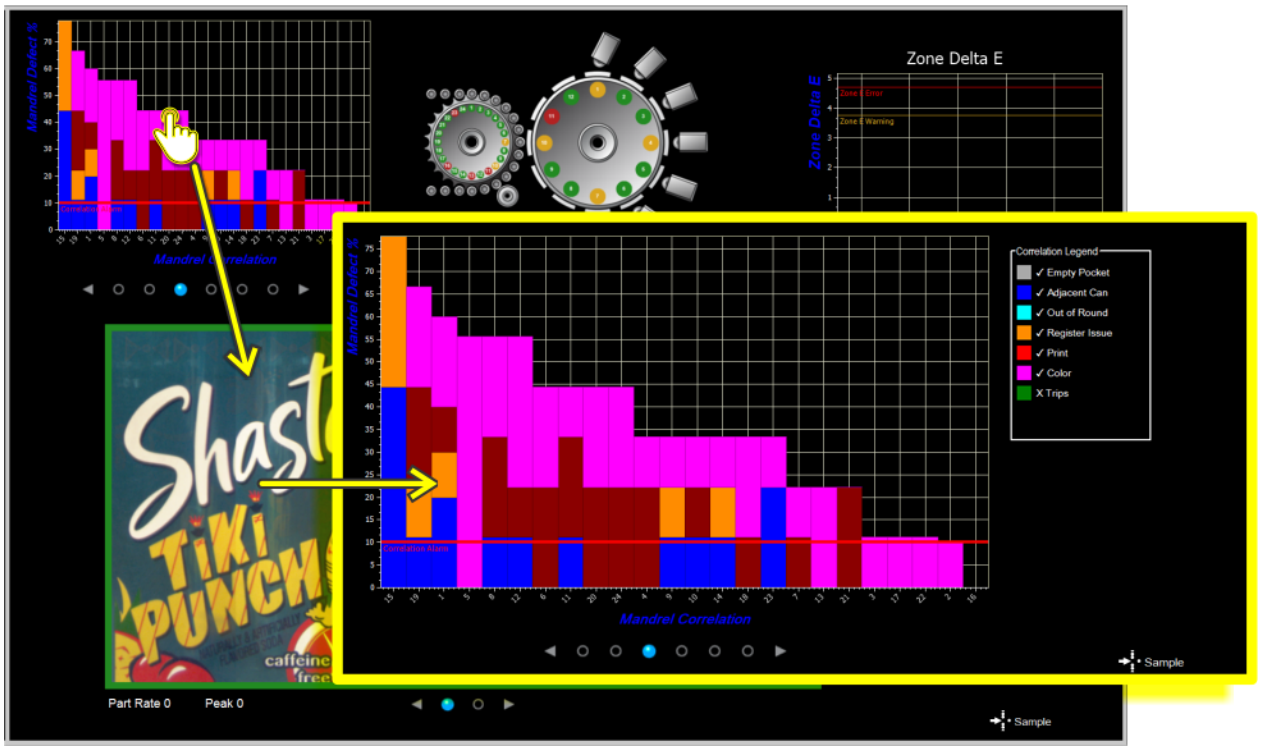
Start Calibration - When you select this, it will poll the part tracker for the number of instances of each machine part found (that is, the number of Mandrels, Print Blankets, and Pins actually encountered) and update those values in the setup dialog if they are different than what is reported.

Viewing Correlation Graphs

Swipe the graphs or use the buttons to display the different graphs.

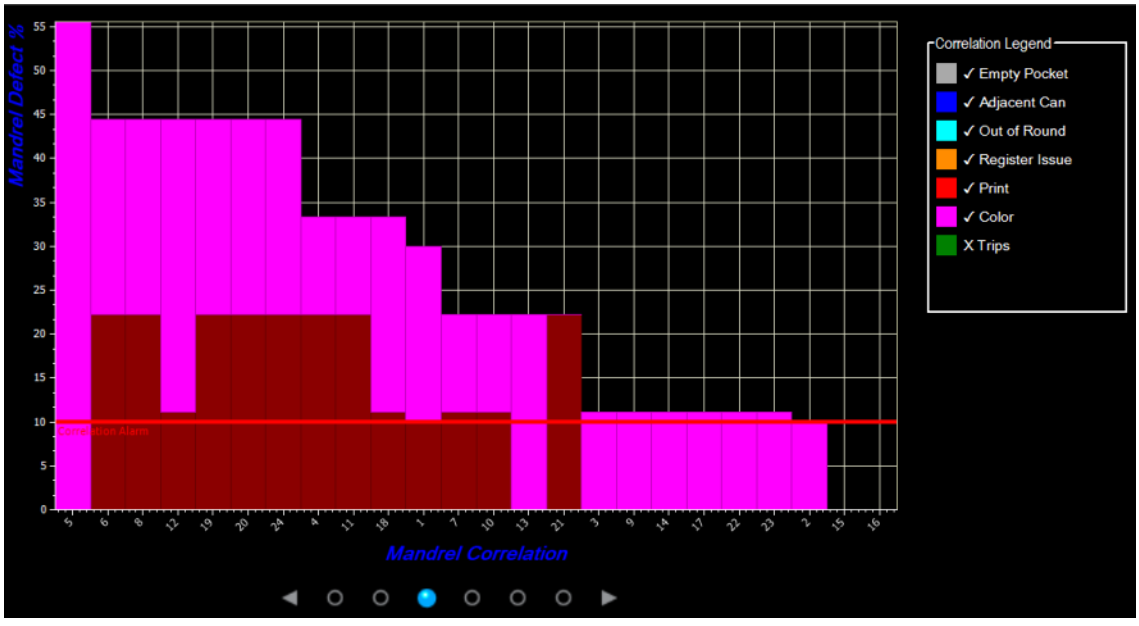


To see a larger graph, click the graph in the upper screen. The graph will be displayed in the lower screen.



The correlation graphs are color coded based on the reason the parts failed. The legend is displayed when you view a larger graph in the lower screen. The legend allows you to filter what you want to see. Click on a color to select or de-select an option. An 'X' means that information will not be shown.

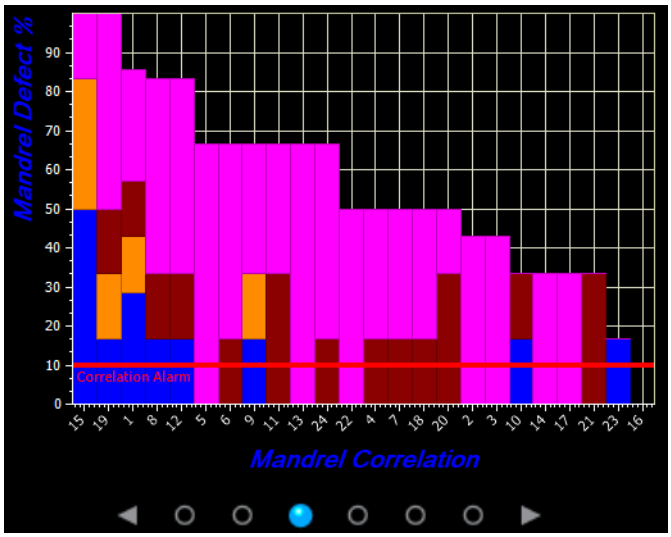
> *Tip: typically, only Print and Color defects matter, since a mandrel or print blanket have nothing to do with the other defect categories.*



Gray = Empty Pocket | Blue = Adjacent Can | Cyan = Out of Round | Orange = Register Issue | Red = Print Defect | Magenta = Color Defect | Green = Deco Trip (see "Part Trip Setttings" on page 132)

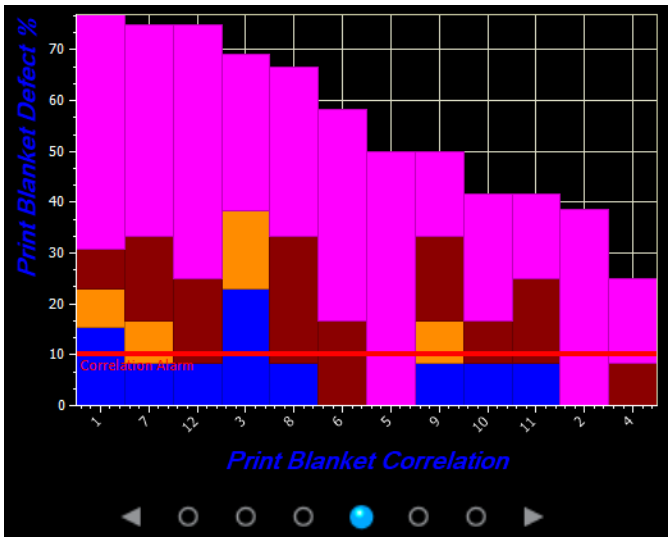
Mandrel Correlation

The mandrel numbers are located on the bottom of the graph. This is sorted in descending order, left to right, from the highest number of failed parts to the lowest number of failed parts.



Print Blanket Correlation

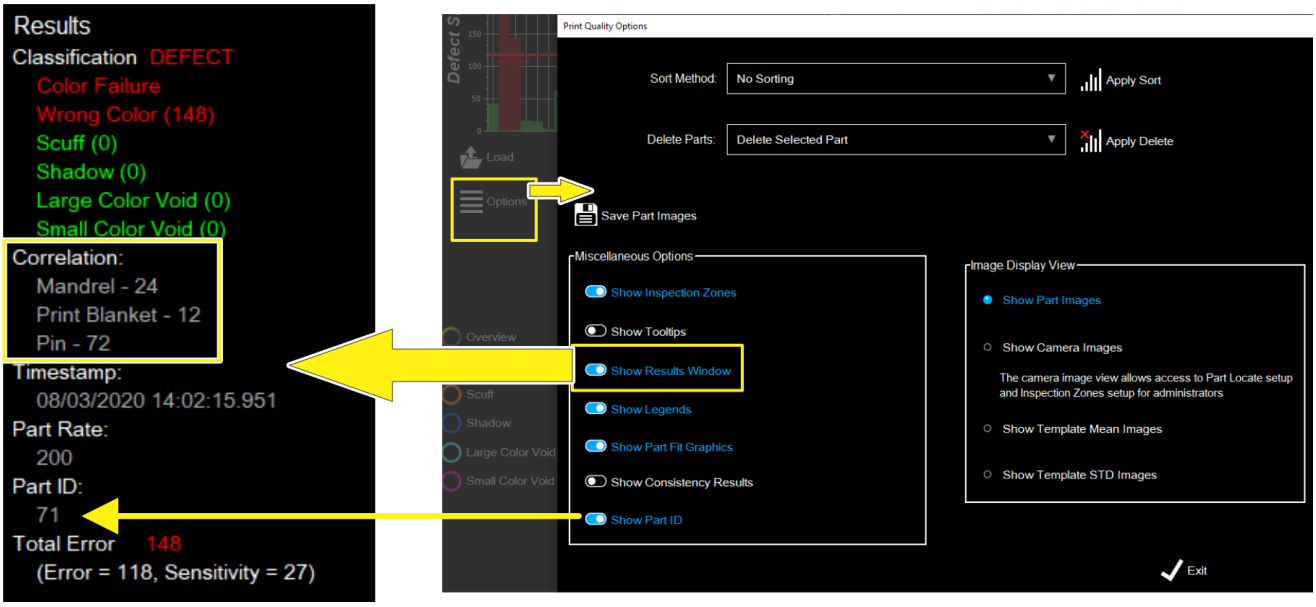
The print blanket numbers are located on the bottom of the graph. This is sorted in descending order, left to right, from the highest number of failed parts to the lowest number of failed parts.



Individual Part Correlation

View the Results window on the Print Quality screen to see the correlation data of each inspected part. To see this window, "Show Results Window" must be enabled. See "Options on Print Quality Screen" on page 98.

In this example, the part was correlated to Mandrel 24, Print Blanket 12, and Pin 72.



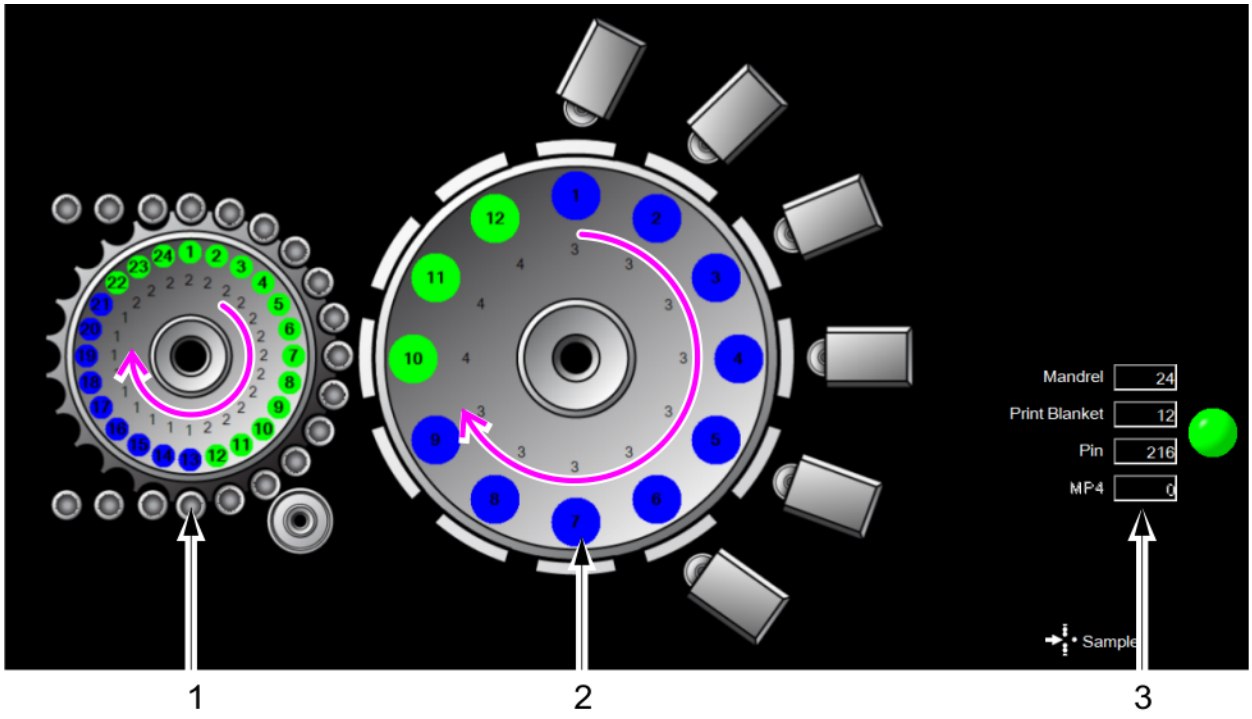
Correlation Diagnostics

Check to make sure the system is tracking the correlation of all machine parts.

Settings | Overview Display View | **Show Correlation Diagnostic Controls**. The controls are displayed on the home screen.

When the system is online, you will see the correlated machine part numbers update with colored dots. The dots toggle between blue and green so that you can see where the current part is in the production line. If a machine part is skipped, you see that the machine part dot does not change.

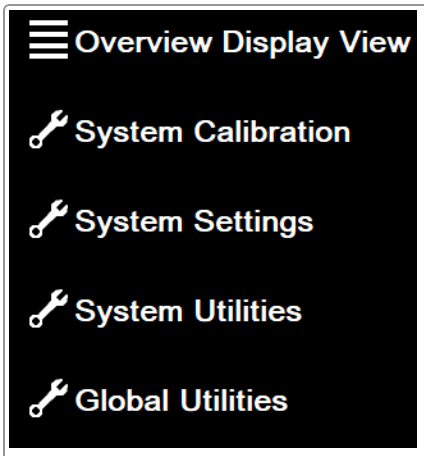
The machine part count is displayed (the innermost numbers on the graphic). If the counts do not increase equally, then this indicates a correlation problem. This number resets to one after it reaches 99.



1) Mandrel parts | 2) Print blanket parts | 3) Correlation values

Chapter 9 Settings

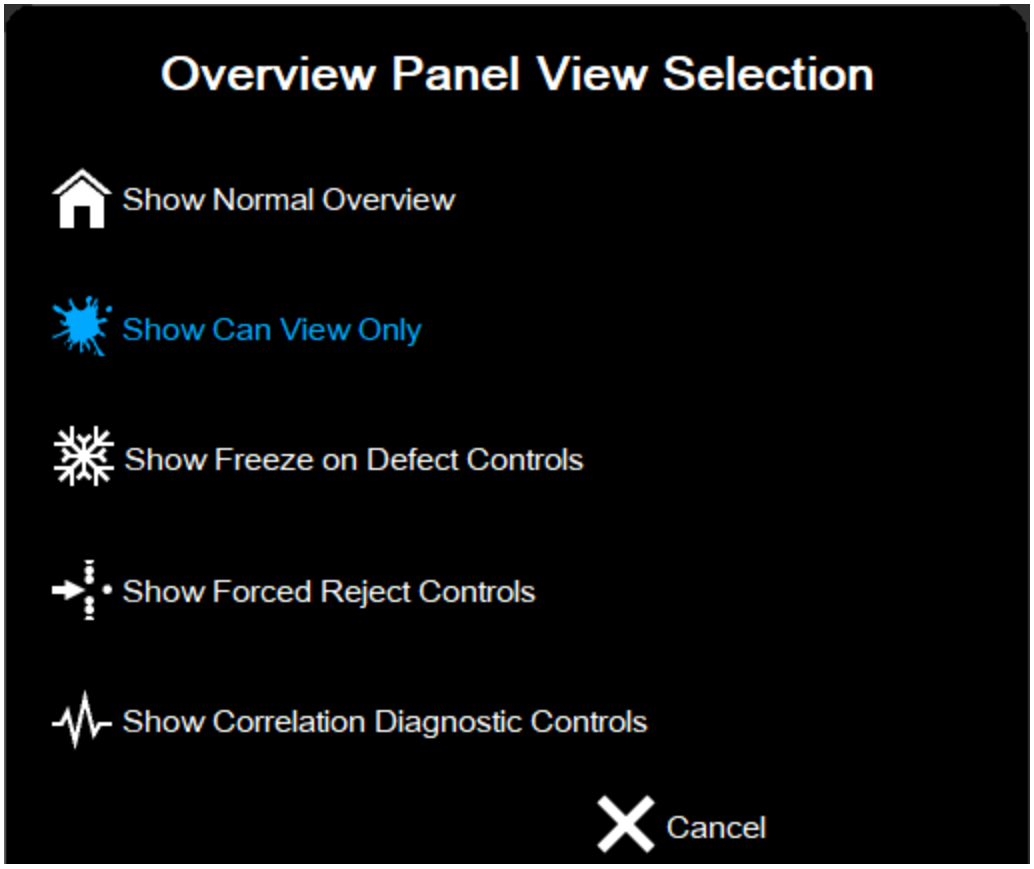
- Adjust system settings. A grayed out item means that only higher user levels have permission to access that item.



"Overview Display View" below
"System Calibration" on page 130
"System Settings" on page 137
"System Utilities" on page 146
"Global Utilities" on page 154

Overview Display View

Select what to display on the Overview screen. To get to this menu:



Show Normal Overview - Resets the home screen to default, hiding Freeze on Defect, Forced Reject, and Diagnostic Controls.

Show Can View Only - This view allows you to view just the can image with details about the part. "Show Can View Only" on page 88

Show Freeze on Defect Controls - Show the "Freeze on Defect Controls" on page 85 on the home screen.

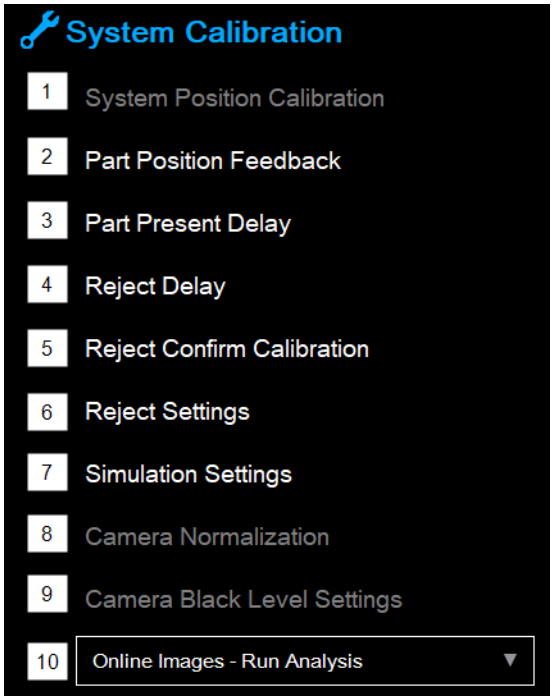
Show Forced Reject Controls - Show the "Forced Reject" on page 168 controls on the home screen.

Show Correlation Diagnostic Controls - Show the correlation value where the current part is, and show that the system is tracking machine parts. "Correlation Diagnostics" on page 126

System Calibration

Administrator only

To get to this menu: Settings | System Calibration.



Adjust the hardware settings for the following:

1) System Position Calibration: *Pressco Technician access only*

2) "Part Position Feedback" on page 73

3) "Part Present Delay" below

4) "Reject Delay" on page 160

5) Reject Confirm Calibration - optional feature. "Reject Confirm Calibration" on page 164

6) "Reject Settings" on page 158 - same as selecting the rejector icon from the main screen.

7) "Simulation Settings" on the next page

8) Camera Normalization: *Pressco Technician access only* - you must be running with actual hardware, not a simulation

9) Camera Black Level Settings: *Pressco Technician access only*

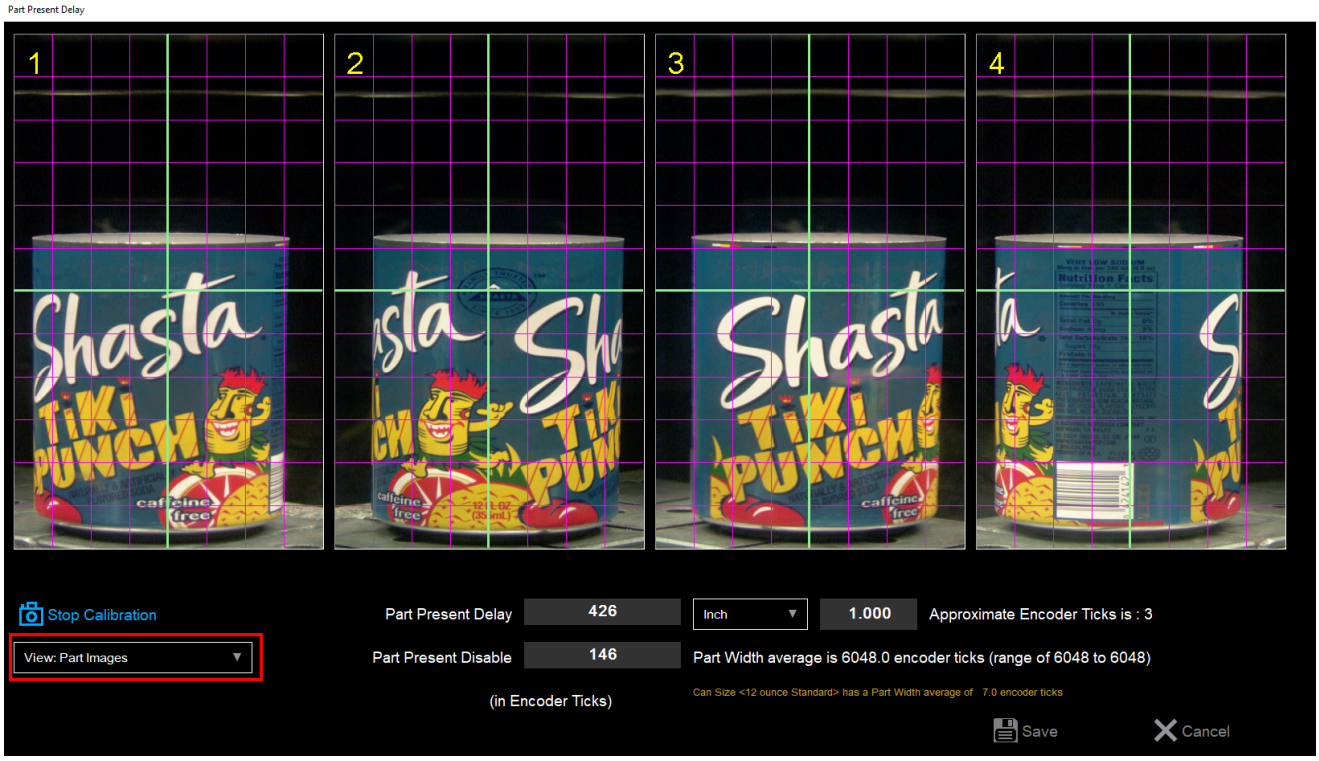
10) Online Images "Online Images" on page 136

Part Present Delay

Administrator only

Part Present Delay is the distance (in encoder ticks) from the part detect sensor to the camera centerline. The Part Present Delay ensures that your part is in the center of the image when the camera snaps its picture.

Tip: When you calibrate the Part Present Delay, it is ideal to only use one part at a time. Otherwise, it will not be easy to determine if the part detected is actually the same part in the image or the part rejected since all the parts look alike. If it is not possible to use only one part, try to use a different color part, or place a piece of colorful tape on a part. You will most likely use a few parts to test the calibration, or run the same part through several times.



To calibrate the Part Present Delay:

1. Settings | **System Calibration** | **Part Present Delay**.
2. Select **Start Calibration**. (this button toggles with Stop Calibration)
3. Place a part onto the conveyor or into the part stream. The part will trigger the part detect sensor, then the system will count the number of encoder ticks and take a picture.
4. Manually adjust the part present delay value until the images are centered every time a part is run through the system. To change a value, press and hold a number and use the keyboard icon from the pop-up menu.
5. When the part is centered, select the **Stop Calibration** button, then the **Save** button. The Part Present Delay calibration value is saved and stored with the job.

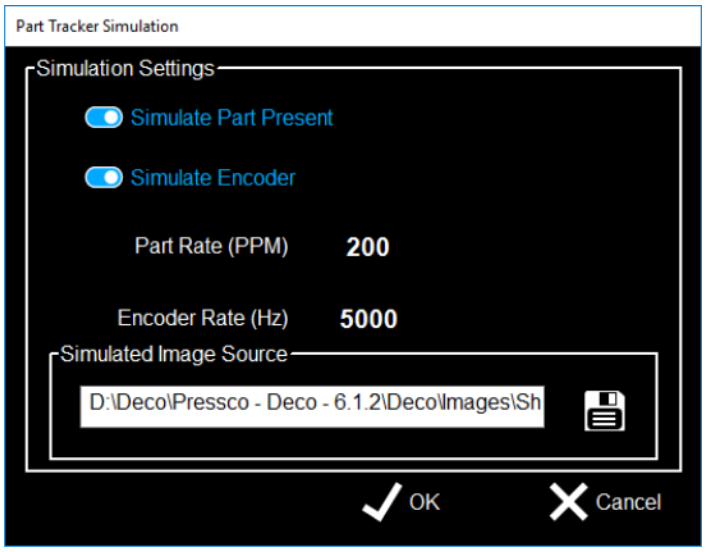
Note: the additional tools: units of measure, Approximate encoder ticks,and Part Width Average are used with "Part Position Feedback." Click the drop-down box next to View: Part Images to switch screens. See "Part Spacing Calculator" on page 77

Simulation Settings

This information is only used if you are operating the DecoSpector system without production running, such as in training, testing, or installing the system.

Settings **Settings | System Calibration | Simulation Settings**.

To change a value, press and hold a number and use the keyboard icon from the pop-up menu.



IMPORTANT - If you use simulated settings, be sure to disable them before using the system in production. Otherwise, inspection and correlation statistics will not be correct.

Part Trip Setttings

Note: This feature is available in software versions 6.2.23, 6.3, and 6.4 and later

A "trip," for the context of this topic, happens when a can is missing from the production line, but the print happens anyway. The print blanket prints directly onto the mandrel instead of a can.

The Part Trip feature adds the ability for the DecoSpector system to receive an input from an external system when a trip happens, and it alerts the DecoSpector system that a trip occurs. The Deco system tracks this information and provides data that you can use to review trips and fine tune the system to reduce waste from trips.

What you need:

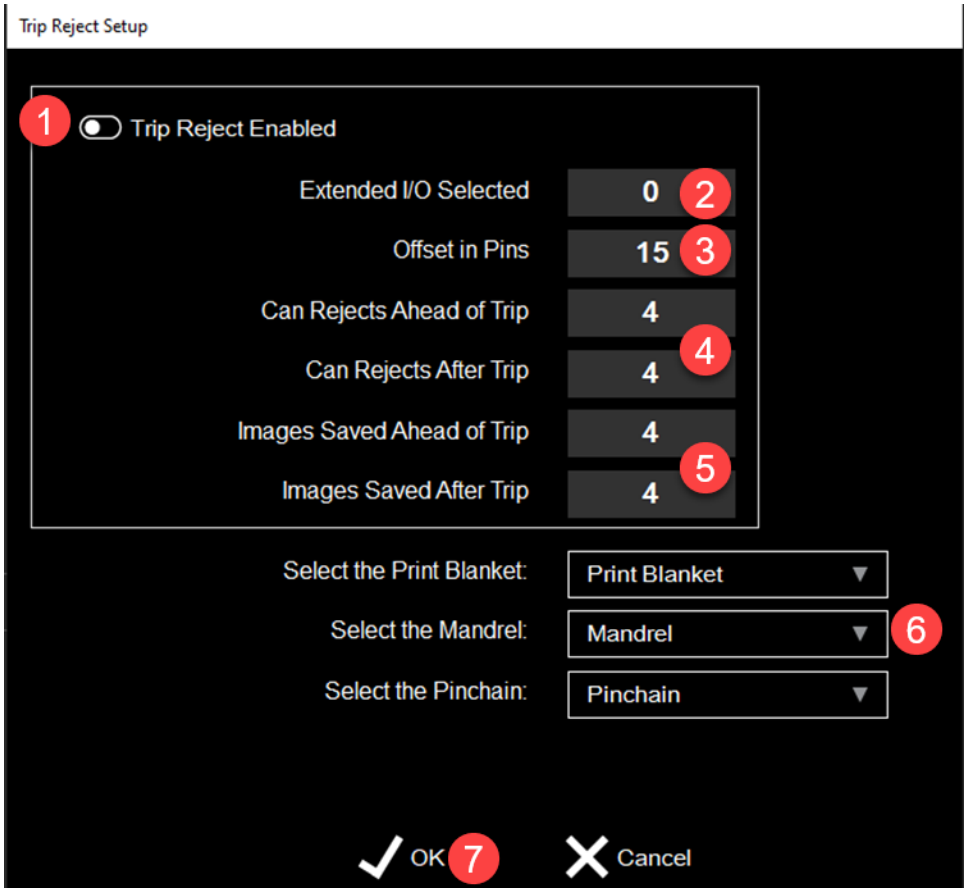
- The optional Extended I/O module installed. See sample circuits to connect your signal to the Extended I/O module - "Deco Extended IO" on page 1

Notes about Part Trip:

- "Trip reject" information is not included in the statistics viewer. However, all rejected part information is included in the statistics. This includes all the parts rejected before and after the trip.
- Clearing the statistics will clear any trip data
- On a job change, the trip data will reset

Setup

To get to this menu, go to **Settings** | **System Calibration** | **Part Trip Settings**.



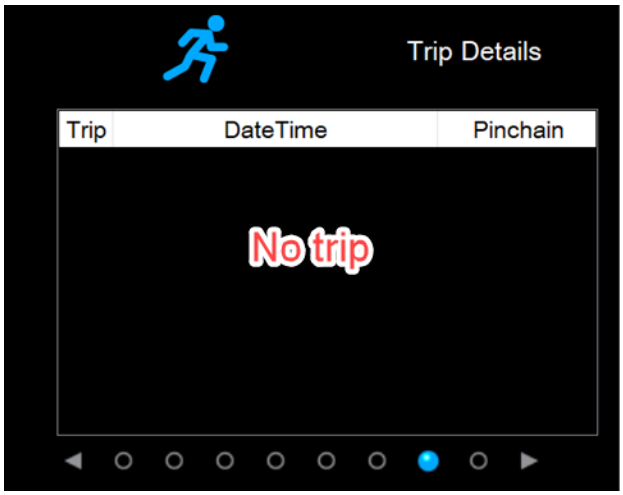
To set up the feature:

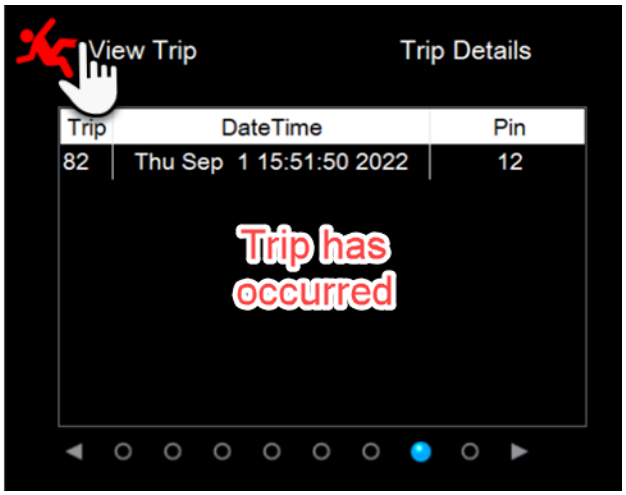
1. Enable the **Trip Reject Enabled** switch to turn on the feature.
2. Select the external I/O signal to receive the trip information from the external source.
3. Configure the offset properly, referencing the pinchain. If the sensor is not looking at Pin 1, then enter the actual pin number that the sensor is pointing to. This is to ensure that the correct parts are tracked and rejected.
4. Select how many cans ahead of and behind the trip to reject.
5. Select how many cans ahead of and behind the trip to save images of for the quick review popup dialogue. (Images are saved to disk only if you manually save them. See "Reviewing Trips")
6. Select which machine part is the Print Blanket, Mandrel, and Pinchain.
7. Click OK to save changes and exit.

Monitoring Trips

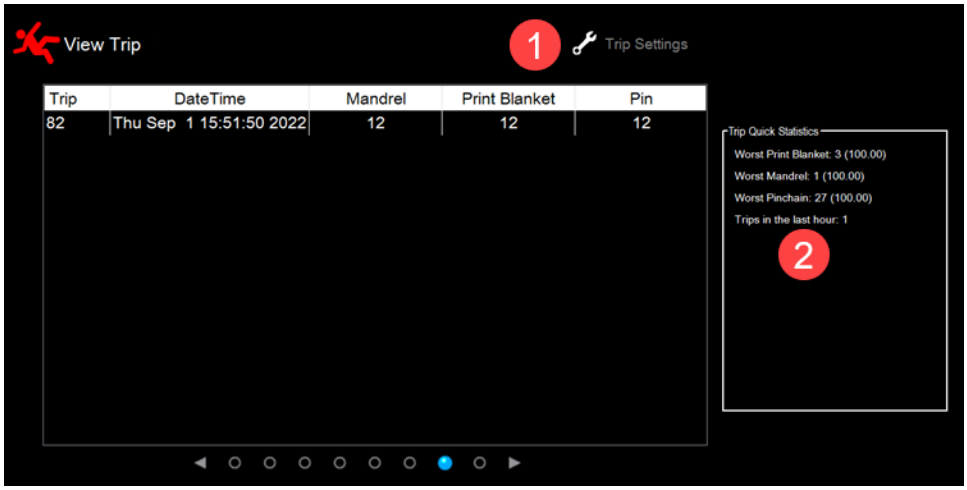
When the feature is enabled, there will be a panel included in the Overview Panel in the statistics viewer that shows Trip information (default in the upper left of the screen). See "Overview Panel" on page 27

The icon of the blue running man changes to a red "tripping" man to indicate that a trip has occurred. When a trip occurs and you are viewing a different panel, the display automatically changes to display the trip panel so that you can review it.





Click the panel and then click the icon of the man. This displays a larger popup dialogue to make it easier for you to review.



1) **Trip Settings** - This button opens the Part Trip Settings dialogue to configure the trip settings. It is only available offline and to Adminstrators.

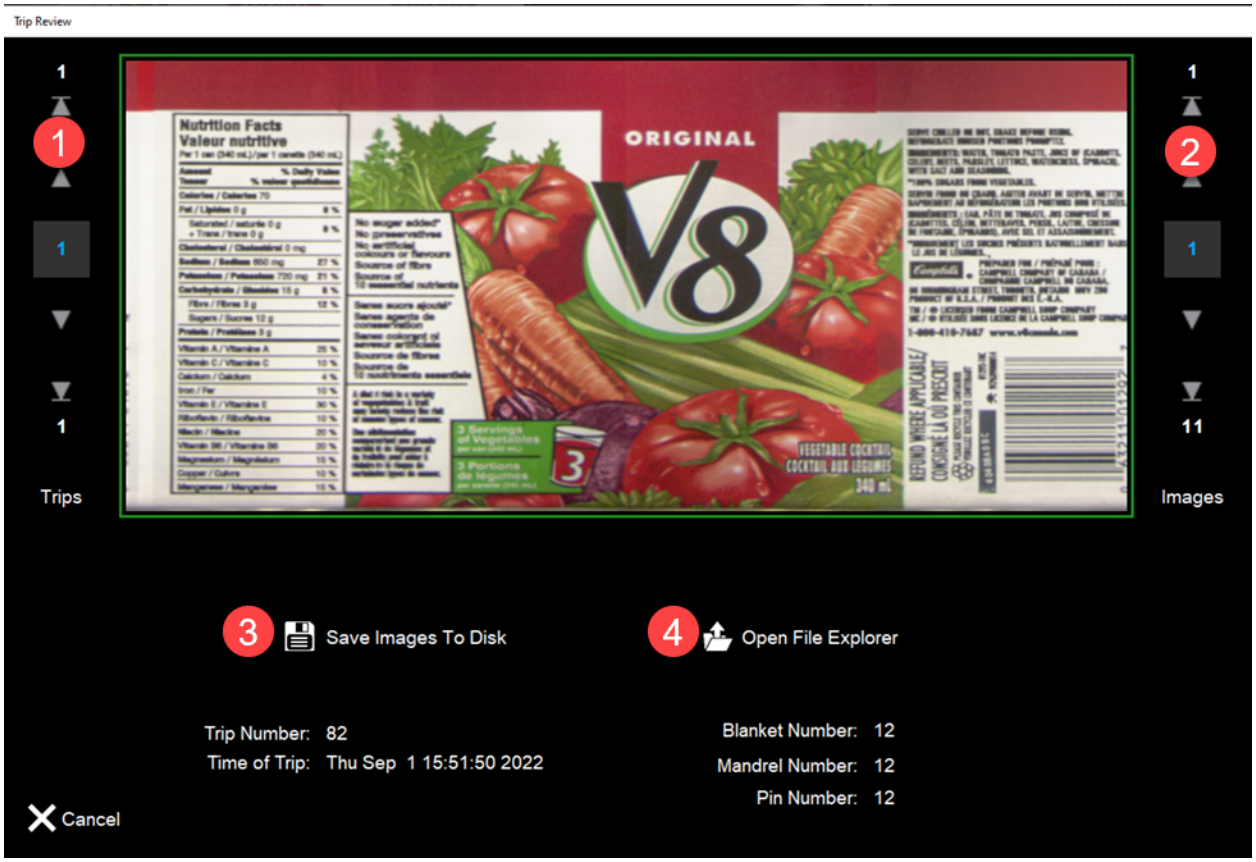
2) **Trip Quick Statistics** - This panel shows some extra data about the system as a whole. It details the worst machine parts and the percentage of trips they are involved in. It also show the number of trips in the past hour.

Reviewing Trips

When you click the View Trip button with the man icon from the panel shown in "Monitoring Trips," this panel shows the last 10 trips. Select a trip from the list to review images, the involved machine parts, and other information. (The statistics panel shows all the trips that have occurred since the system was reset or there was a job change. This dialogue shows only the last 10.)

About images:

- Images are saved in memory until the system is reset or the job changes. You can save them to disk using the button in this dialogue.
- The image shown is from the stitched image from the cameras when a can passes through the system. This image is not a picture of the machine part during the trip.



1) **Vertical pager on the left** - scroll through the available trips to review each one.

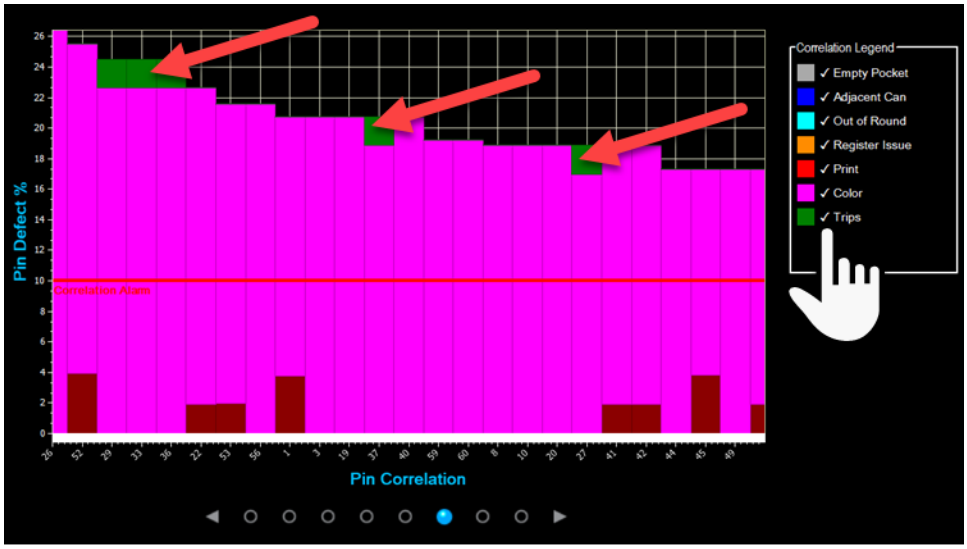
2) **Vertical pager on the right** - scroll through the images for each trip. In the event of two trips having overlapping images, the later one will have the images for the trip.

3) **Save images to disk** - this button saves the images of the currently viewed trip. The images are saved to: C:\Pressco\Deco\Trips\job name\Trip MM-DD-YYYY-HH-MM-SS_Trip#.

4) **Open File Explorer** - this button opens the File Explorer to view the images. It is only available to Administrators.

Machine Part Correlation Graph with Trips shown

Trips are shown in green on the machine part correlation graphs. They can be toggled on and off in your view similar to the other categories, by clicking the checkmark next to the category.

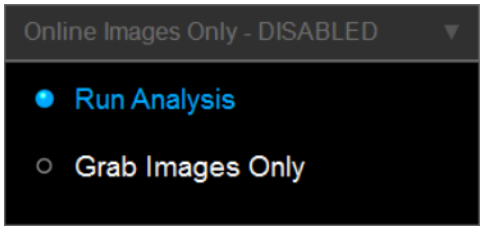


Online Images

Choose whether to inspect images or only display images (but not inspect) when the system is online. This is good for testing the DecoSpector system without rejecting parts.

Administrator only

Settings | **System Calibration** | **Online Images - Run Analysis**.



Run Analysis - This is the default mode. Make sure Run Analysis is selected (text is blue) when the system is inspecting parts.

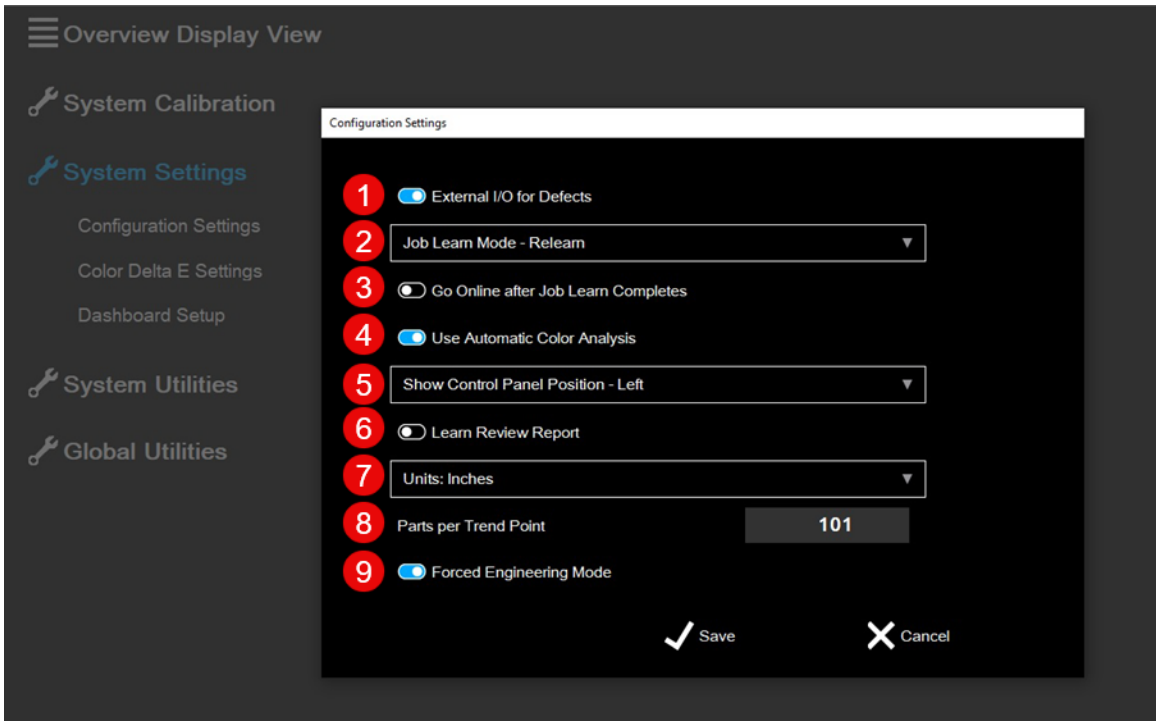
Grab Images Only - This is used for testing only. It allows the system to be put online, but not run inspection, and therefore not reject parts.

System Settings

Settings | **System Settings**

Enable features and configure settings for the DecoSpector 360™.

Configuration Settings



1) **External I/O for Defects** - This provides the ability to track the number of times certain defects happen, through the External I/O. It is only used in specific plant locations. Leave this disabled unless otherwise instructed by a Pressco engineer.

2) **Job Learn Mode** - This changes the text on the Control Panel. Select between **Learn Job** and **Relearn**. If the option "Learn Review Report" is enabled, then the Job Learn Mode will be forced to "Relearn."

If the setting is **Learn Job**:

- When you select this button from the control panel, the system will collect new images, and determine whether the parts being inspected are from the same job that was already loaded.
- This setting disables **Learn Review Report.** This means that you will not see the Learn Review Report if you go online after the learn job completes.

If the setting is **Relearn**:

- The systems acquires new images and detects subtle changes in color or printing. This mode is good to use when you have been running the job for several hours and need to accommodate for subtle process changes.

- You can enable the Learn Review Report to see what the system learned. This is displayed when the system goes online after the Relearn is complete.

3) **Go Online After Job Learn Completes** - This toggles between enabled and disabled. If enabled, the system will automatically go online to inspect parts after it completes a job learn process. If this is enabled, then **Learn Review Report** is disabled. You will not be able to view the Learn Review Report when the system goes online after the learn job completes.

4) Use Automatic Color Analysis

New Jobs Use Manual Color Analysis *Pressco Technician access only*

This toggles with "New Jobs Use Automatic Color Analysis."

Automatic - If your system is configured to "Use Automatic Colors," then the system will automatically identify all the different colors of your cans during the learn process. You may decide which of these colors to monitor.

Manual - Use this feature to monitor specific colors over time. You may choose up to eight colors, and the system will monitor how closely each image compares to the original image

---

5) "Show Control Panel Position" below

6) "Learn Review Report" on page 59 When this is enabled, then **Job Learn Mode** is forced to **Relearn**.

7) **Units** - Select your preferred unit of measurement.

8) "Parts Per Trend Point" on the next page

9) **Forced Engineering Mode:** - *Pressco Technician Only*. This allows Pressco engineers to test settings.

Color Delta E Settings

Set up your plant's preference to perform Delta E color analysis. See "Color Delta E Settings" on the next page.

Dashboard Setup

Enable and configure how the Dashboard feature works. See "Dashboard Setup" on page 143.

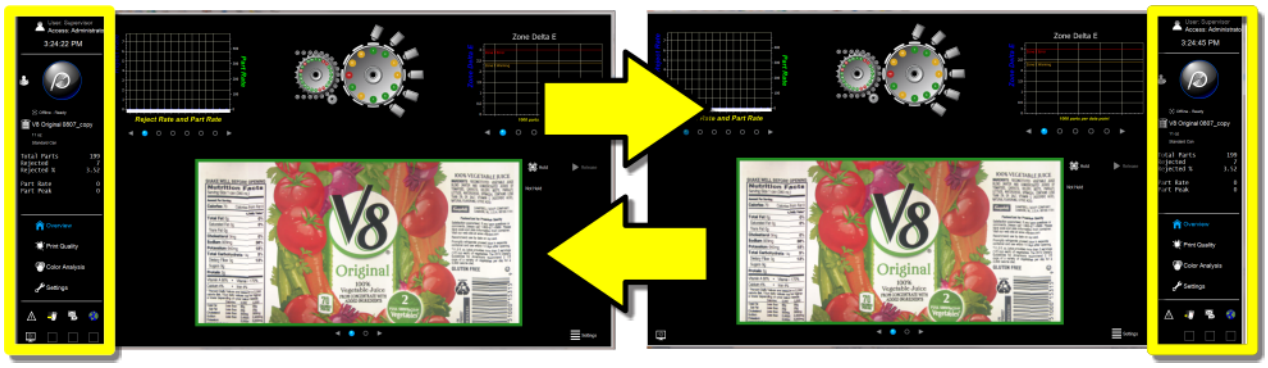
Unrolled Image Save

This feature uses a separate hard drive to save all defective images and a periodic sampling of good images for up to six (6) months. See "Unrolled Image Save" on page 229.

Show Control Panel Position

Settings | **System Settings** | **Configuration Settings** | **Show Control Panel Position - Left** (or Right).

Switch the position of the control panel.



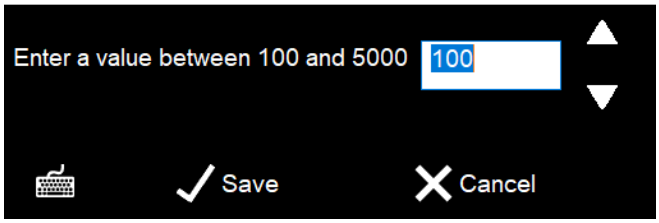
Parts Per Trend Point

Select the frequency of the trend graph updates.

Administrator only

To set: Log in as Administrator. Go to **Settings** | **System Settings** | **Configuration Settings** | **Parts Per Trend Point**.

Press and hold the number to change the value.



Color Delta E Settings

Administrator only

To get to this menu: go to **Settings** | **System Settings** | **Color Delta E Settings**.

1) Delta E Measurement Technique - This toggles between "2000" and "CMC" methods of measuring Delta E for color analysis. Select the technique used in your plant.

2) Enable Simplified Delta E mode - This mode hides Delta H, L, and C from the user interface. See more below.

3) Delta E Limits by Color - This feature is only available when Simplified Delta E mode is enabled. When this feature is turned on or off, the scaling factor for all colors is reset to 1. For more information see "Delta E Limits by Color" below.

Simplified Delta E mode

To enable this mode, see "Color Delta E Settings" on the previous page

When this mode is enabled, any references to Delta L, Delta H, and Delta C are hidden. During inspection, only the Delta E limit is measured.

Screens that show only Delta E will include:

- Color Analysis graphs
- Trend graphs
- Color/ measurement-specific graphs
- Default job settings
- Reports

Delta E Limits by Color

This feature is only available when Simplified Delta E mode is enabled. To enable this mode, see "Color Delta E Settings" on the previous page

This is used for reducing the sensitivity for certain colors, while still maintaining increased sensitivity on critical colors. For example, if your label has a critical color of red that you need to inspect with accuracy, and you are not as picky about "rosy brown," then you can decrease the sensitivity on the rosy brown color.

When this feature is enabled, you can select a scaling factor for each color that is applied to the Delta E value to desensitize it. The default value is 1.0, which means no scaling (no change in sensitivity). A value of 2.0 would double the Delta E limit, thus making the color half as sensitive (the higher the number, the more parts will pass).

When this mode is enabled, you will see the scaling factor for each color below each color block.

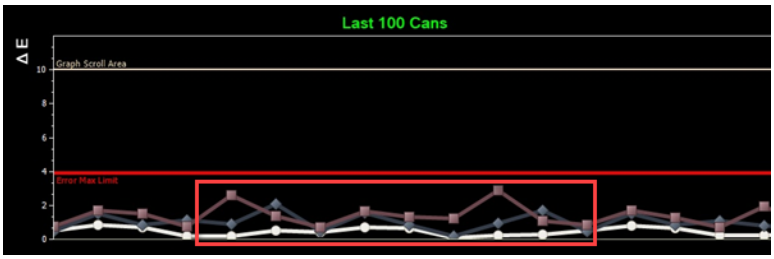
The examples below reflect settings in the Color Analysis screen. To see images and colors, you will need to load images.

Example of Delta E Limits by Color

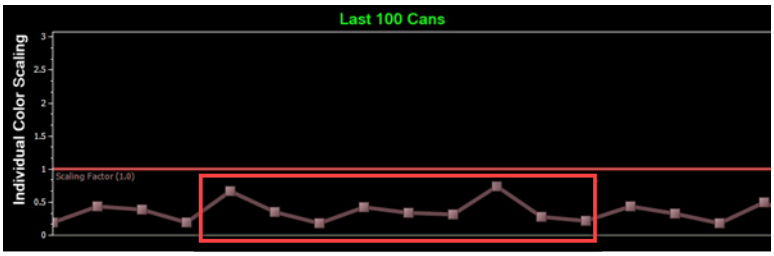
In the Color Analysis screen, the scaling factor is shown below each color.

To change the scaling factor value:

First, select a color (from one of the can color boxes). For example, if you select Rosy Brown (from the color blocks), the color graph will change from this:

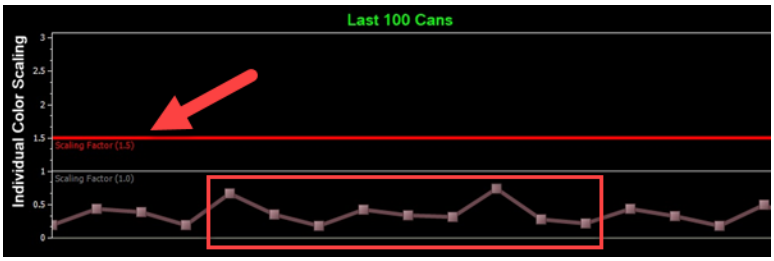


To this:



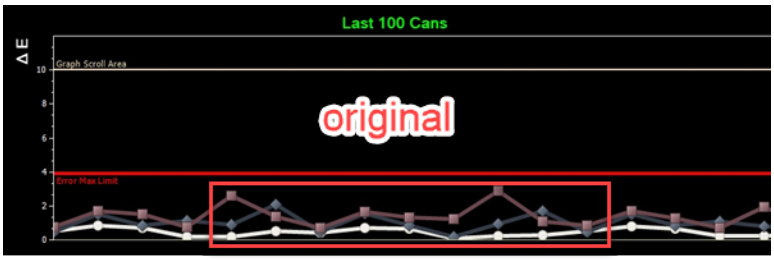
In the above example, notice that the Delta E limit (red horizontal line) is set to 4 in the first graph. In the second graph, both the Delta E limit line (in grey, which you cannot see) and the scaling factor line are set to 1. This indicates that no scaling is in effect. You can drag the red scaling factor line up to a new value. (You cannot move the grey Delta E limit line when in this mode).

When you move the red scaling factor line up to a new value, it would look like this:



In this example, the Delta E value for Rosy Brown is less sensitive than normal.

When you de-select the Rosy Brown color (by clicking on the Rosy Brown color block again), the graph will look like this:



Notice that the Rosy Brown line is flatter than the original, reflecting the scaled (limited) value. Note: the scaled values (of the graphed line) only show on the graph when a color is NOT selected.When a color is selected, the original, unscaled value is reflected in the graph.

In the results window, when a color is not selected, the scaled (limited) values for each color are displayed in the "ΔE" column. When you select a color, the original ΔE values are displayed in the "Unscaled ΔE" column (representing the values in the graph), and the scaled values are displayed in the "Scaled ΔE" column.

Color Not Selected

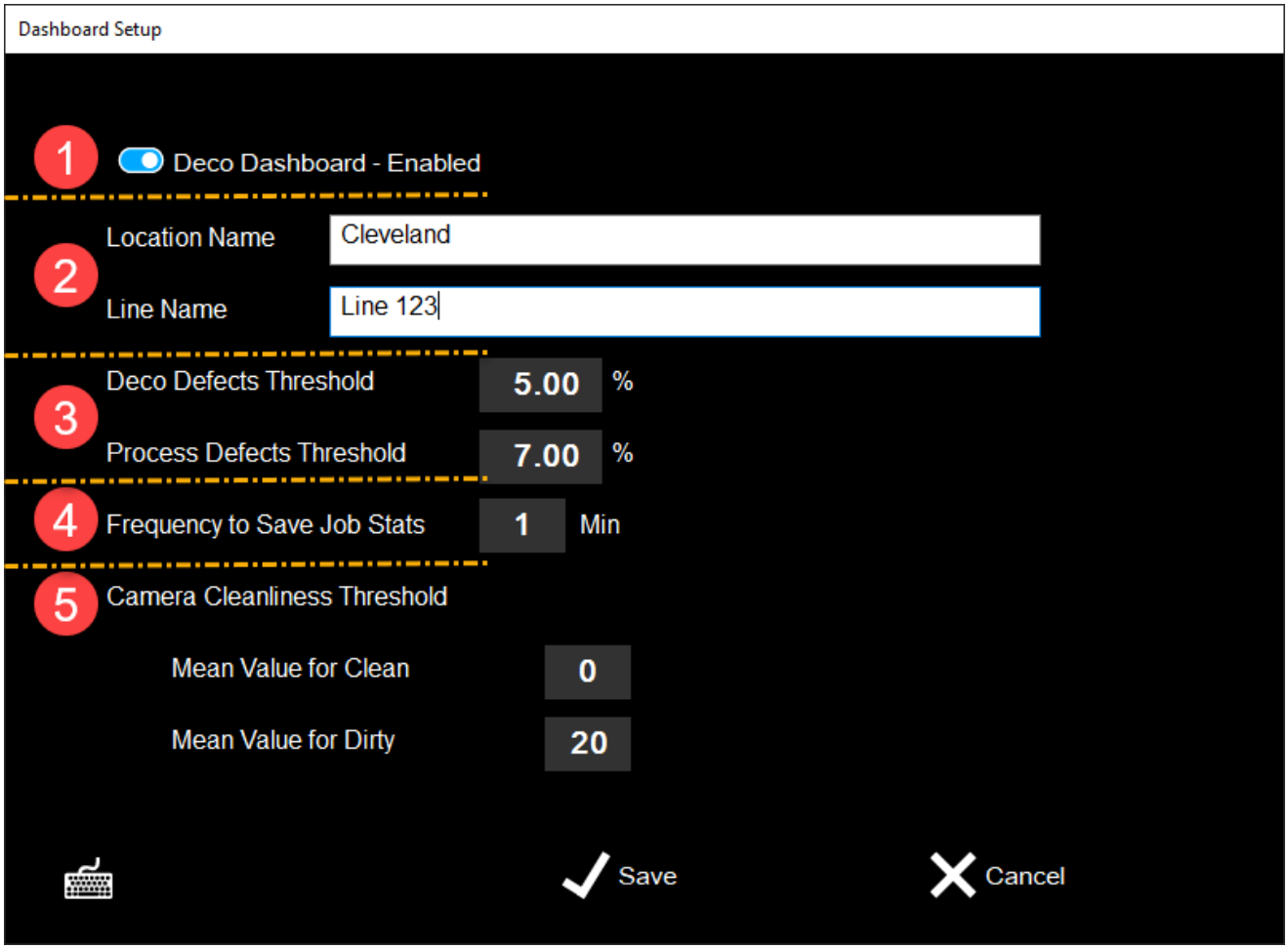
Color Selected

Dashboard Setup

The Deco Dashboard feature is available in software versions 6.2.020, 6.3, 6.4 and higher, built after 22 February 2023.

Administrator only

Settings Open the Dashboard Setup screen by selecting **Settings** | **System Settings** | **Dashboard Setup**. Select the switch for Deco Dashboard - Enabled.

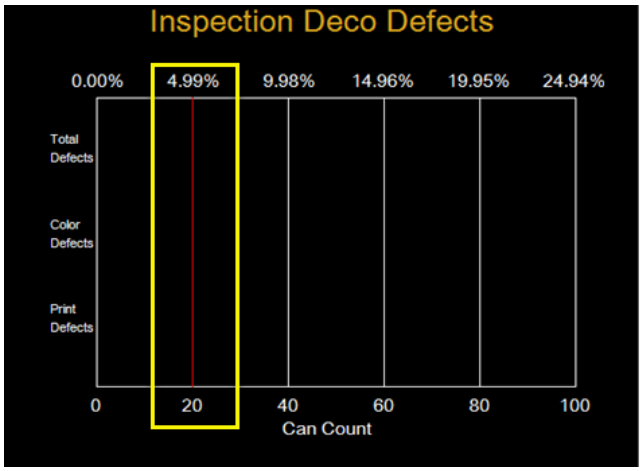


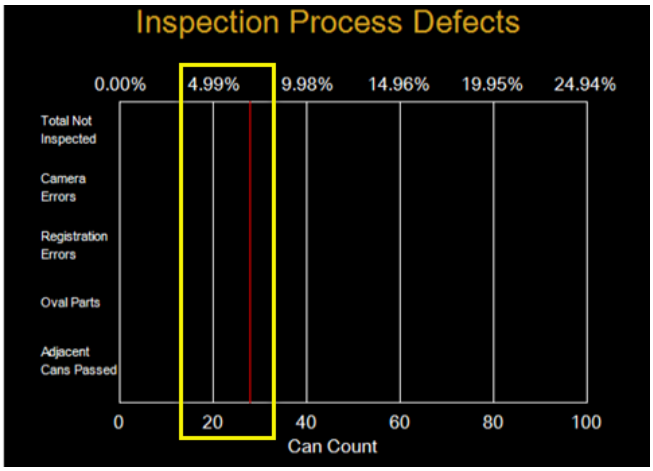
1) **Enable the Dashboard** - Select the “Deco Dashboard” switch so that is says “Enabled” as shown above.

2) **Enter location and line #** - Enter the “Location Name” and “Line Name” text fields. These values are optional and can be any alphanumeric string. These values are displayed at the top of the Dashboard screen.

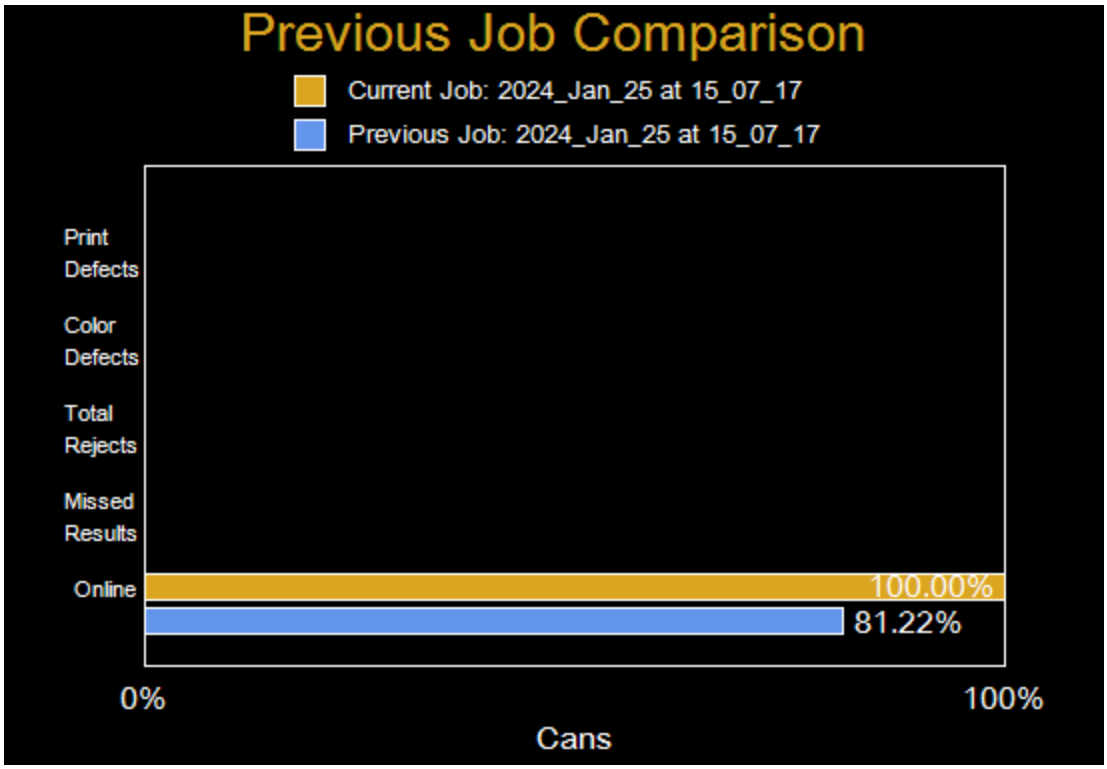
3) **Deco Defects Threshold and Process Defects Threshold** - Press and hold to change the values. The **Inspection Deco Defects** graph and the I**nspection Process Defects** graph on the Dashboard are bar graphs that show the percentages of various types of defects. Both of these graphs can be given a threshold value so that bars below the threshold value will be displayed in

green and bars above the threshold value will be displayed in red. Enter the thresholds for the Deco Defects Graph and the Process Defects graph in the fields provided. These values are represented as a vertical red line on each graph, as shown below.



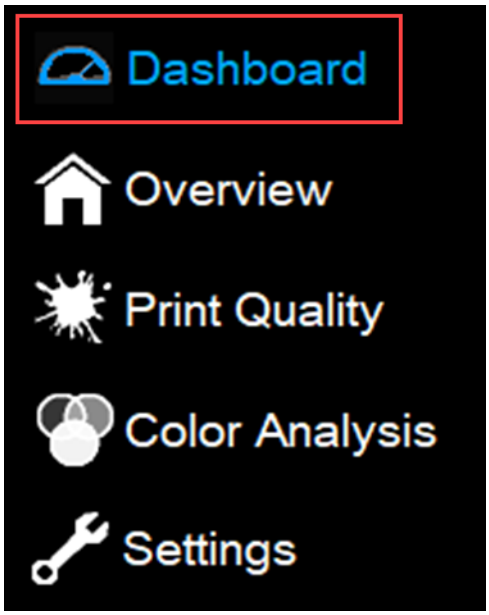


4) **Frequency to Save Job Stats** - Enter the frequency in which job statistics should be saved, in minutes. The default is one minute. This affects the saving of job statistics for the currently running job, which are displayed in the **Previous Job Comparison** graph once that job becomes the previous job. The larger the value for the save frequency, the less frequent the data is saved, and the more likely that data could be missed if the system crashes. The job statistics data is also saved when the system goes offline. If you want to disable saving data, set this value to 0. (Note: if this value is not 0, job statistics will be updated even if the Dashboard is disabled. This is so that job statistics history is present if and when the dashboard becomes enabled.)



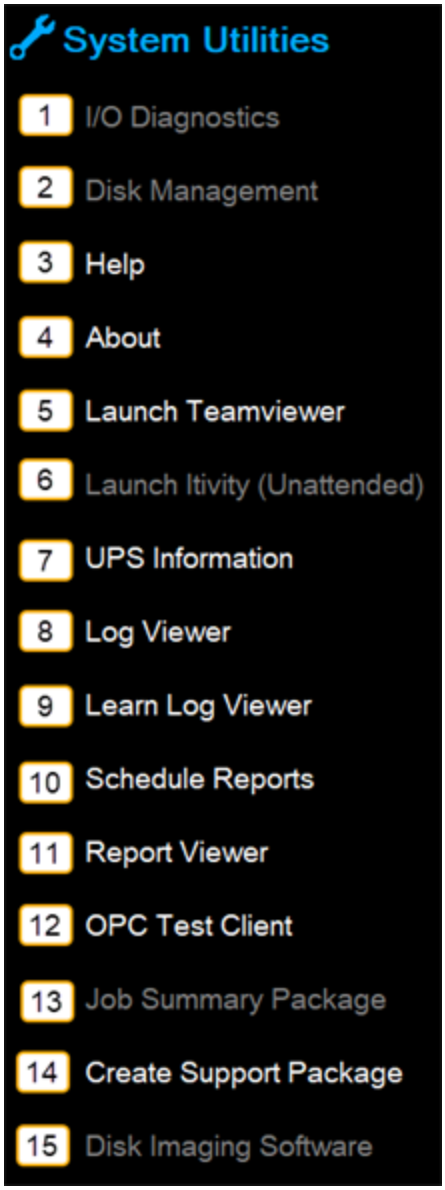
5) **Camera Cleanliness Threshold** - Enter a range for cleanliness of the cameras, from Clean to Dirty, such as 0 to 20. The value the system receives for the camera cleanliness is anywhere from 0-255 (0=clean, 255=dirty). The range you enter is used to calculate the % value displayed on the dashboard. So if the value the system receives is 5, and your range is 0-20, then we will display 75%. If the range is 1-10, then we display 50%. If your lenses are very clean, and the dashboard shows an inadequate percentage, you could change the range to reflect cleaner lenses.

Select **Save** to save changes and exit. A Dashboard icon is added to the control panel. Select that icon to open the Dashboard on the main screen.



System Utilities

Settings | System Utilities.

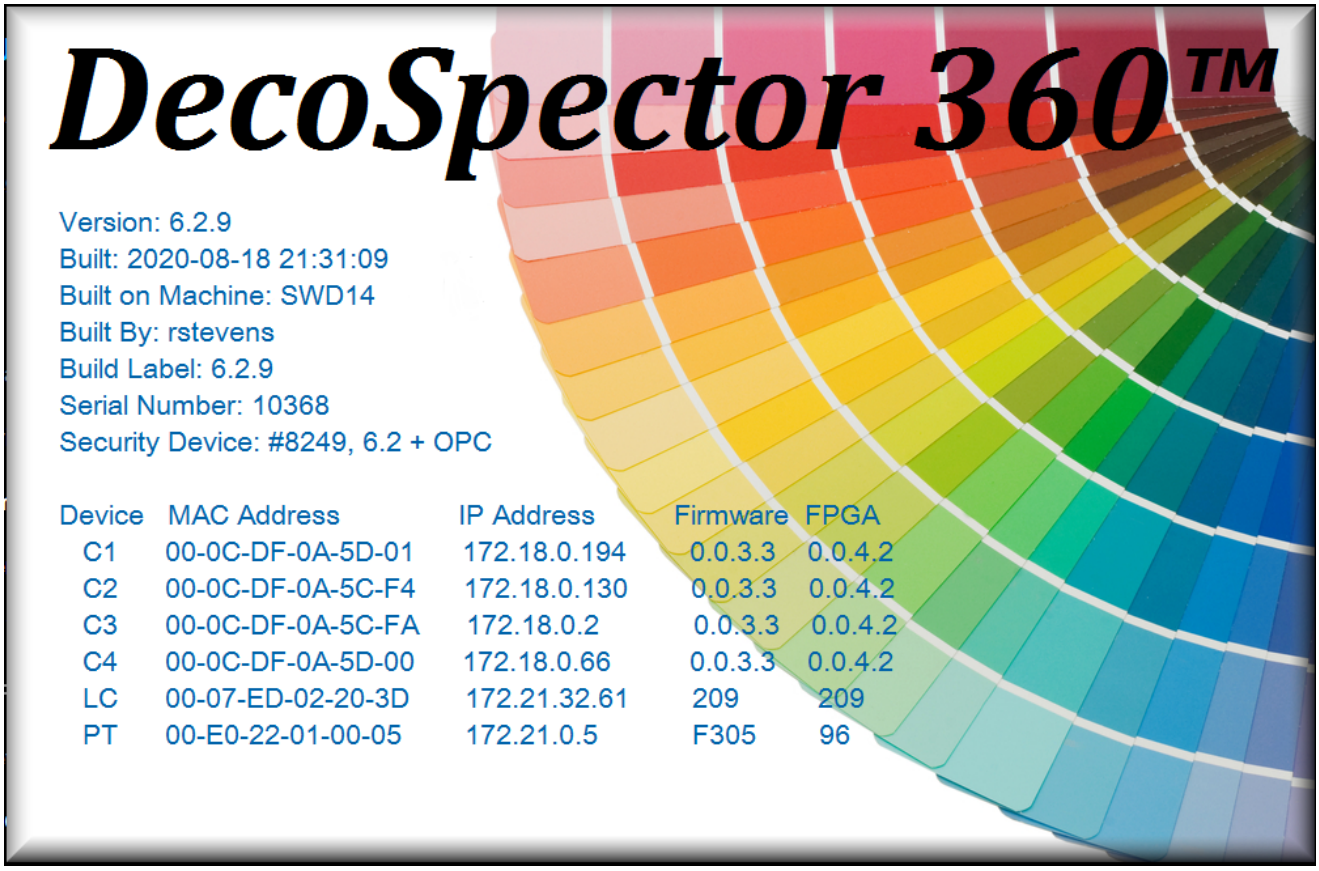


1) "I-O Diagnostics" on page 148

2) Disk Management - *Pressco Technician access only*

3) "Help" on page 36

4) **About** - View the software and firmware versions. This information may be required if you request Technical Support assistance.



5) Launch "Teamviewer" on page 149

6) Launch "iTivity" on page 150

7) **UPS Information** - View remaining battery life and other information about the UPS backup device.

8) "Log Viewer" on page 151

9) "Learn Log Viewer" on page 57

10) "Schedule Reports" on page 180

11) "Report Viewer" on page 187

12) DecoSpector OPC Test Client (optional feature)

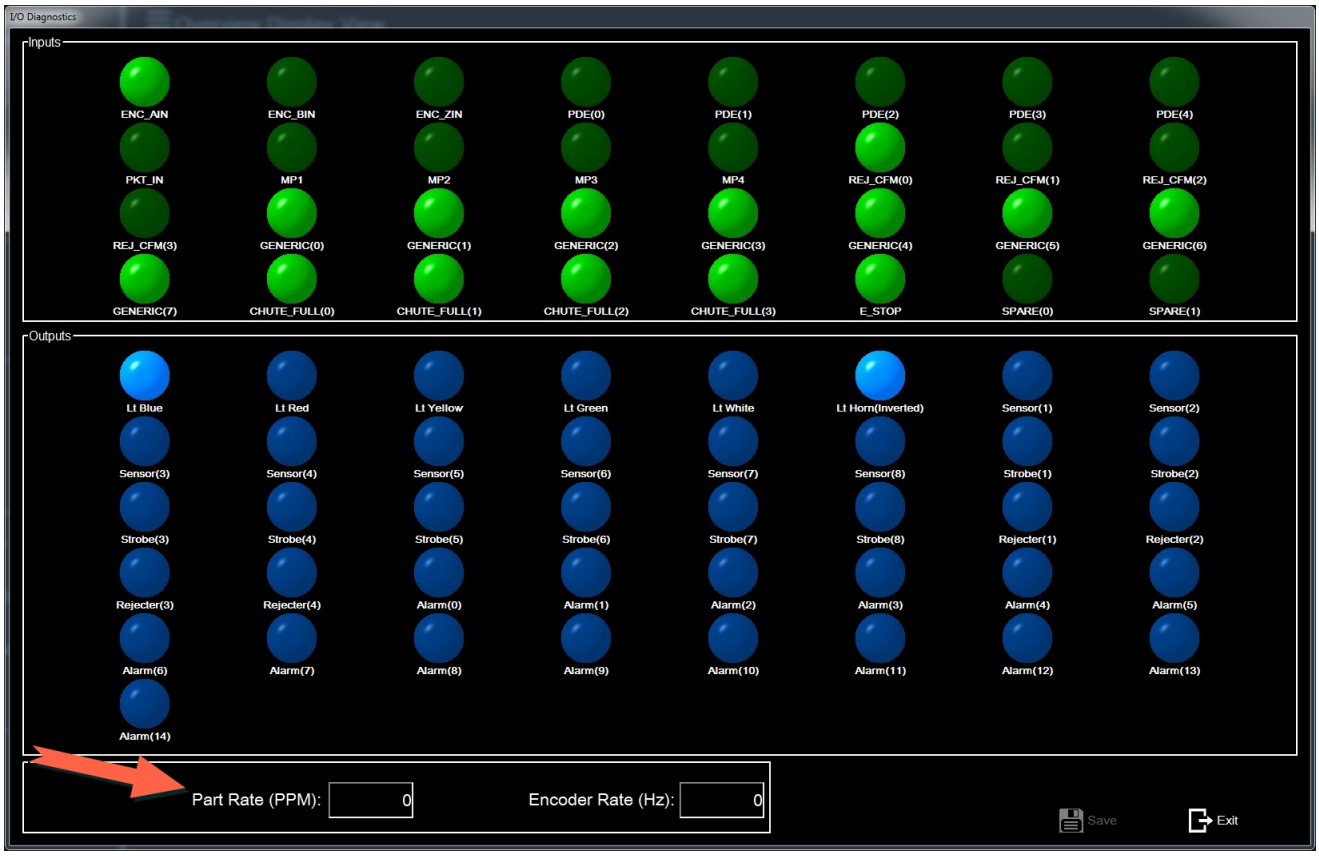
13) Job Summary Package - *Pressco Technician access only*

14) "Create Support Package" on page 152

15) **Disk Imaging Software:** - Use the software to back up and restore the DecoSpector system files and your data. Reference: " Create an Acronis Backup" on page 236

I-O Diagnostics

Settings | **System Utilities** | **I/O Diagnostics** - View the I/O port activity. You must be logged in as an Operator or higher, and running actual hardware. You can also view the part rate and encoder rate.

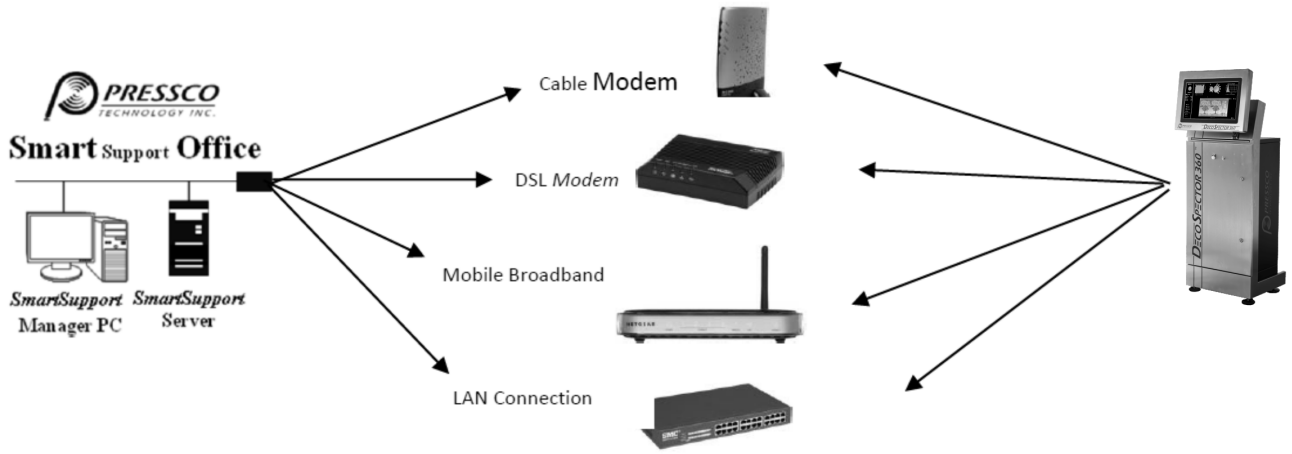


Remote Support

Each DecoSpector 360™ system is equipped with iTivity and Team Viewer agent software that provide a safe and effective means of allowing remote support connections to the system. These allow Pressco engineers to access your DecoSpector 360™ system remotely, and assist with troubleshooting and optimizing system performance.

To use remote support, you must provide an Ethernet connection to the DecoSpector 360™ and outgoing Internet access to the specific support server, described in the "iTivity" on page 150 and "Teamviewer" on the next page topics.

Connection Methods: The remote support connection can operate over a variety of networks. However, these are image and video based systems so the higher the bandwidth available the better we will be able to navigate through the system and assist with any issues you encounter.



Teamviewer

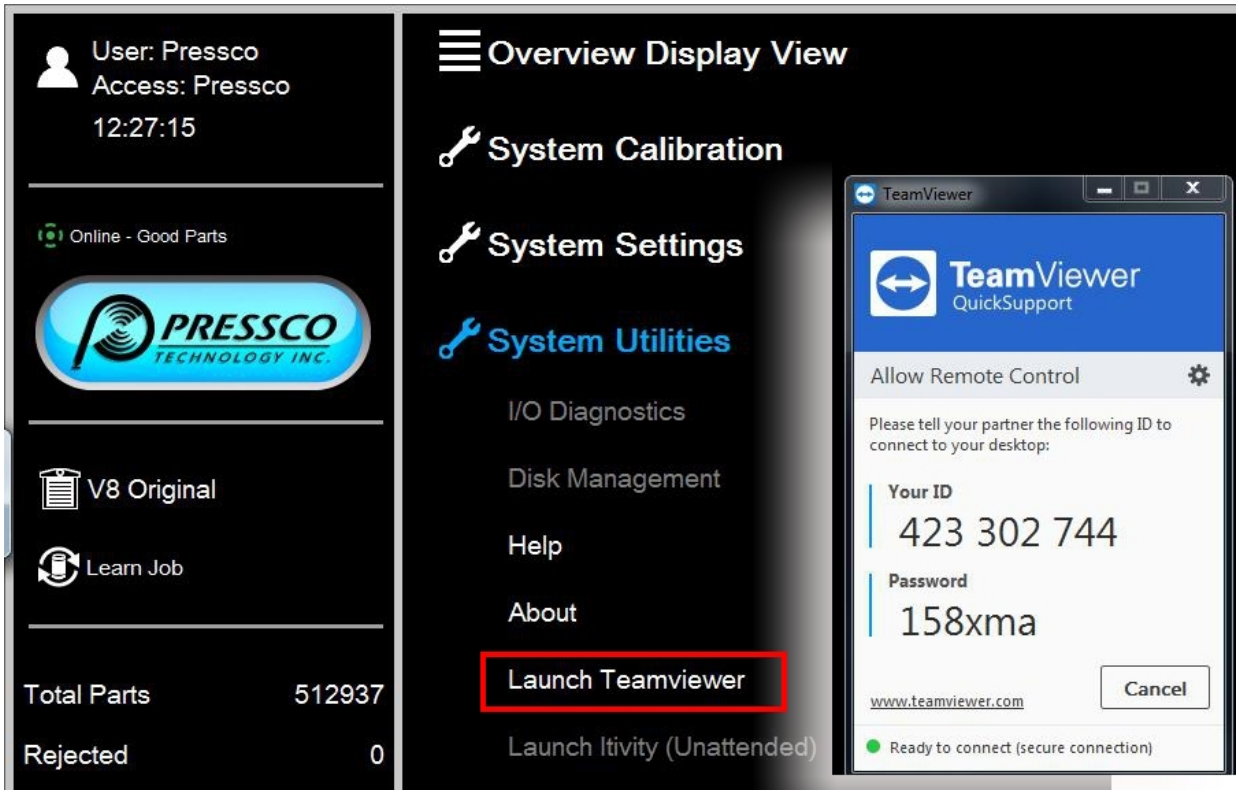
Each DecoSpector 360™ system is equipped with Team Viewer agent software.

Team Viewer is installed at the Pressco factory on the DecoSpector 360™ system, in systems with version 6.2 software and higher.

To use the Team Viewer connection method, the DecoSpector 360™ will need outgoing Internet access to TeamViewer.com via port 5938. Firewall rules may need to be set to allow outbound traffic over port 5938.

To initiate a Pressco support session:

1. Launch Team Viewer: go to **Settings** | **System Utilities** | **Launch Teamviewer**. When the connection is established you will see a dialog box with an ID number and password. Those are the logon credentials needed for others to gain access to that computer.



2. Contact Pressco support, via email, support chat, text message, or by phone call. See below.
3. Notify Pressco with the TeamViewer ID and Password. Pressco will log into your Deco system, and perform troubleshooting or maintenance as necessary.

Request technical support and remote support: techsupport@pressco.com

24/ 7 Customer Support (for urgent system help): +1-440-498-2000

iTivity

Each DecoSpector 360™ system is equipped with iTivity agent software that, when initiated, will establish an encrypted connection to a server located behind the Pressco firewall. This allows Pressco engineers to access your DecoSpector 360™ system remotely. Only registered members of the Pressco support team can gain access to the remote support server.

To use remote support, you must provide an Ethernet connection to the DecoSpector 360™ and outgoing Internet access to support.pressco.com via port 23800. If you do not have a DNS, Pressco can provide you with the IP address of the remote support server. If connecting through a firewall you will need to add a rule allowing outgoing access from the DecoSpector's IP address to support.pressco.com:23800. All other connections can remain blocked.

Once the session is established, the DecoSpector 360™ shows up on our server and is identified by the serial number of the system. Our Engineers can then connect and offer assistance.

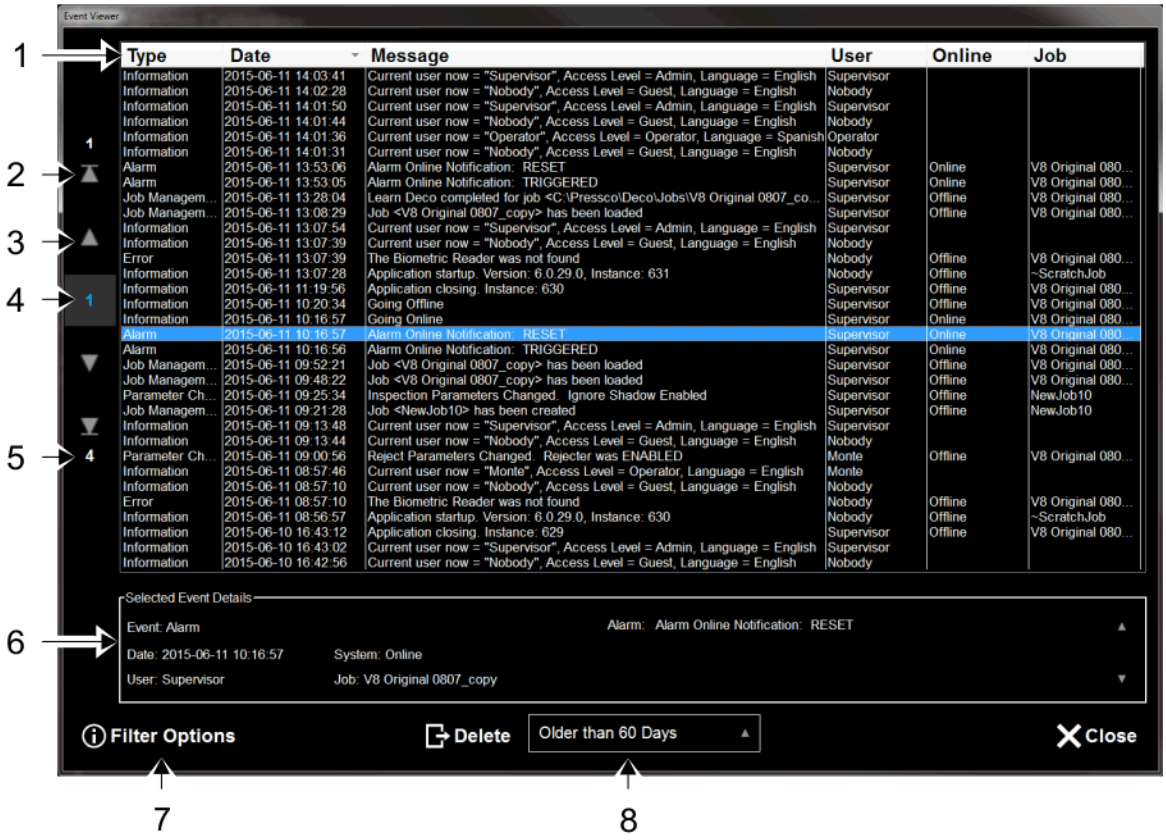
To request a Pressco support session:

Contact Pressco support. Provide the serial number of the system that needs to be accessed. Pressco will log into your Deco system and perform troubleshooting as necessary.

Log Viewer

Settings **Settings** | **System Utilities** | **Log Viewer**.

View the system logs, including inspection changes, alarms, and errors.



1) Sort any column by selecting the column heading

2) Go to beginning of the log file

3) Page up

4) The current page of the log file. Press and hold the number to enter any valid page to navigate to.

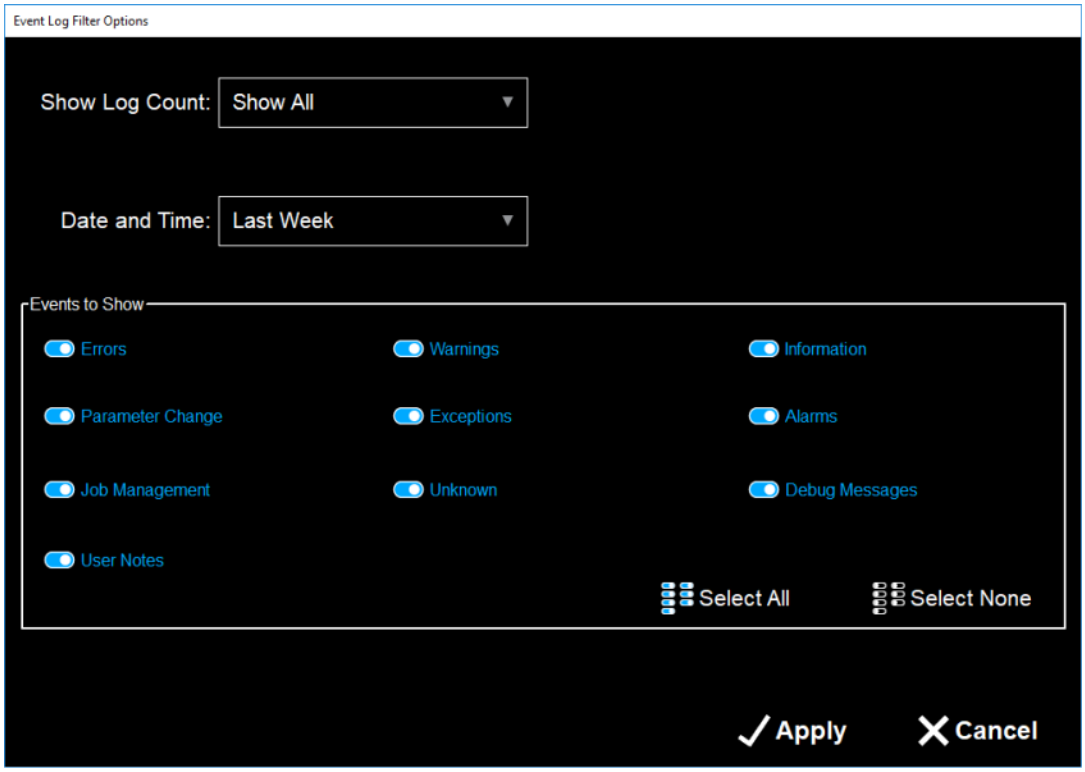
5) Total number of pages in the log file

6) Detailed information about the selected line (if selected). Use the up/ down arrows on the right side of the box to scroll up/ down one line in the log file.

7) View your chosen criteria. Filter options are shown below.

8) Delete old log entries (Administrator only). Select the desired criteria, then select the Delete button next to the drop-down box.

The available log filters are shown below. Enable the desired filters.



Create Support Package

A support package is a set of files gathered by the system to help find system problems. You will send this package to Pressco service specialists so that they can troubleshoot your system.

What you need:

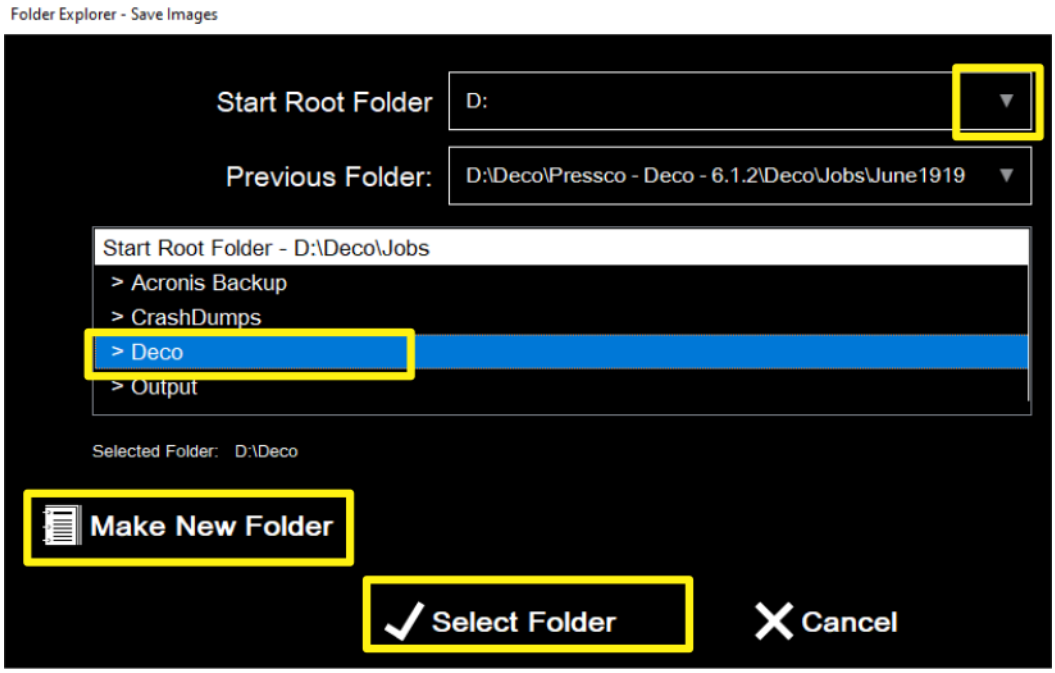
- Mechanical keyboard to enter a file name (only if you want to enter a custom file name)
- USB flash drive (128MB or larger)

To set up for the support package procedure:

- (if using) Connect the mechanical keyboard to a USB port on the side of the monitor
- Connect the USB drive to the other USB port (see USB Ports)

To create the support package:

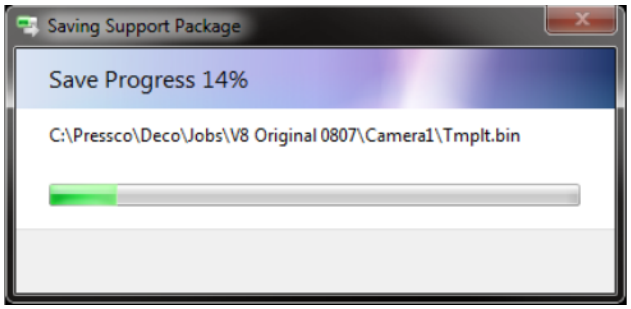
1. Make sure the system is offline.
2. Settings **Settings** | **System Utilities** | **Create Support Package**. A Folder Explorer will open, allowing you to select a location. If you are saving to the USB drive, then select that drive from the Start Root Folder.



3. Browse to the desired folder, or make a new folder if desired.

   > *Tip: make a note of the Selected Folder. This is where the file is saved*

4. **Select Folder**. The DecoSpector system will create a support package zipped file. [name example: SYSTEM-NAME_year_month_day_time.zip] The status window will be removed from the screen when the process is complete.



5. Remove the USB flash drive.
6. Remove the mechanical keyboard.
7. Send the support package files to Pressco.

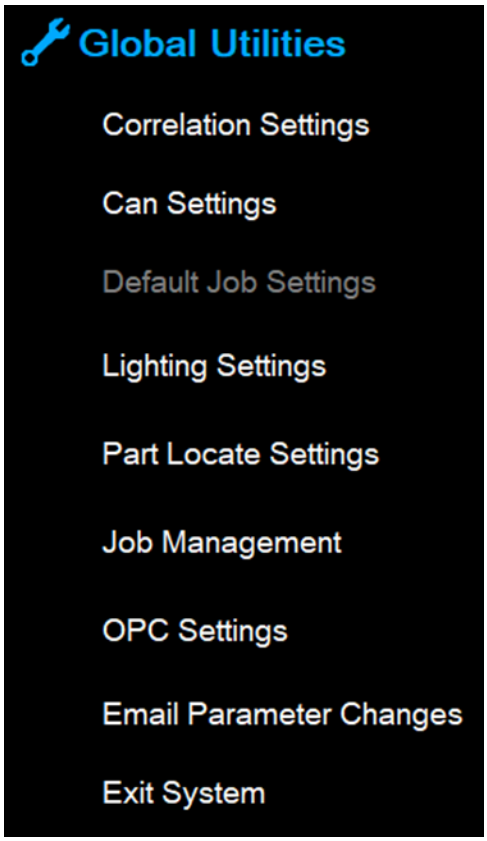
To send the files to Pressco:

1. Attach the USB drive to your computer.
2. Send an e-mail to techsupport@pressco.com and attach the support package files. Pressco service/ tech support will respond within one business day, if possible.

Global Utilities

Administrator only

These settings apply to the entire system. **Settings** | **Global Utilities**.



"Correlation Settings" on page 122

"Can Settings" on page 62

Default Job Settings - *Pressco Technician access only*. Note: when Simplified Delta E mode is enabled, then the fields that relate to Delta L, H, and C are grayed out.

"Lighting Settings" on page 80

"Part Locate Settings" on page 68

"Job Management" on page 40

"OPC Settings" on page 212 (optional feature)

"Email Parameter Changes" below

"Exit the Software" on page 36

Email Parameter Changes

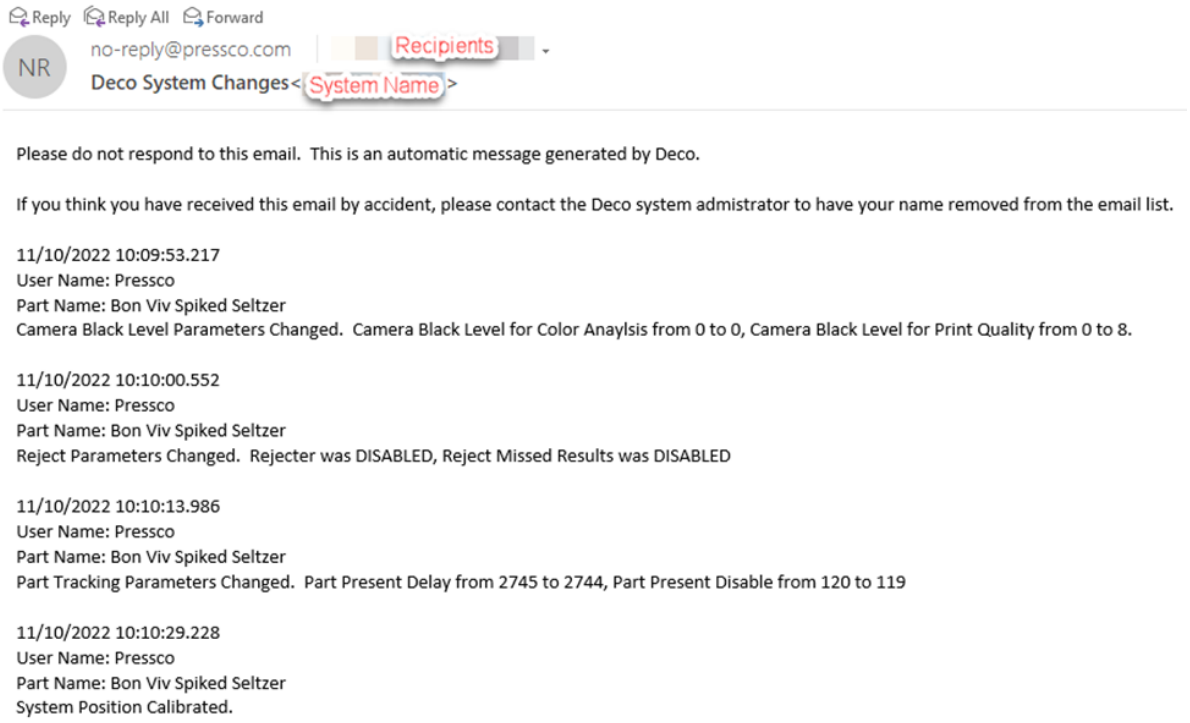
The “Email Parameter Changes” utility collects information about various parameter changes. This information will be periodically sent to pre-determined individuals via email.

A queue is filled if someone makes changes to inspection parameters. Once an email is sent, that queue is cleared.

If this feature is enabled, the recipients in the email list will receive an email - **only if the queue is not empty** - when:

- The time interval has reached its limit, and every time interval after that
- Someone disables the process
- Someone changes the time interval in the dialog
- The system shuts down normally - not from a crash

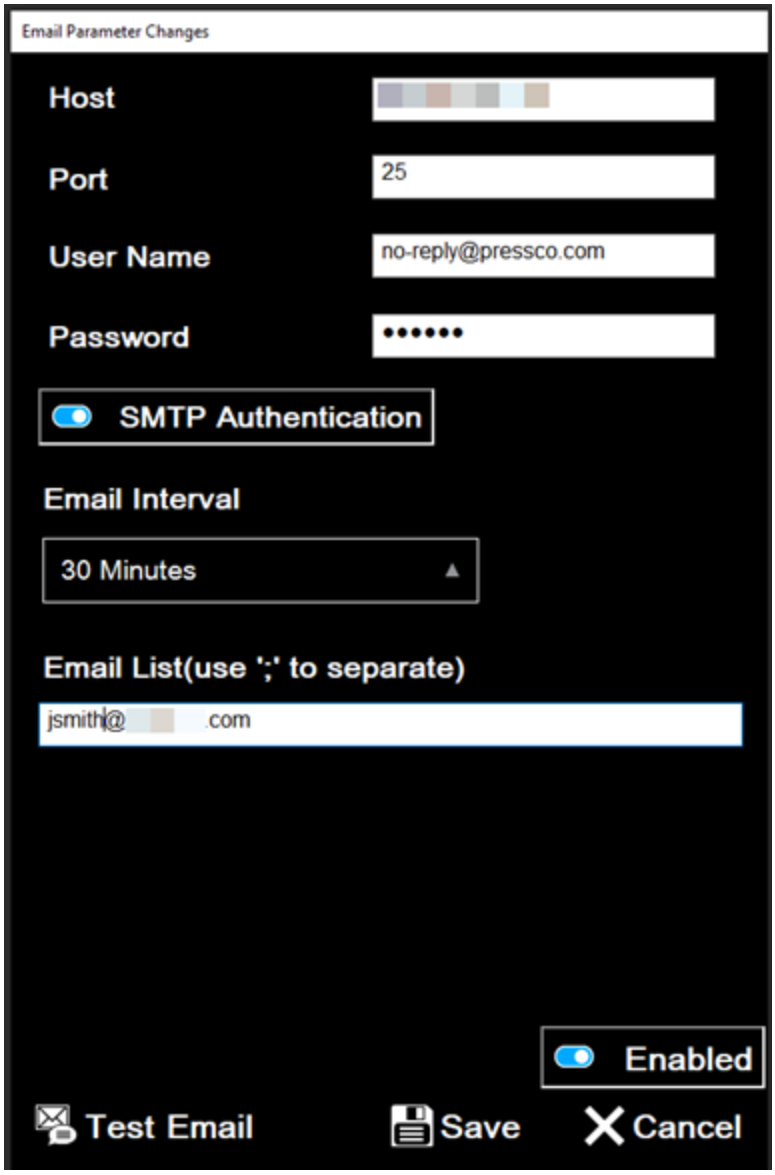
Example:



What you need:

- **To make changes:** Administrator-level user privileges
- **To view settings and send a test email:** Operator-level access

Settings To get to this menu, from **Settings** | **Global Utilities** | **Email Parameter Changes**.



Host - The domain name of the SMTP server. Do not include "http://" in the domain name. This property may also be set to an IP address string, such as "168.144.70.227." Both IPv4 and IPv6 address formats are supported.

Port - The port number of the SMTP server used to send email. Only needs to be set if the SMTP server is running on a non-standard port. The default value is 25.

User Name - The login for logging into the SMTP server. Use this only if your SMTP server requires authentication.

Password - The password for logging into the SMTP server. Use this only if your SMTP server requires authentication.

SMTP checkbox - This enables and disables SMTP Authentication. If disabled, the system will by default choose the most secure login method available.

Time Interval - This selects the time interval for emails to be sent to the selected individuals. If this value is changed, any collected information will automatically be sent out.

Email List - The list of relevant individuals receiving “System change data” via email. Add a semi-colon (;) to separate email addresses.

Enable checkbox - This will allow the email process to start. The process will start when the “Email Parameter Changes” window closes, and the timer starts when the window closes.

Test Email - Operator-level users or higher may send a test email.

Chapter 10 Rejector

Administrator only

- Tap the rejector icon to change settings.

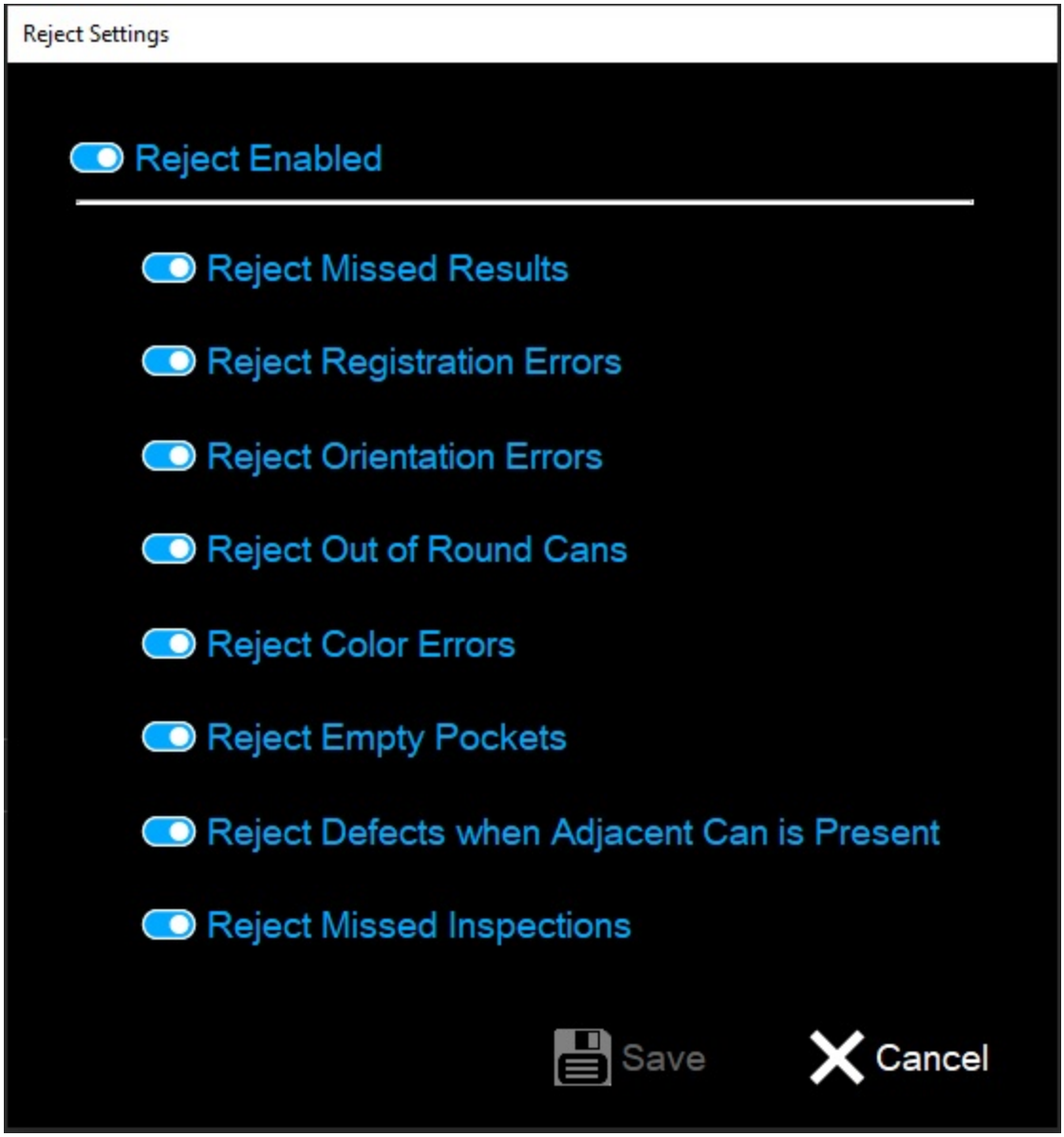
- This icon indicates that the rejector is disabled.

Reject Settings

Administrator only

To access these settings:

- - select the rejector button, or
- **Settings** | **System Calibration** | **Reject Settings**.



> *Tip: you can set an alarm feature to Turn the Rejector Off if too many parts are rejected, or some other alarm condition. In Alarms, make sure "Perform Special Action" is enabled for the alarm | and enable "Turn Rejector Off" under Perform Special Action.*
> *Note: Pressco recommends that you enable both Reject Registration Errors and Reject Orientation Errors. These errors are usually found together on deformed cans.*

Reject Missed Results - A Missed Result occurs if the system misses the inspection results of a part. This can happen if the inspection time is too long or if the system is too busy to process all the data before the part reaches the reject station.

Reject Registration Errors - A registration error occurs when the system does not find the top or side edges of a part. If the job is set up properly, this does not happen often.

Reject Orientation Errors - An orientation error occurs when the part is tilted too much. This is also the reason for failure if the system detects a 'tramp can' or wrong label. This check is done automatically by the system.

Reject Out of Round Cans - Reject cans that the system determines to be out of round (the rim of the part appears to be an oval instead of a circle).

Reject Color Errors - Color Errors occur when the part fails the tests for Color Zones. Color Zones are optional and are based on your plant specifications.

Reject Empty Pockets - The system tests to see if a part is present before proceeding with inspection. If a part is not present, then this is called an Empty Pocket. For accurate production numbers, we need to locate empty pockets. No inspection takes place (for the current part) if the system finds an empty pocket. Empty pockets are found when the system does not locate any feature edges during part location. This can happen if the part is too short, too dark, or there is another severe defect that causes the system not to find the part.

Reject Defects when Adjacent Can is Present - An adjacent can error occurs when the system sees another can (in addition to the can being inspected) in the field of view. The adjacent can may cause shadows or reflections on the part being inspected.

Adjacent Cans:

Adjacent can detection is impacted by three things:

• Adjacent cans in the Field of View – this is a true material handling issue that cannot be corrected by software, but detected

• The diffuser is getting dirty – "Clean the Tunnel Windows" on page 202

• Bad adjacent can settings – "Part Locate Settings" on page 68

Reject Missed Inspections - The system rejects cans that the DecoSpector could not inspect because of timing or other issues. This ensures that an uninspected part does not get into your production line. (Available in software versions 6.2.22 and 6.4.48 and higher).

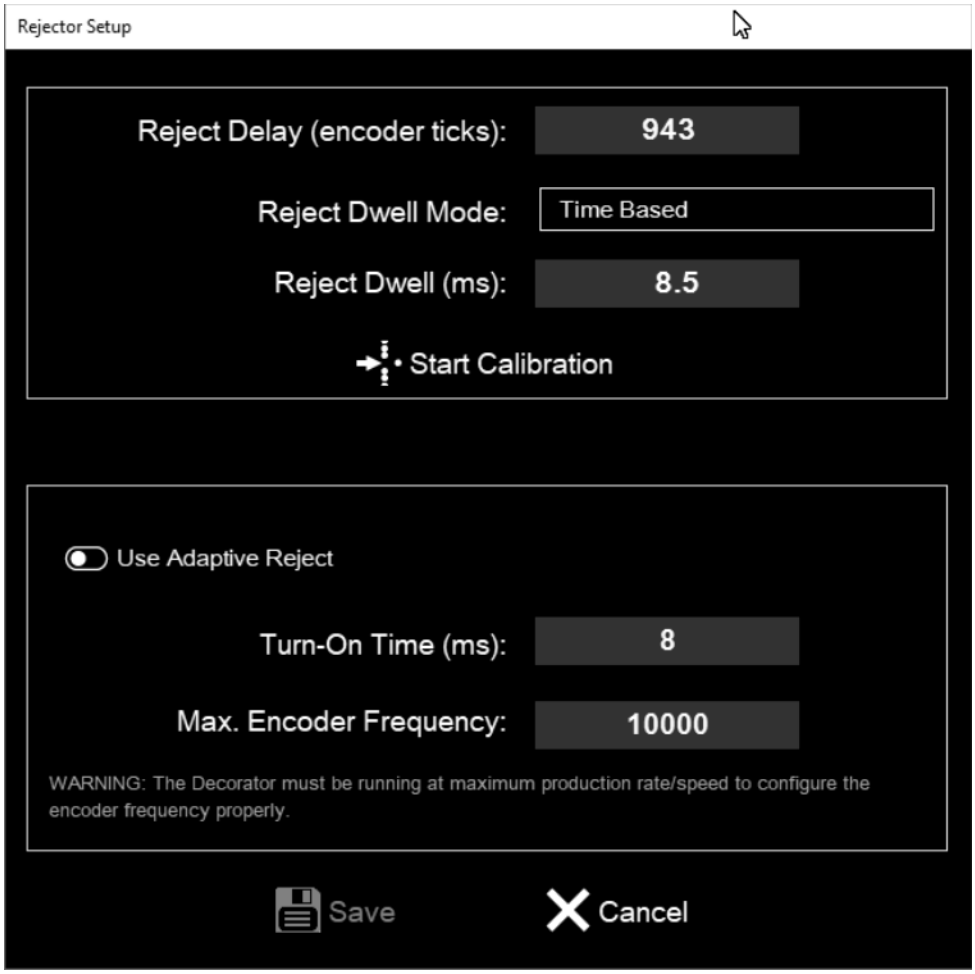
Reject Delay

Administrator only

Reject Delay is the distance (in encoder ticks) from the part detect sensor to the rejector. This signal ensures that the correct part is rejected.

During Reject Delay calibration, the reject device will activate for each part that flows through the system. Ensure that the rejector is activated properly and that each part is rejected properly. After calibration, ensure that adjacent parts are not being rejected (example, from too long a reject dwell time), nor being knocked off by the rejected part.

To change a value, press and hold a number and use the keyboard icon from the pop-up menu.



To calibrate the Reject Delay:

Settings **Settings** | **System Calibration** | **Reject Delay**.

1. Stop production with the conveyor still running.
2. Select **Start Calibration**. (this button toggles with Stop Calibration)
3. Place a part on the running conveyor or into the part stream. After the number of encoder ticks shown in the Reject Delay box, the rejector will be activated.
4. Make sure the correct part was rejected.
5. Continue to insert parts into the part stream.
6. Manually adjust the **Reject Delay** (encoder ticks) until the correct part is rejected every time.
7. Adjust the **Reject Dwell** so that it is long enough to completely reject the part, and short enough that only one part is rejected for each reject pulse.
8. When you are sure that the correct parts are being rejected, select **Stop Calibration**.
9. **Save** changes and exit. The reject values are saved and stored with the job for the part.

Related topic: "Adaptive Reject" on the next page

Adaptive Reject

Adaptive Reject compensates for the reject device's turn-on time delay with varying speeds of machine operation. An example where this is used is on a Belvac machine. The turn-on time of the reject device might be over one-half of a can width at high machine speeds. The Adaptive Reject will delay the activation of the reject device as a function of encoder speed. As the belt (or production line) slows down, more delay is added.

Adaptive Reject allows for different speeds without having to recalibrate between part types.

For best results when using Adaptive Reject:

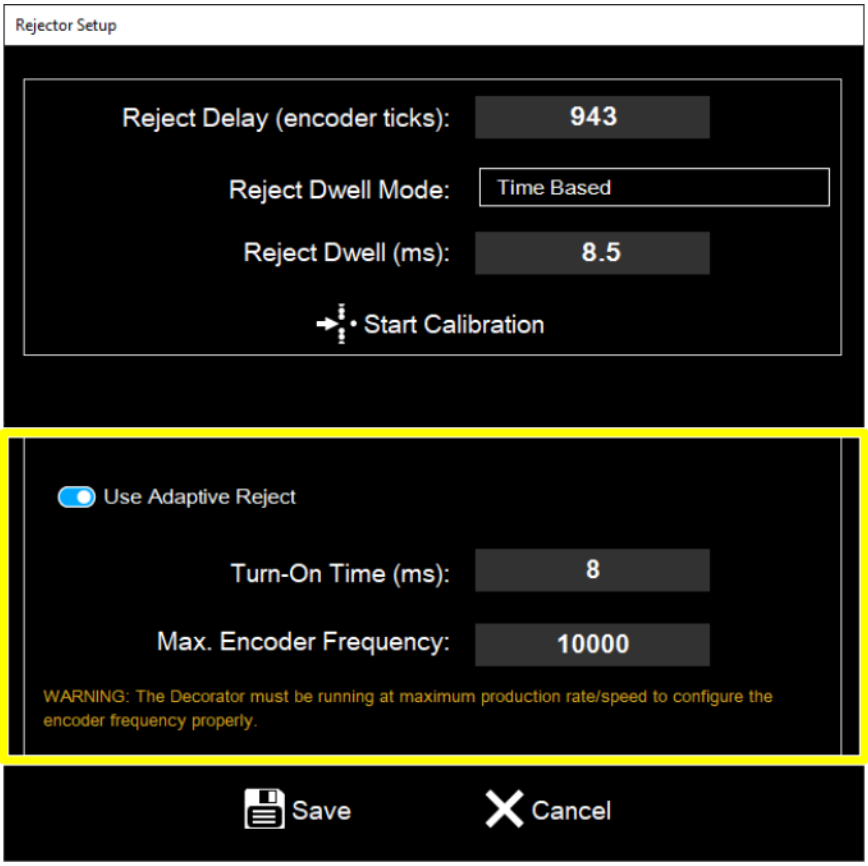
- Calibrate the Reject Delay and Reject Dwell at the fastest possible conveyor or production line speed prior to enabling the Adaptive Reject function
- Calibrate the Reject Delay when the conveyor or production line is running at a constant speed -- not during a startup or stopping

> *Note: Adaptive Reject will not function properly if the reject device delay is greater than the spacing between parts.*

To calibrate Adaptive Reject:

1. Run the conveyor at maximum speed for about 35-40 seconds. This programs the adaptive reject logic for maximum product speed.
2. Go to the I/O Diagnostics screen and record the encoder rate while the line is running at max speed. (**Settings** | **System Utilities** | **I/O Diagnostics**). For more information, see "I-O Diagnostics" on page 148.
3.

Go to the Reject Delay Calibration menu: **Settings** | **System Calibration** | **Reject Delay**.
4. Enable: **Use Adaptive Reject**.
5. Set the **Max Encoder Frequency** to the value you recorded in step 2.
6. Set the reject device **Turn On Time** (usually about 10 ms for air rejectors and about 15 ms for the pusher rejector).
7. Select **Save** to save changes and exit the menu.



Turn on Time

Latency of the rejector mechanism in milliseconds.

Max Encoder Frequency

Maximum encoder frequency of the starwheel or conveyor. Notes:

- Reject Delay should be calibrated with the system running at the maximum encoder frequency.
- A positional error will occur if the encoder frequency exceeds the maximum encoder frequency.
- Max Encoder Frequency is shared by all rejectors

Reference table

The table below shows the computed value of the delay based on encoder speed and how the resultant delay (in encoder ticks) is the same regardless of speed.

Max Encoder Frequency (Hz)	Encoder Frequency (Hz.)	Computed Delay (encoder ticks) (A)	Reject device turn-on delay (encoder ticks) (B)	Total movement (encoder ticks) (A + B)
10000	500	95	5	100
10000	1000	90	10	100
10000	2000	80	20	100
10000	3000	70	30	100
10000	4000	60	40	100
10000	5000	50	50	100
10000	6000	40	60	100
10000	7000	30	70	100
10000	8000	20	80	100
10000	9000	10	90	100
10000	10000	0	100	100

- Computed Delay (Encoder Ticks) (A) = [Max Enc Freq (Hz) – Enc Freq (Hz)] * Reject Turn-on Delay (msec) / 1000
- Rejecter Latency (Encoder Ticks) (B) = Enc Freq (Hz) * Reject Turn-on Delay (msec) / 1000
- Total Movement = A+B

Reject Confirm Calibration

Reject Confirm can detect missed rejects. It is used with the Missed Reject Alarm. There are two types of Reject Confirm sensors (Encoder based and Time based), and calibration is different for each. The type used in your process depends on your plant's needs.

Settings **Settings | System Calibration | Reject Confirm Calibration**.

> *Note: Reject Confirm is an optional feature, and an additional sensor must be installed at your site.*

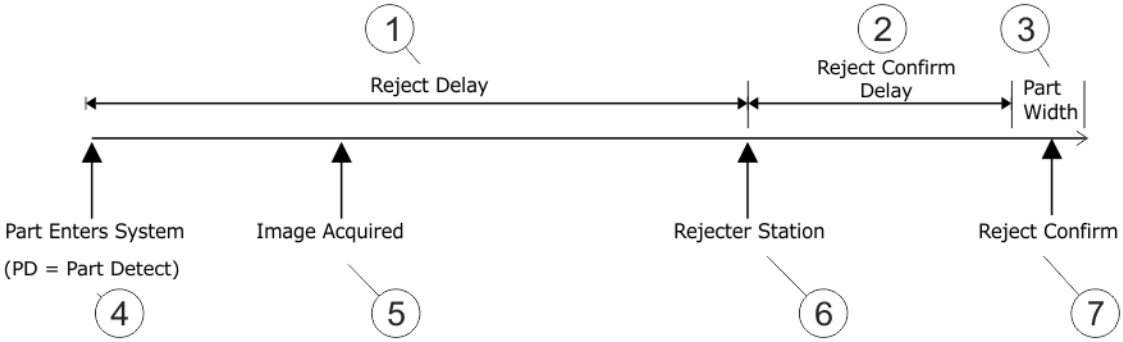
A. Encoder-based sensor

Reject Confirm uses a part detect sensor positioned past the normal reject mechanism to determine whether the defective part was rejected. Reject Confirm Delay must be a value of 1024 or less. This calibration method uses encoder ticks because the measurement is made along the same path as the parts.

After the rejector fires (meaning the reject delay for a part has passed), the Reject Confirm Delay starts. Once the Reject Confirm Delay has passed, the system examines the reject confirm sensor for a period of time equal to the Part Width. If the reject confirm sensor “sees” a part within that

time, it means that the reject was missed. If the reject confirm sensor does not see a part, it means the part was rejected successfully. [Part Width is calibrated through "Part Present Delay" on page 130].

If the reject was missed, the Missed Reject Alarm will be triggered (if enabled). Below is a timing diagram of the Reject Confirm process.



1) Reject Delay

2) Reject Confirm Delay, set by Reject Confirm Calibration

3) Part Width

4) Part Detect (PD) - where the part is first detected by the sensor

5) Image Acquired - image is taken, inspection is performed

6) Rejector Station - standard rejection point

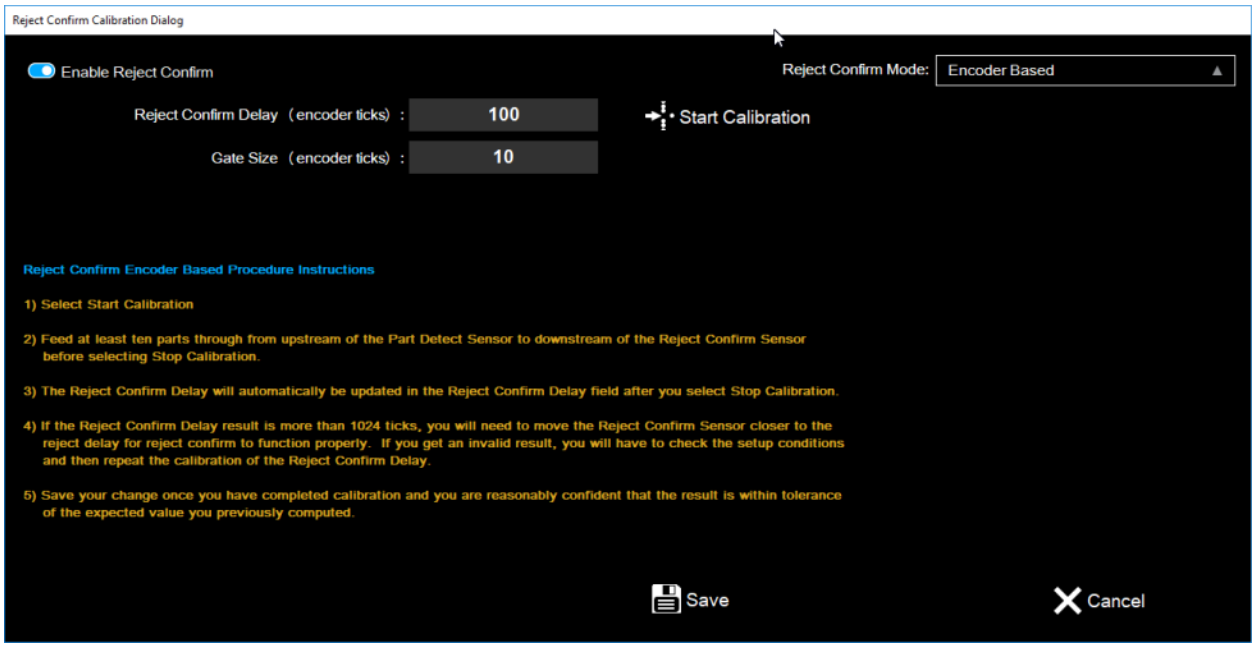
7) Reject Confirm - second part sensor to determine whether a defective part was rejected

Mount the sensor:

Mount the Reject Confirm sensor at “X” distance beyond the rejector where “X” is distance in encoder ticks. For example, if there are 70 encoder ticks per inch, and the sensor is mounted five inches beyond the rejector, the Reject Confirm Delay would be set to 350. When the Reject Confirm sensor sees a part that is not supposed to be there, it triggers the Missed Reject alarm.

Note: The maximum setting for Reject Confirm Delay is 1024. Mount the Reject Confirm sensor within that range of encoder ticks.

Encoder Based Reject Confirm Calibration



To calibrate Reject Confirm using Encoder Based method, follow the steps on screen (which are repeated below):

1. Select **Start Calibration**.
2. Feed at least 10 parts through from upstream of the Part Detect Sensor to downstream of the Reject Confirm Sensor before selecting **Stop Calibration**.
3. The **Reject Confirm Delay** will automatically be updated after you select Stop Calibration.
4. If the Reject Confirm Delay result is more than 1024 ticks, you will need to move the Reject Confirm Sensor closer to the reject delay or reject confirm to function properly. If you get an invalid result, you will have to check the setup conditions and then repeat the calibration of the Reject Confirm Delay.
5. **Save** your changes once you have completed calibration and you are reasonably confident that the result is within tolerance of the expected value you previously computed.

B. Time-based sensor

With this method of Reject Confirm, the part detect sensor is mounted in the path of the rejected products. This calibration method measures the reject confirm delay in milliseconds, because the product is flying through the air and not related to encoder ticks. If the Reject Confirm sensor does NOT see a part, then it triggers the Missed Reject alarm (if the Missed Reject alarm is enabled).

Mount the sensor:

Mount the Reject Confirm sensor so that it can see parts after they are rejected. For example, in the reject chute. If the sensor is closer to the rejector, less gate and dwell time is needed. If the Reject Confirm sensor does NOT see a part, then it triggers the Missed Reject alarm.

To set up Reject Confirm Calibration:

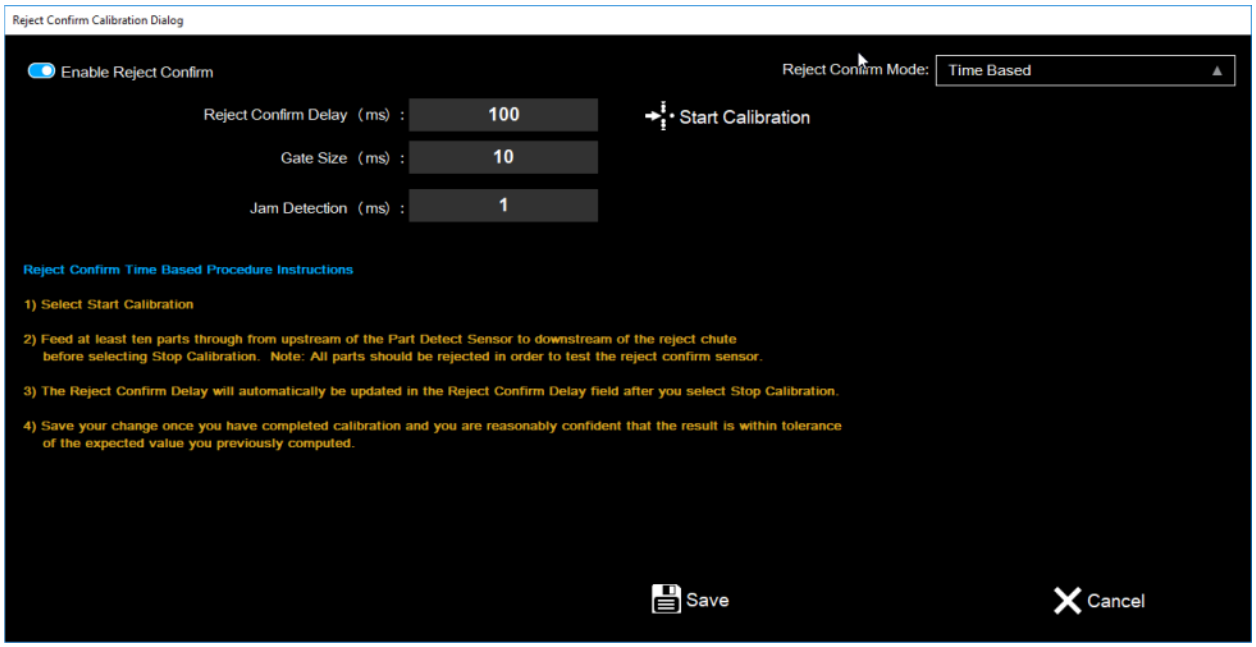
1. Enable the **Missed Reject** alarm. If you are using Time based reject confirm, you may also want to enable the Reject Jam Detected alarm, which is triggered when the reject path has been blocked too long. That is, the reject bin may be blocked or full. See also "Alarm Setup" on page 171.
2. Calibrate the standard reject delay using normal procedures. See also "Reject Delay" on page 160.
3. Calibrate Reject Confirm (below).

The following parameters are used with Reject Confirm:

Gate Size - The time interval (in milliseconds) that the system looks for the product to pass by the reject confirm sensor. The valid range is 1 to 63 milliseconds.

Jam Detection - (Time Based Reject Confirm only) Specifies how long the sensor is blocked before the Reject Jam Detected alarm is triggered. The valid range is 1 to 32000 milliseconds.

Time Based Reject Confirm Calibration



To calibrate Reject Confirm using the Time Based method, follow the steps on screen (which are repeated below);

1. Select **Start Calibration**.
2. Feed at least 10 parts through from upstream of the Part Detect Sensor to downstream of the reject chute before selecting **Stop Calibration**.

   > *Note: all parts should be rejected in order to test the reject confirm sensor.*
3. The **Reject Confirm Delay** will automatically be updated after you select Stop Calibration.
4. **Save** your changes once you have completed calibration and you are reasonably confident that the result is within tolerance of the expected value you previously computed.

Forced Reject

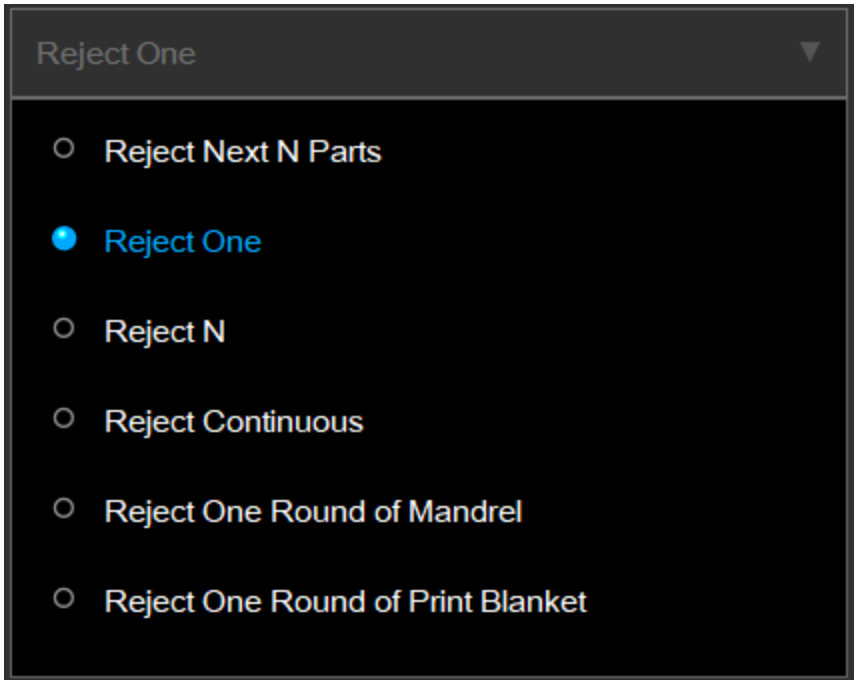
Force any part to be rejected. The system will reject all parts associated with the selected components, regardless of the pass/fail condition of those parts. This provides a means of handling an emergency situation until repairs on machine can be made. If you know there is a serious problem with a particular component, you can use this method to ensure that no part from the defective machine component passes the inspection process.

> *Tip: Forced Reject can be used for everyday quality checks if you would like to inspect dry cans versus wet cans.*
> *Note: the DecoSpector system must be online to reject parts*

To set up Forced Reject:

1. Select **Settings** | **Overview Display View**.
2. Select **Show Forced Reject Controls**. These are displayed on the right side of the home screen.

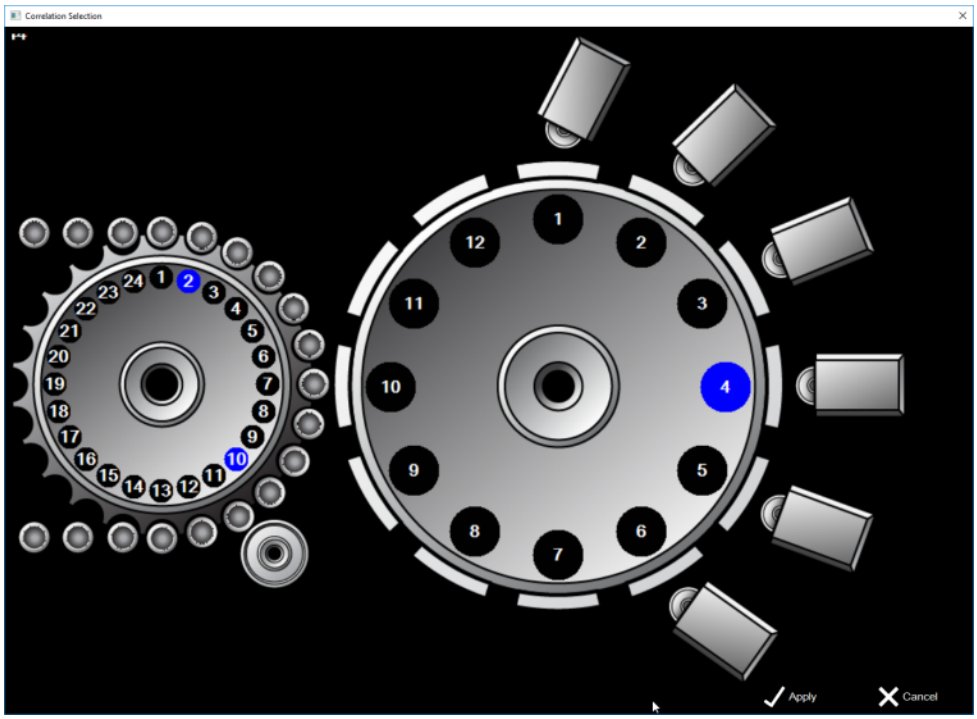
3. To select a different option than what is displayed, select the drop-down menu and make another selection.



4.

Tap the **Select** button to select different machine parts. A graphic with machine parts is displayed. [shown below]
5. Tap each machine part that you want reject correlated parts from. In the example below, mandrels 2 and 10 and print blanket 4 are all selected.

> *Note: even if you select a Forced Reject option such as "Reject One Round of Print Blanket," you can still select other machine parts from the graphic.*



6. Tap **Apply** to save changes and exit. The correlation graphic at the top of the Home (Overview) screen highlights the selected machine parts.

To use Forced Reject:

1. Put the system online to inspect parts.
2. Tap the **Start Forced Reject** button. The system rejects those parts correlated to the selected machine parts and conditions you selected. The border around the part image turns gray when a part is rejected through Forced Reject. A message stating Forced Reject Completed is displayed when all the reject criteria is met.

Notes about Forced Reject:

- To reset the Forced Reject options to the default values, select the **Reset Selected** button. (If the system is still in Forced Reject mode, you may need to cancel Forced Reject before making changes)
- The system uses an OR function to reject parts. That is, if you select mandrel 2 and print blanket 4, the system will reject the first part correlated to either machine part.
- When using **Reject One** or **Reject Continuous**, you must **Select** which correlated machine parts to reject.
- When using **Reject Next N** or **Reject N**, you can change the number of N parts on the screen by pressing and holding the number next to **Reject Count**.
- You can add additional correlated machine parts by tapping the **Select** button and selecting more machine parts.

Chapter 11 Alarms

- Select the alarm icon to clear, configure, or view alarms.

Each alarm is user-configurable to: enable the alarm, turn on the light tree, sound the horn, turn the rejector off, and many other options.

Some alarms, including Inspection speed too slow, General failure, and System power loss cannot be disabled, because they are necessary for system operation.

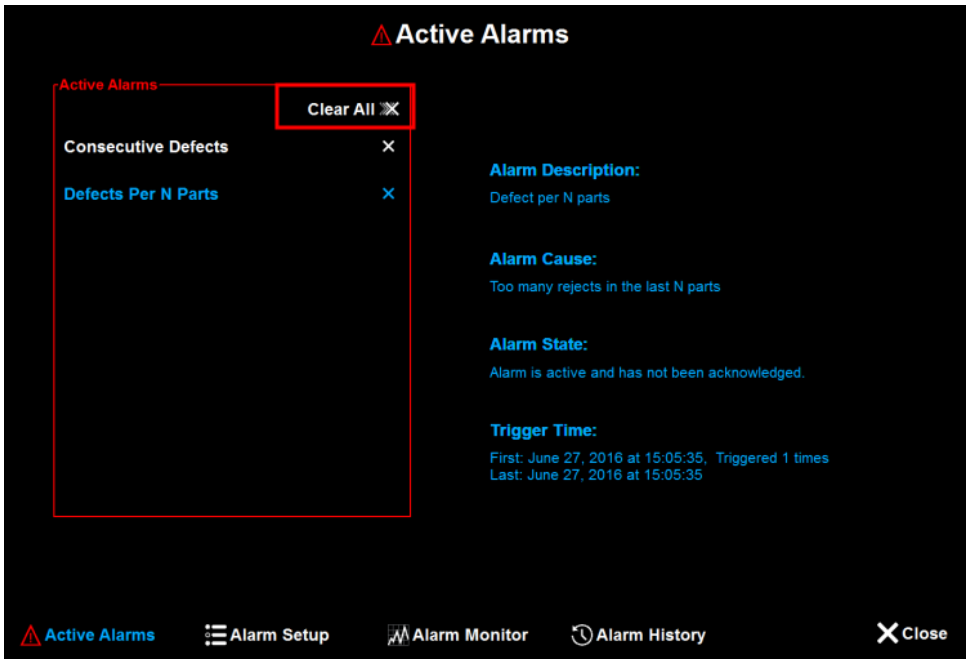
See "Alarm Descriptions" on page 174 for a list of alarms.

Clearing Alarms

The alarm icon turns red when an alarm is triggered, and the Active Alarms screen is displayed. The number next to the icon indicates the number of currently triggered alarms.

To see more information about the active alarm, select the alarm name in the left column. More information will be displayed on the right side of the screen.

Select Clear All (or the X) to clear the alarms. If there are no active alarms, no alarms are displayed in the list. If you close the screen without clearing alarms, the alarm icon stays red.



Alarm Setup

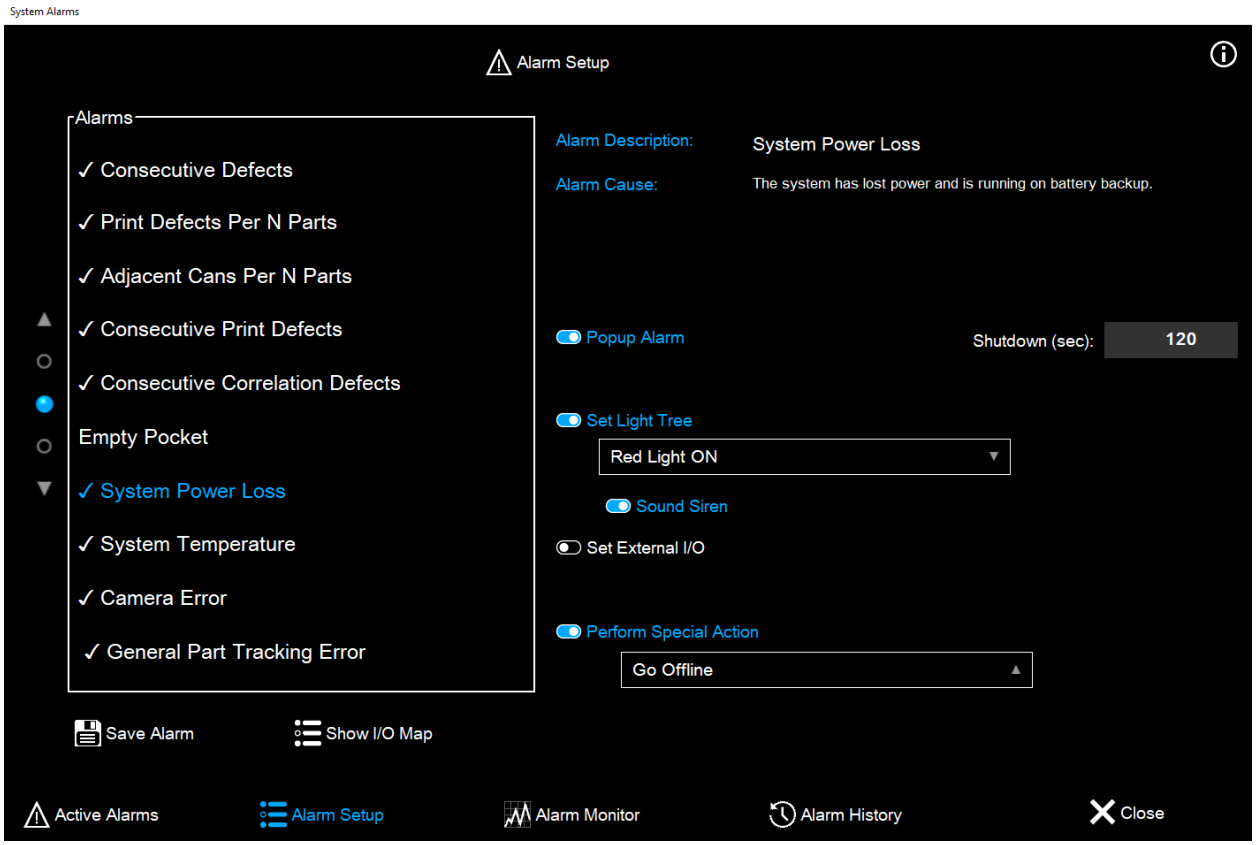
Administrator only

To get to this menu: select the Alarms icon | select **Alarm Setup** from the bottom of the menu. Checked = enabled

Select an alarm to set up from the left column. The parameters for that alarm are displayed on the right.

To see more alarms, use the Page Up/ Page Down buttons on the left side of the screen.

You can set alarms according to your preferences. An option is enabled if it is blue. Each alarm and its possible cause are explained on the screen. Press and hold any alarm name or parameter on the screen for a description.



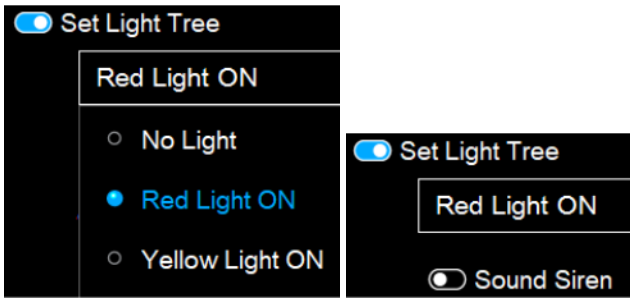
Alarm Code - When you add an Alarm Code (any alphanumeric value), that alarm gets added to the **Dashboard** for monitoring. You may select as many alarms as you like, but only six are visible at a time. If more than six alarms have Alarm Codes, then you will see a vertical scroll bar on the right of the Alarm field. Note that the alarm code is not displayed on the Dashboard.

Alarm Enabled - This switch enables or disables the alarm. In many alarms, you can set an Alarm Threshold, and Last N parts number, if applicable.

Pop up Alarm - When this is enabled, the alarm notification window will pop over the DecoSpector screen if the alarm gets triggered.

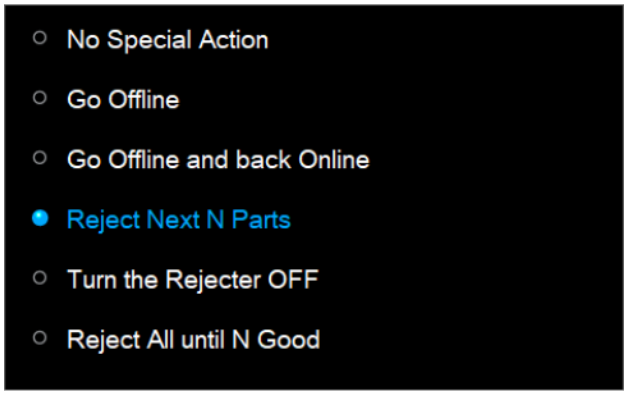
Auto Reset - When this is enabled, the alarm will automatically be cleared if it gets triggered. The alarm is saved in the Alarm History and Log Viewer, and any Special Actions are performed, but the alarm does not appear in the active alarms list. You can set a Reset Delay in milliseconds.

Set Light Tree - When this is enabled, the triggered alarm can activate the light tree. A triggered alarm can also sound the siren, if you enable the siren.



Set External I/O - When this is enabled, the triggered alarm can activate an external I/O signal. See also "External I-O for Alarms" on page 177.

Perform Special Action - When this is enabled, the system can perform a special action you select from the pop-up list. If you select Reject N Parts, enter a number of parts for Reject Count.



After you make changes to the alarms, select the Save Alarm button to apply changes and exit.

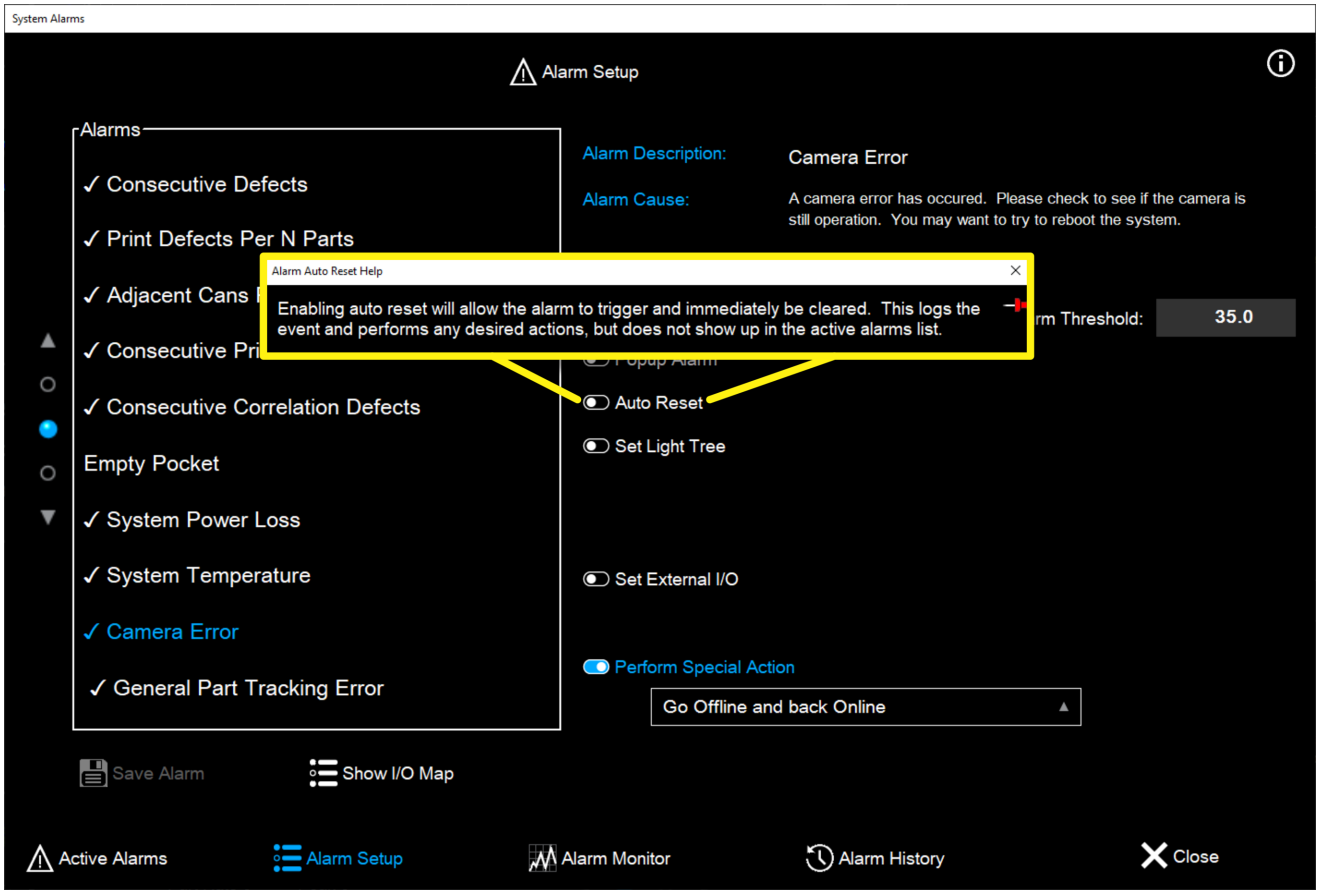
Tips:

- Use the Perform Special Action feature for automatic and safety features. Examples:
- If you have Consecutive Defects set for 25 parts, you may want to Turn Rejector Off (in addition to triggering the alarm)
- If you have Camera Error enabled, you may want to also Go Offline and Back Online. This will reset the cameras.
- If you have Empty Pin Chain enabled, you may want to also Reject Next N Parts to prevent the empty pin from decorating the inside of the next N parts. More information: Reject Settings.

Alarm Descriptions

To see more information about any alarm setting, press and hold the name of the item. More information about that item is displayed on screen.

Note: you must be an Administrator to access Alarm Setup. However, as an Operator, you can select an alarm name in the Active Alarms screen to see more information.
Note: some alarms listed below are in available in later versions of software. Your system may not show all alarms listed.



The available alarms are:

General Failure - A general failure has occurred.

Invalid Correlation - Correlation values are out of range. Check the sensors to make sure they are all adjusted properly.

Offline Acquire Active - This alarm is typically used to tell the decorator that the vision system is doing offline acquisition and needs part flow.

Online Notification - The system was placed online to inspect parts. We typically use this alarm to signal external I/O that the system is inspecting.

Offline Notification - The system was placed offline. We typically use this alarm to signal external I/O that the system is not inspecting.

Defects Per N Parts - Indicates an excessive reject rate over a small number of parts. We typically use this alarm to signal external I/O to allow the decorator to be stopped for adjustment.

Consecutive Defects - The system is rejecting all parts. We typically use this alarm to signal external I/O to allow the decorator to be stopped. Either the decorator has a problem or the vision system is dirty.

Print Defects Per N Parts - The system detected too many print rejects in the last N parts. We typically use this alarm to signal external I/O to allow the decorator to be stopped for adjustment.

Adjacent Cans Per N Parts - The system detected too many adjacent cans in the last N parts. You can set a value for N. This usually indicates an extreme part tracking issue. Too many adjacent cans may also be caused by a dirty diffuser. Please make sure the diffuser is clean.

Consecutive Print Defects - The system is rejecting all parts due to Print defects. We typically use this alarm to signal the external I/O to allow the decorator to be stopped. Either the decorator has a problem, or the vision system is dirty.

Consecutive Correlation Defects - One or more machine parts are generating defects every time. This is not a critical situation, but does indicate that a machine part may need adjustment.

Empty Pocket - This alarm indicates we had an empty pocket or a missing can. We can configure the system to automatically reject the next N parts to prevent inside of can ink issues.

Inspection Speed Too Slow - The inspection is unable to keep up with the current part rate.

Correlation Sampling - This alarm is triggered when the user rejects a round of machine parts for sampling purposes. The alarm allows the user to set external I/O to trigger other equipment in the plant.

Camera Error - The system is having problems with one or more of the system cameras. Try rebooting the system.

Camera Acquire Error - A camera acquire queue error has occurred. Please check to see if the camera is still in operation. Try rebooting the system. This is a serious issue. If the error does not go away after rebooting, please contact the Pressco Service Department.

Camera Merge Error - A camera merge queue error has occurred. Please check to see if the camera is still in operation. Try rebooting the system. This is a serious issue. If the error does not go away after rebooting, please contact the Pressco Service Department.

General Part Tracking Error - The system had an issue with tracking parts within the system. Try rebooting the system. This is a serious issue. If the error does not go away after rebooting, please contact the Pressco Service Department.

Missed Reject - The system did not reject a part, possibly because it was too busy processing an inspection, or because of some other error.

Encoder Overspeed - The encoder speed is too fast.

Reject Jam Detected - A jam was detected at the reject confirm sensor. The reject confirm sensor has been blocked for an extended period of time. When the reject confirm sensor remains blocked, it is typically due to parts backing up in the reject area. It can also be caused by the reject confirm sensor getting moved by being hit.

Dirty Diffuser - The diffuser needs to be cleaned. This is the plastic window in the inspection tunnel that shields the cameras. This alarm usually triggers many adjacent can detections as well. Please make sure the diffuser is clean.

Reject is Disabled - The system rejector has been disabled. We typically link this alarm with external I/O to prevent the decorator from being run without visual inspection. Note that this alarm cannot be manually reset. It is reset when the system rejector becomes enabled again.

System Power Loss - The system has lost power and is running on battery backup. Typically, the system will automatically shut down if the power is off for an extended period of time.

System Temperature - The system temperature is too high. Perhaps the A/C is not working. This adversely impacts overall system performance and can cause the system to run slower and potentially miss inspecting parts.

Color Delta E Error Per N Parts - Too many color zone Delta E measurements are critically bad. Check the process to determine the cause.

Color Delta E Warning: - One or more of the color zone Delta E measurements are getting close to being out of specification. This is a trend alarm indicating the process may need adjustment.

Color Delta E Error: - One or more of the color zone Delta E measurements are critically bad. Check the process to determine the cause.

Color Delta L Warning: - One or more of the color zone Delta L measurements are getting close to being out of specification. This is a trend alarm indicating the process may need adjustment.

Color Delta L Error: - One or more of the color zone Delta L measurements are critically bad. Check the process to determine the cause.

Color Delta H Warning: - One or more of the color zone Delta H measurements are getting close to being out of specification. This is a trend alarm indicating the process may need adjustment.

Color Delta H Error: - One or more of the color zone Delta H measurements are critically bad. Check the process to determine the cause.

Color Delta C Warning: - One or more of the color zone Delta C measurements are getting close to being out of specification. This is a trend alarm indicating the process may need adjustment.

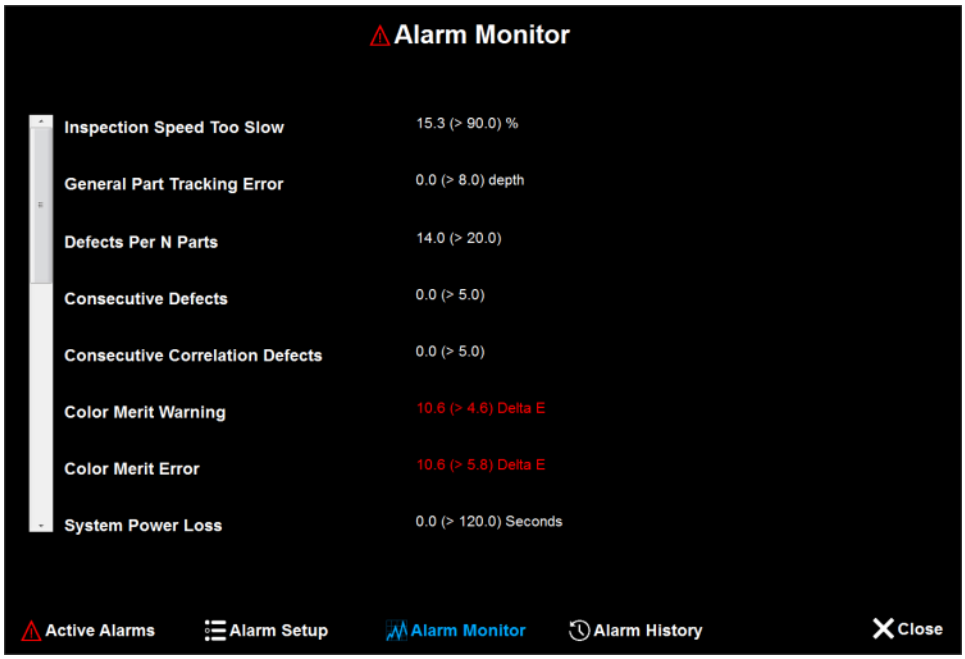
Color Delta C Error: - One or more of the color zone Delta C measurements are critically bad. Check the process to determine the cause.

Image Save - Low Disk Space - The disk partition used for the Image Save Utility is running low on space. Review, then delete or move images off of the DecoSpector system to make more room.

CPU Temperature - The CPU is running too hot. Perhaps the air conditioner is not working or the CPU fan has failed. This adversely impacts system performance, causing the system to run slower and potentially miss inspecting parts.

Alarm Monitor

View which alarms were recently triggered and how high the alarms were over the trigger threshold.



Alarm History

This operates like "Log Viewer" on page 151, except that the messages are only about alarms.

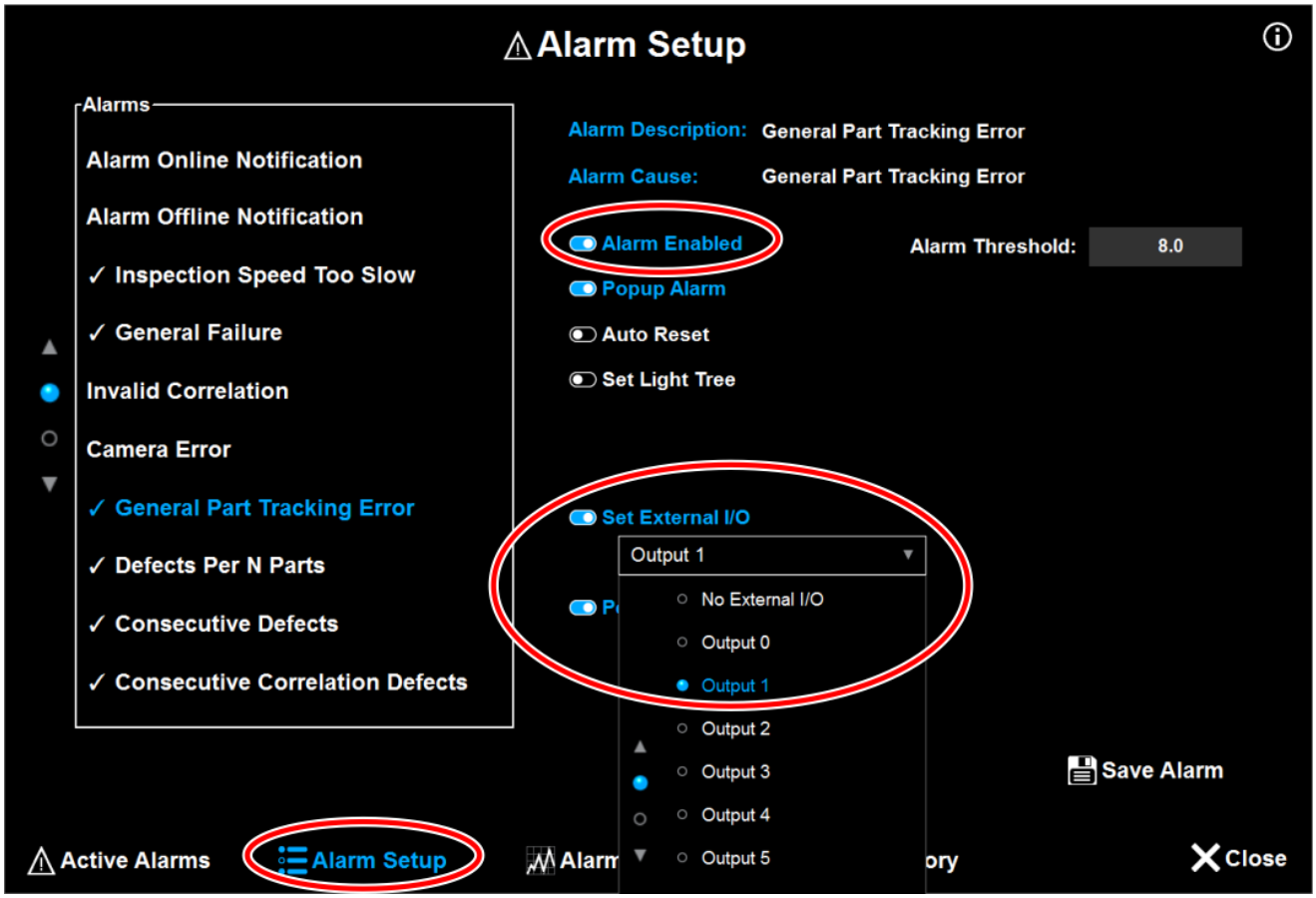
External I-O for Alarms

Go to Alarm setup: **Alarms icon** | **Alarm Setup**.

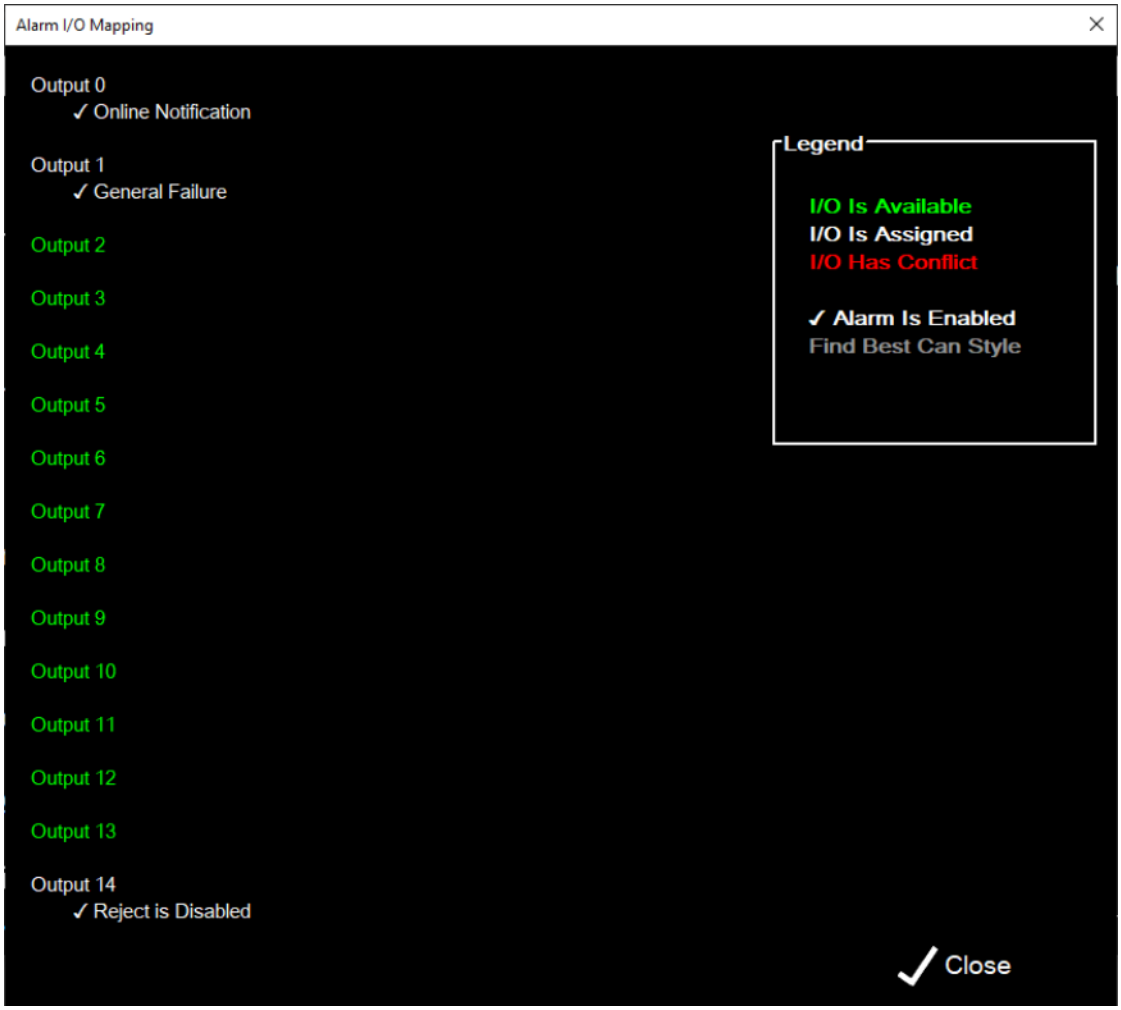
To set up an alarm output:

1. Enable the alarm.
2. Select an output number for the alarm.

> *Note: you can use the same external I/O output for multiple alarms*



You can also select "**Show I/O Map**" at the bottom of the Alarms screen to see which Extended I/O outputs are available:


Alarm I/O Mapping
Output 0
✓ Online Notification
Output 1
✓ General Failure
Output 2
Output 3
Output 4
Output 5
Output 6
Output 7
Output 8
Output 9
Output 10
Output 11
Output 12
Output 13
Output 14
✓ Reject is Disabled
Legend
I/O Is Available
I/O Is Assigned
I/O Has Conflict
✓ Alarm Is Enabled
Find Best Can Style
Close

Chapter 12 Reports

System reports provide statistical information about the performance over a period of time. The reports are saved so that they can always be viewed within the DecoSpector 360™ system. Reports can also be saved to a file or printed (if a printer is connected to the system).

Reports have two components: Scheduling and Viewing.

Information contained in the reports:

- Report Period – Start and End date/time
- Online Information – How long (and when) the system was online and offline
- Reject Enabled Information – How long (and when) the rejector was enabled and disabled
- Job Statistics:
- - Parts inspected and rejected
  - Reject reasons
  - Camera error breakdown
  - Correlation statistics
  - Color zone statistics (Delta E, Delta L, Delta H and Delta C).

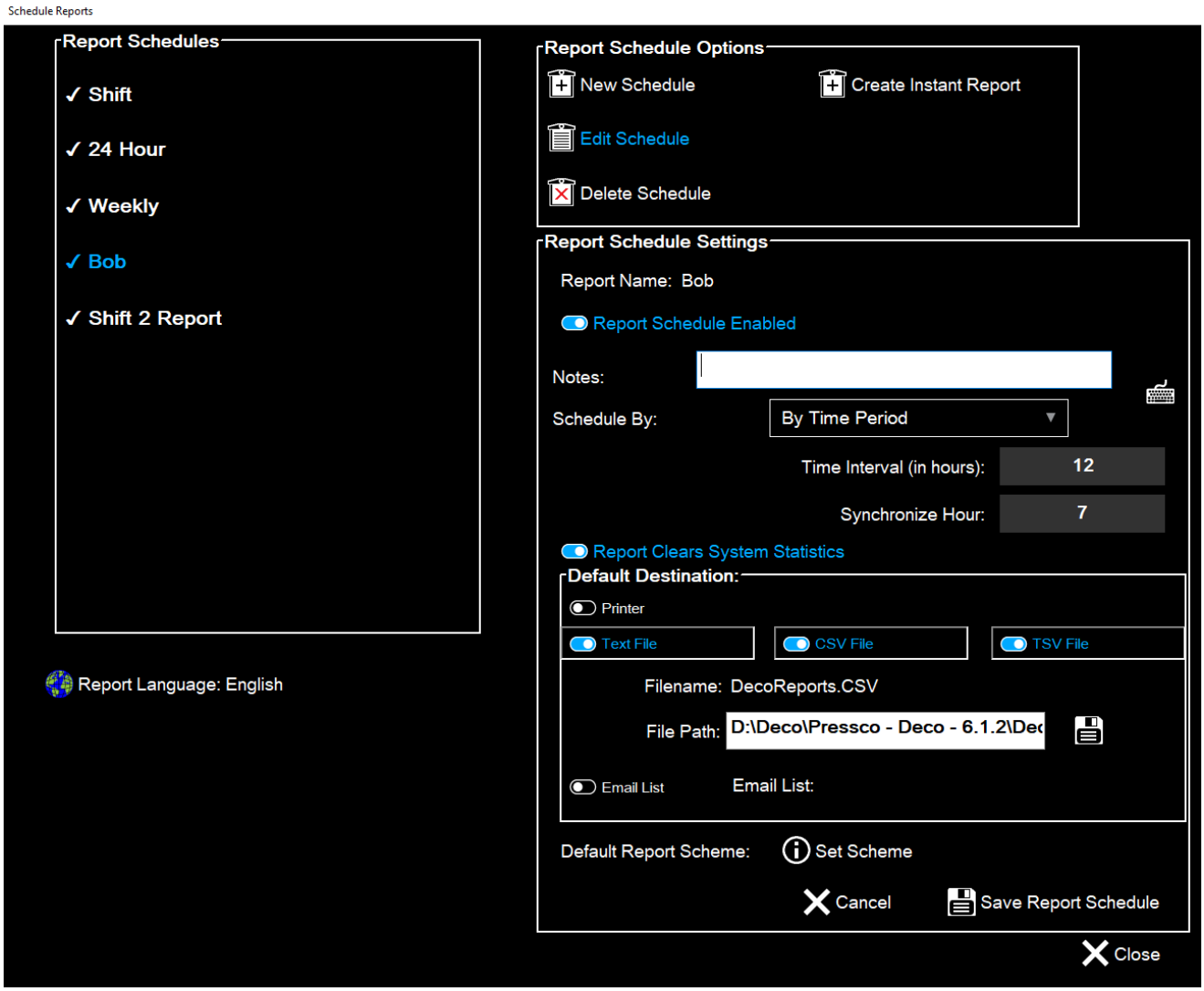
> *Note: when **Simplified Delta E mode** is enabled, any reports generated to .csv and .tsv files will have the values for Delta L, H, and C written as 0. In the .txt file and on printed reports, the fields will be omitted. For more information about this mode, see "Color Delta E Settings" on page 139.*

Schedule Reports

Administrator only

Log in. Take the system offline (so the icon is not blue).

Settings | System Utilities | Schedule Reports. This screen shows the available report schedules and options for creating / editing / deleting report schedules.



To schedule a report:

1. Select a report in the left column, or

   Select New Schedule, enter a name for the new schedule, then save. Then select the new report from the left column.
2. Select Edit Schedule.

Report Schedules:

The list of available reports.

Report Schedule Options:

New Schedule – Create a new schedule. This adds to the Report Schedules list. You must Edit the Schedule.

Edit Schedule - "Report Schedule Settings" below

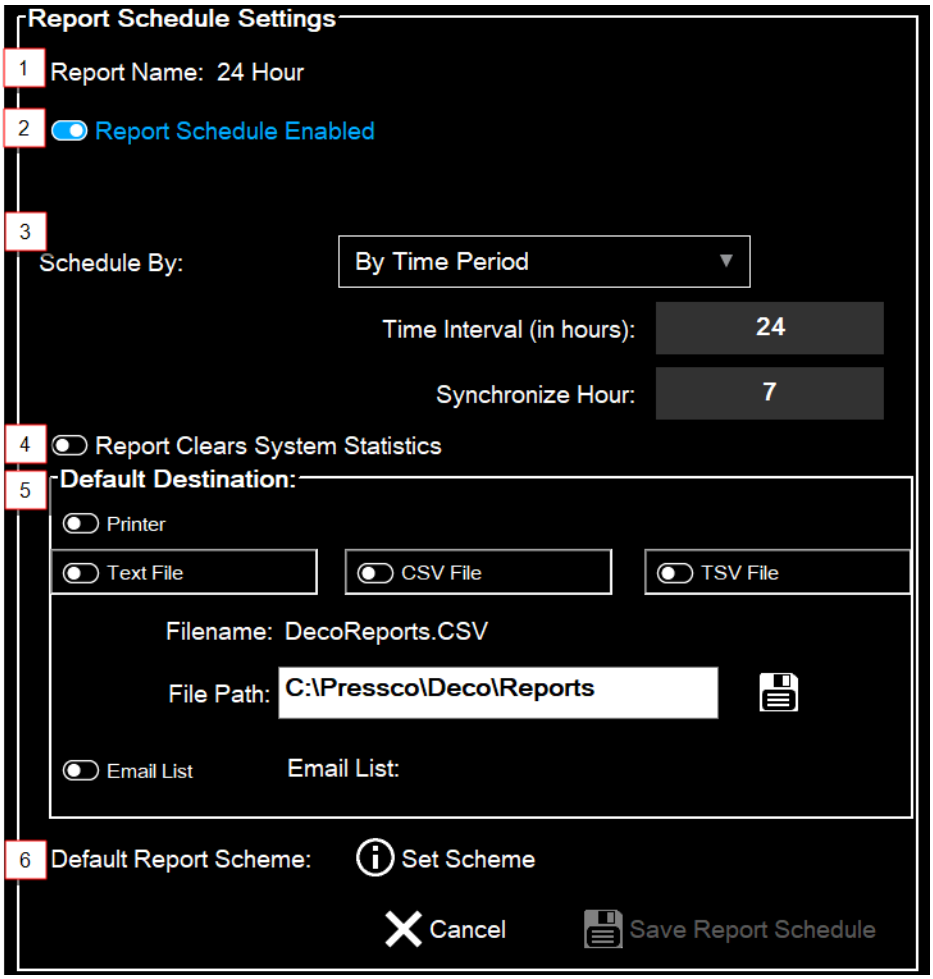
Delete Schedule – This permanently deletes the report schedule from the system. It WILL NOT delete any reports that were previously created with this schedule.

"Create Instant Report" on page 186

Report Schedule Settings

Administrator only

Settings **Settings** | **System Utilities** | **Schedule Reports**. System must be offline.

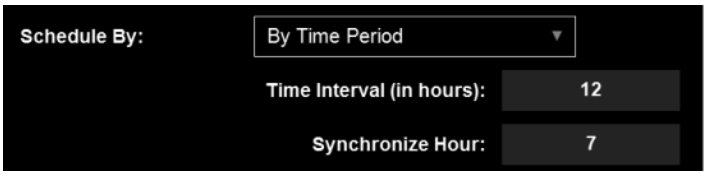


1) **Report Name** - Select the name to change it if desired.

2) **Report Schedule Enabled** - Enable the scheduled reports.

3) **Schedule By:**

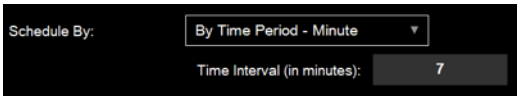
- **By Time Period – Hour:** The report is generated after the specified number of hours. To change a value, press and hold a number and use the keyboard icon from the pop-up menu.



- Time Interval (in hours) – You can schedule reports between 1 and 72 hours.

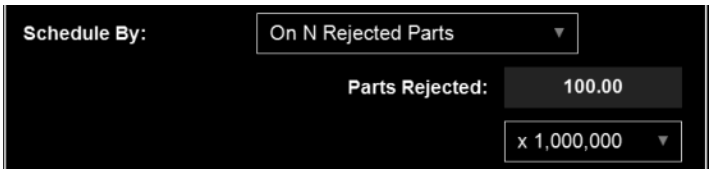
  Synchronize Hour – Synchronize to a specific hour of the day. This ensures that the reports are generated at the desired time, even if the system gets shut off at some point. Enter in military time of 0 to 23. If you want shift reports every 12 hours that start at 7 AM you would set the time interval to 12 and the synchronize hour to 7 as shown above.

- **By Time Period – Minute:** The report is generated after the specified number of minutes. There is no "Synchronize Hour" with this setting. You can select between 0-120 minute intervals:

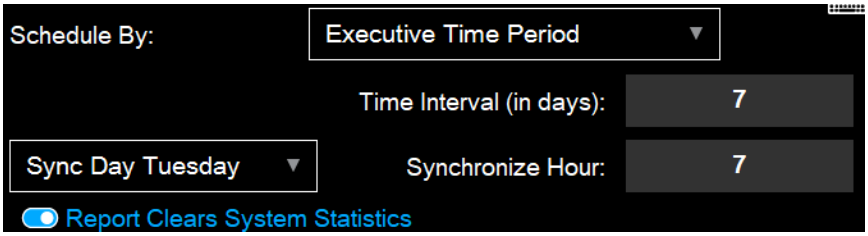


- On Job Change – This report is generated when you load a different job.
- On N Inspected Parts – This report is generated after the system has run the designated number of parts.

- Parts Inspected – This value is multiplied by the scale factor below the number entry. In this example the multiplier is 1 million. This example shows 100 million parts will generate a report.
- On N Rejected Parts – This report is generated after the system has rejected the designated number of parts.



- Parts Rejected – This value is multiplied by the scale factor below the number entry. In this example the multiplier is 1 million. This example shows 100 million parts rejected will generate a report.



- Executive Time Period - Set the time period between one and seven days. This report ignores job changes. It shows an overview of statistics (not broken out by job). By default, the correlation, color, and camera information is hidden; you can display more information as desired.
- Sync Day - Synchronize to a specific day. This ensures that the reports are generated at the desired time and day, even if the system gets shut off at some point. In the example above, the report would be generated every Tuesday at 7 AM. Enter the hours in military time 0 through 23.

---

4) **Report Clears System Statistics** - The system statistics are cleared when the report is generated.

5) Default Destination

This identifies where the report is sent.

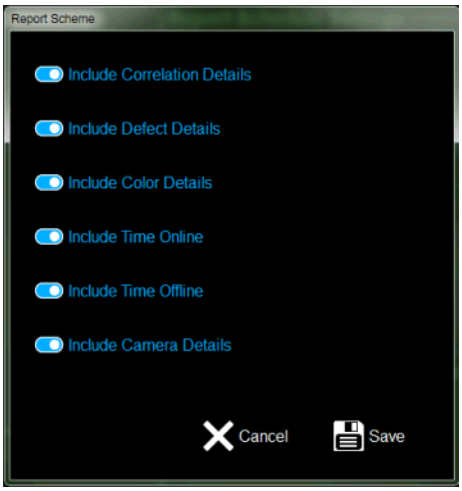
- Printer - Print the report (if a printer is attached and configured).
- Text File - Saves the report to a text (.txt) file.
- CSV File - Saves the report to a Comma Separated Variable (.csv) file. You can open this file in a spreadsheet program. If you want to change the report name, press and hold the name next to "Filename." A pop-up menu and keyboard option will be available to rename the file.
- TSV File - Saves the report to a Tab Separated Value (.tsv) file. You can open this file in a spreadsheet program. If you want to change the report name, press and hold the name next to "Filename." A pop-up menu and keyboard option will be available to rename the file.

- File Name - The file name is automatically generated. Select the name to change it if desired.
- File Path - Select the folder you wish to save the reports to. Otherwise, the report is sent to the destination displayed on screen.
- Email - Select "Email List" to enter a set of email addresses, separated by semi-colons.

---

6) Default Report Scheme

Show and hide different components of the report statistics. The system ALWAYS records all information in the report database. The scheme is only used to adjust what is visible in the displayed and printed report.

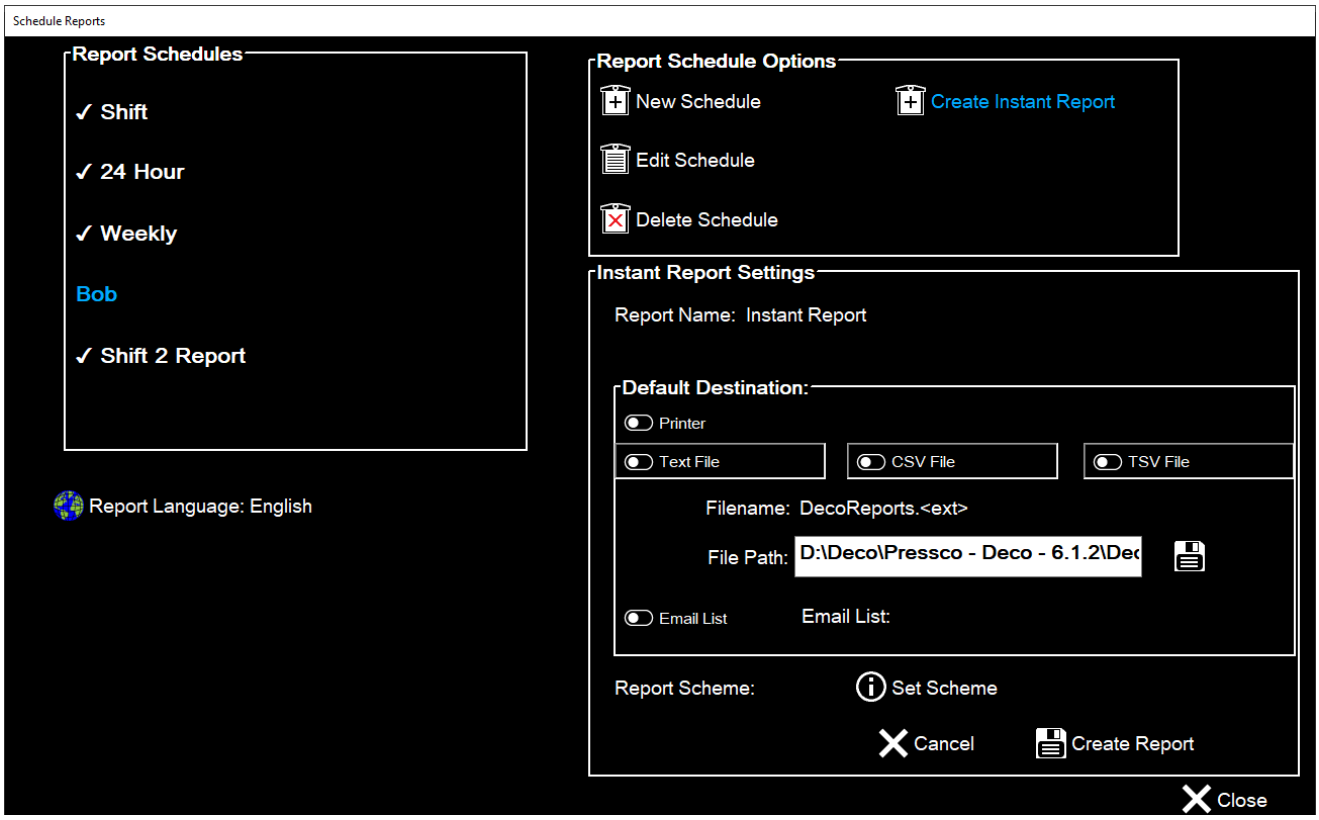


- Include Correlation Details – The correlation defect count list.
- Include Defect Details – This includes: Print Defects, Color Defects, Register Defects, Orient Defects, Empty Pockets and Forced Rejects.
- Include Color Details – The color statistics information about each configured color zone. Color statistics includes: Delta E, Delta L, Delta H and Delta C.
- Include Time Online – How long the system was online during the report period.
- Include Time Offline – How long the system was offline during the report period.
- Include Camera Details – How many defects were found on each camera. Too many defects on a specific camera can indicate that the system is dirty and needs cleaning.

Create Instant Report

Administrator only

Settings **Settings | System Utilities | Schedule Reports | Create Instant Report.**



You can select and change the following options:

Report Name - The report name is automatically generated. Select the name to change it if desired.

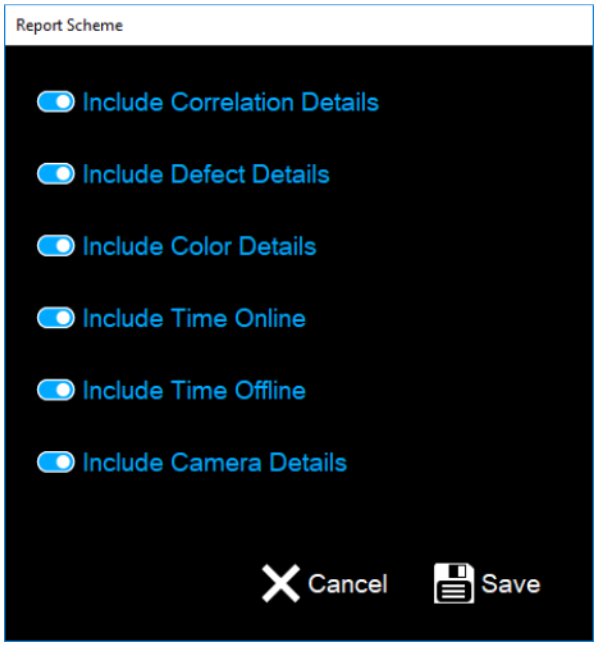
Destination - Select a printer (if one is connected to the DecoSpector 360™ system), or to a Text, CSV (comma separated value), or TSV (tab separated value) file.

File Name - The file name is automatically generated. Select the name to change it if desired.

File Path - Select the folder you wish to save the reports to. Otherwise, the report is sent to the destination displayed on screen.

Email - Select "Email List" to enter a set of email addresses, separated by semicolons.

Report Scheme - Include the desired report details, including: correlation, defects, color, time online, time offline, and camera details.



Report Viewer

Administrator only

Review all old reports generated on the system. There are options available to delete old reports, view a report, and filter the report search.

Log in. Take the system offline (so the face of the button is not blue).

Settings **Settings** | **System Utilities** | **Report Viewer**.

List of Reports - To view a report, click on the report and select Report Details. You can Save and Print Reports from the details view.

Filter Options - This allows you to filter by date and time as well as report type.

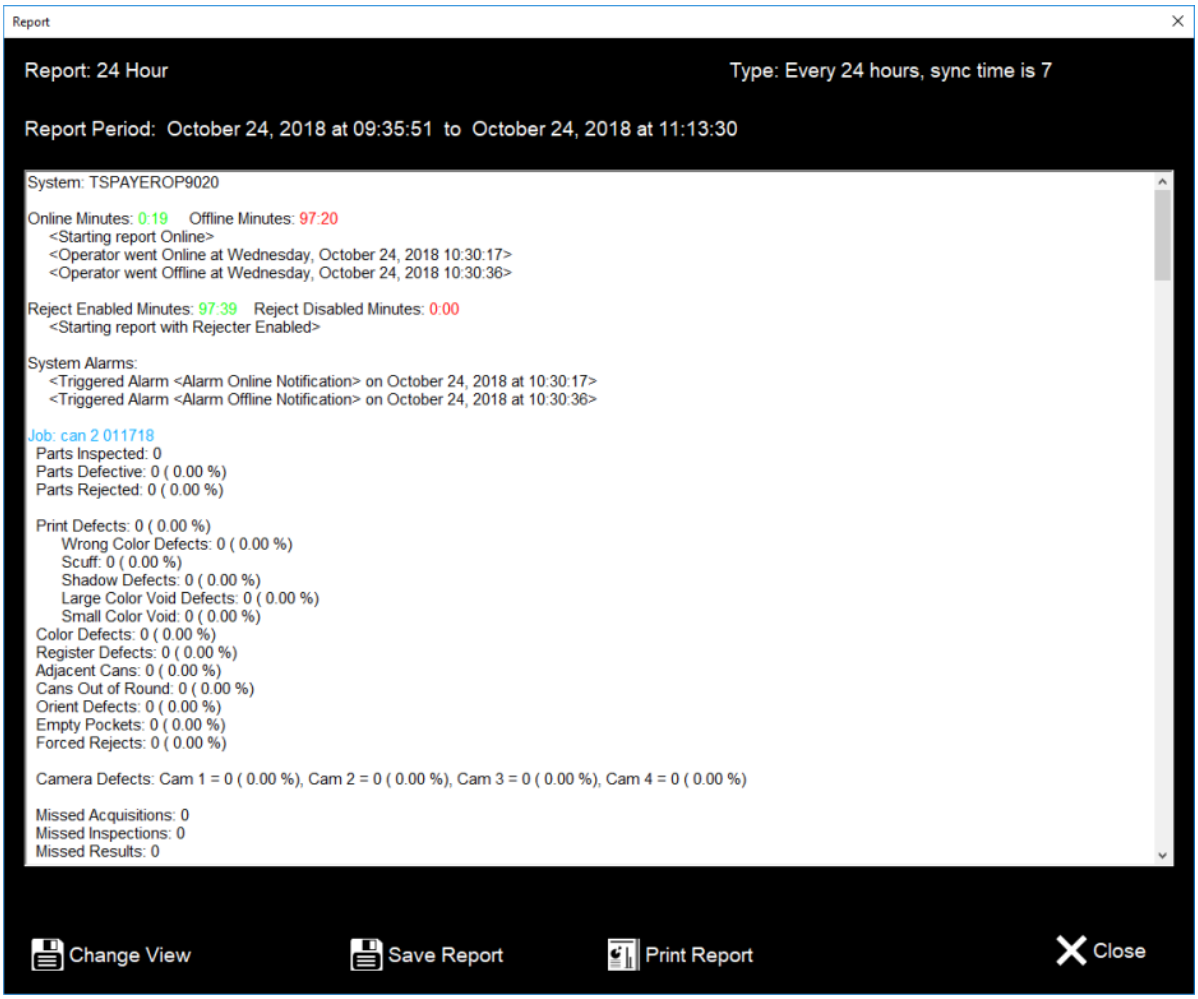
Delete - This allows you to delete old reports. Select from the available options.

Report Details

The details of the report are dependent on what options are selected.

> *Note: To change the options to show, select the **Change View** button*

The report details show the report name, report type, report period and then the specific statistics during the report period.



It is possible to have multiple jobs displayed for one report period.

Save Report: Save the report to the default location of C:\Pressco\Deco\Reports, unless otherwise specified in the report schedule.

Print Report: This allows you to print the report to any connected printer.

Chapter 13 User Accounts and Login

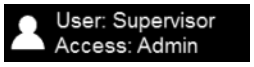
Add user accounts, assign privileges, change passwords, and create biometric login for users.

Add a New User

Administrator only

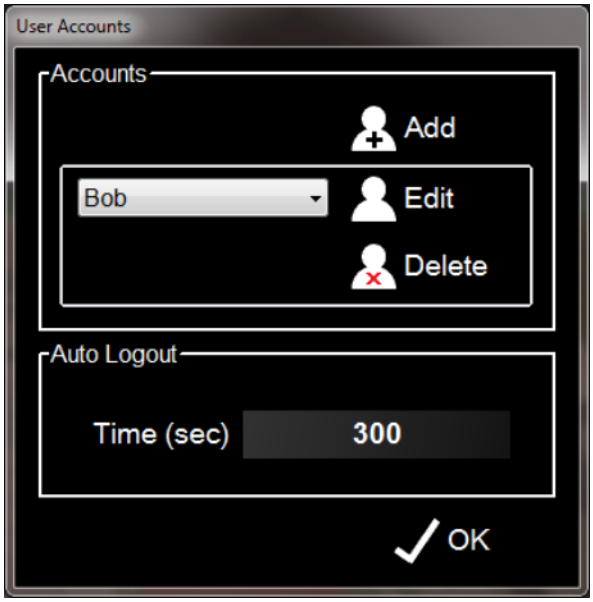
> *Note: if you have software version 6.2.22 and 6.4.48 and higher, you will also be able to set permissions while you add a new user. For details, see "Change User Permissions" on the next page.*

To add a new user:



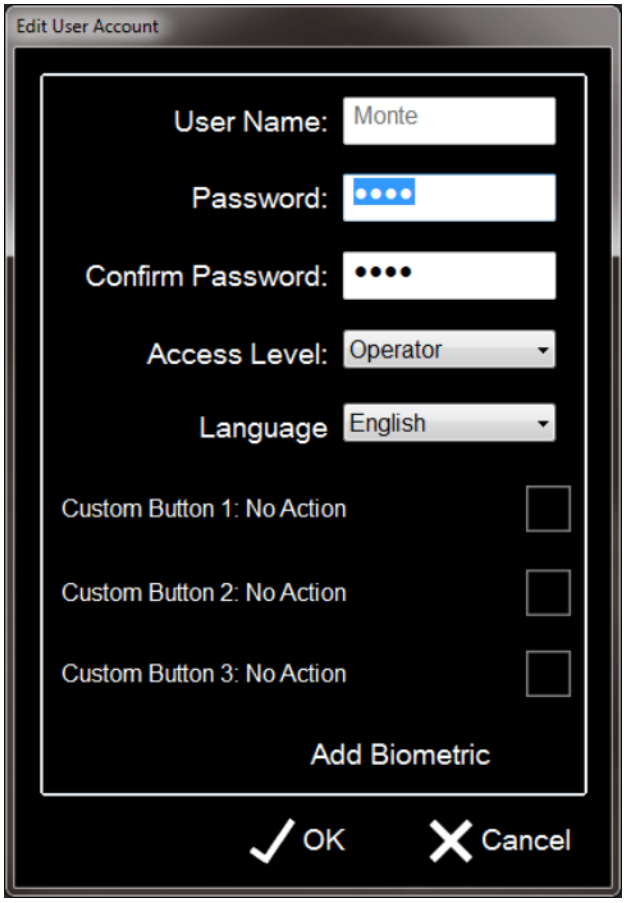
Log in as Administrator.

1. Press and hold the login button for one second. The User Accounts dialog is displayed.



2. Select the Add button and enter the user's name and password, and assign an access level and language.

> *Note: to enter a password, tap in the password field to see a keyboard icon. Tap the keyboard icon to bring up an on screen keyboard to enter the password.*



3. Select OK and exit.

To add the biometric login option for a user:

Follow the instructions above to add a user.

1. Select the **Add Biometric** text.
2. Follow the instructions on screen, having the user touch the sensor with the same finger as many times as required, until a message states that the process is complete.

Once programmed for the biometric login, a user can log in by touching the biometric sensor with the same finger that was programmed. He or she does not need to touch the login area on the screen, nor enter a password.

Change User Permissions

This feature is available in DecoSpector software versions 6.2.22 and 6.4.48 and higher. This feature is only available to Administrators (with Manage User Account permissions).

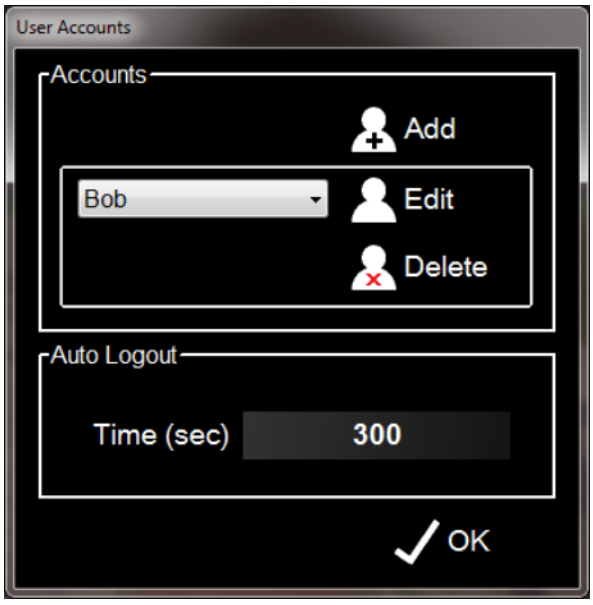
The DecoSpector system has default permissions to quickly set up users. When you select these default permissions, you could also add or subtract specific permissions for the user.

Default user permission levels are: Guest, Operator, Administrator, and Pressco Technician.

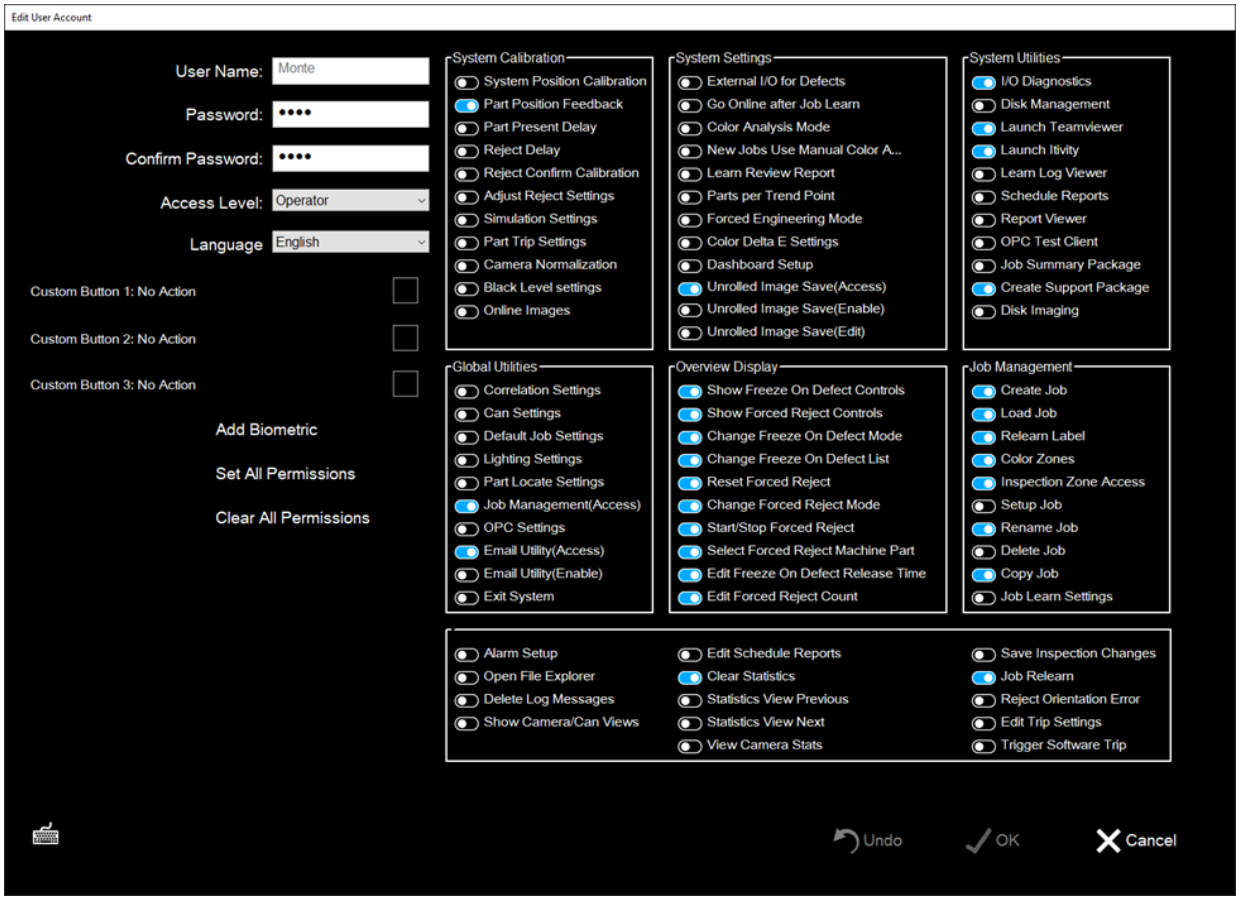
A **Guest** user allows people who are not logged in to have limited access to view items on the screen. You will not be able to grant a Guest user additional access.

To change the default permissions:

1. Log in as administrator.
2. Press and hold the login button for one second. The User Accounts dialog is displayed.



3. From the drop-down menu, select the user for which you want to change permissions.
4. Select the **Edit** button. The EditUser Account dialog is displayed.



5. Enable or disable the permissions as desired. For quick changes to all permissions, select the **Set All Permissions** or **Clear All Permissions**. You can reset all changes by selecting the **Undo** button.
6. When you are finished making changes, select the OK button to save changes and exit.

To see the list of permissions granted by default, see "User Access Levels" below.

User Access Levels

The DecoSpector 360™ system has three available access levels:

- **Guest** - A guest access level is available even when no one is logged in.
- **Operator** - Basic access, allowing inspection and rejection of parts.
- **Admin** - Full access, including system configuration.

Additionally, a **Pressco** account is reserved for Pressco engineers.

Users have the following permissions* (Marked with an X):

Operation	Guest	Operator	Admin	Pressco
System Calibration				
System Position Calibration				x

Operation	Guest	Operator	Admin	Pressco
"Part Position Feedback" on page 73		x	x	x
"Part Present Delay" on page 130			x	x
"Reject Delay" on page 160			x	x
"Reject Confirm Calibration" on page 164			x	x
Adjust "Reject Settings" on page 158			x	x
"Simulation Settings" on page 131			x	x
"Part Trip Setttings" on page 132			x	x
Camera Normalization				x
Camera Black Level Settings				x
"Online Images" on page 136			x	x
Collect Calibration Images				x
Camera White Balance				x
System Settings				
External I/O for Defects			x	x
Go Online after Job Learn			x	x
Color Analysis Mode				
New Jobs Use Manual Color Analysis			x	x
"Learn Review Report" on page 59			x	x
"Parts Per Trend Point" on page 139			x	x
Forced Engineering Mode				x
Color Delta E Settings			x	x
Dashboard Setup			x	x
Unrolled Image Save (Access)		x		
Unrolled Image Save (Enable)			x	
Unrolled Image Save (Edit)				
System Utilities				
"I-O Diagnostics" on page 148		x	x	x
Disk Management				x
Launch "Teamviewer" on page 149		x	x	x
Launch "iTivity" on page 150		x	x	x
"Learn Log Viewer" on page 57			x	x
"Schedule Reports" on page 180			x	x
"Report Viewer" on page 187			x	x
DecoSpector OPC Test Client			x	x

Operation	Guest	Operator	Admin	Pressco
Job Summary Package				x
"Create Support Package" on page 152		x	x	x
Disk Imaging Software			x	x
Global Utilities				
"Correlation Settings" on page 122			x	x
"Can Settings" on page 62			x	x
Default Job Settings				x
"Lighting Settings" on page 80			x	x
"Part Locate Settings" on page 68			x	x
"Job Management" on page 40		x	x	x
"OPC Settings" on page 212			x	x
Email Utility (Access)		x	x	x
Email Utility (Enable)			x	x
"Exit the Software" on page 36			x	x
Overview Display				
Show Freeze on Defect Controls		x	x	x
Show Forced Reject Controls		x	x	x
Change Freeze on Defect Mode		x	x	x
Change Freeze on Defect List		x	x	x
Reset Forced Reject		x	x	x
Change Forced Reject Mode		x	x	x
Start/ Stop Forced Reject		x	x	x
Select Forced Reject Machine Part		x	x	x
Edit Freeze on Defect Release Time		x	x	x
Edit Forced Reject Count				
Job Management				
Create Job		x	x	x
Load Job		x	x	x
Relearn Label		x	x	x
"Color Zones - Manual, optional" on page 52 (setup)		x	x	x
"Inspection Zones" on page 53		x	x	x
Job Setup - Advanced			x	x
Rename Job		x	x	x
Delete Job			x	x

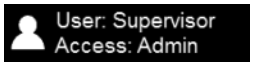
Operation	Guest	Operator	Admin	Pressco
Copy Job		x	x	x
Job Learn Settings				x
Miscellaneous				
Manage User Accounts			x	x
Alarm Setup			x	x
Open File Explorer			x	x
Delete Log Messages				x
Show Camera/ Can Views				x
Edit Schedule Reports			x	x
Clear "Statistics on the Control Panel" on page 34		x	x	x
Statistics View Previous				x
Statistics View Next				
View Camera Statistics				x
Save Inspection Changes		x	x	x
Job Relearn			x	x
Reject Orientation Error				x
Edit Trip Settings			x	x
Trigger Software Trip			x	x
Color Analysis and Print Quality Screens				
"Color Analysis" on page 106	x	x	x	x
"Print Quality Screen" on page 90	x	x	x	x
Save Images to USB Drive	x	x	x	x
"Adjust Inspection Settings" on page 96			x	x

Note: some users have permission to view screens, but need additional permissions to make changes

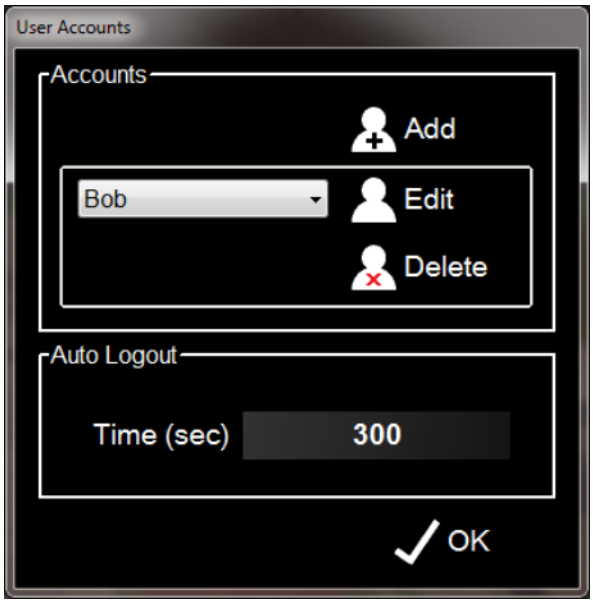
Delete a User Account

Administrator only

To delete a user account:



1. Press and hold the login button for one second. The manage users dialog is displayed.

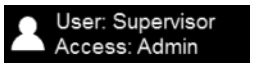


2. From the drop-down menu, select the account to be deleted.
3. Select **Delete**.
4. Select Yes, then select OK to save changes and exit.

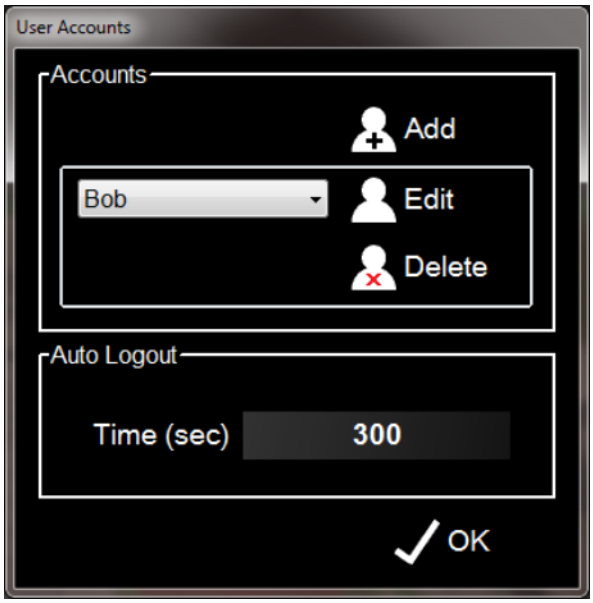
Change a Password or Access Level

Administrator only

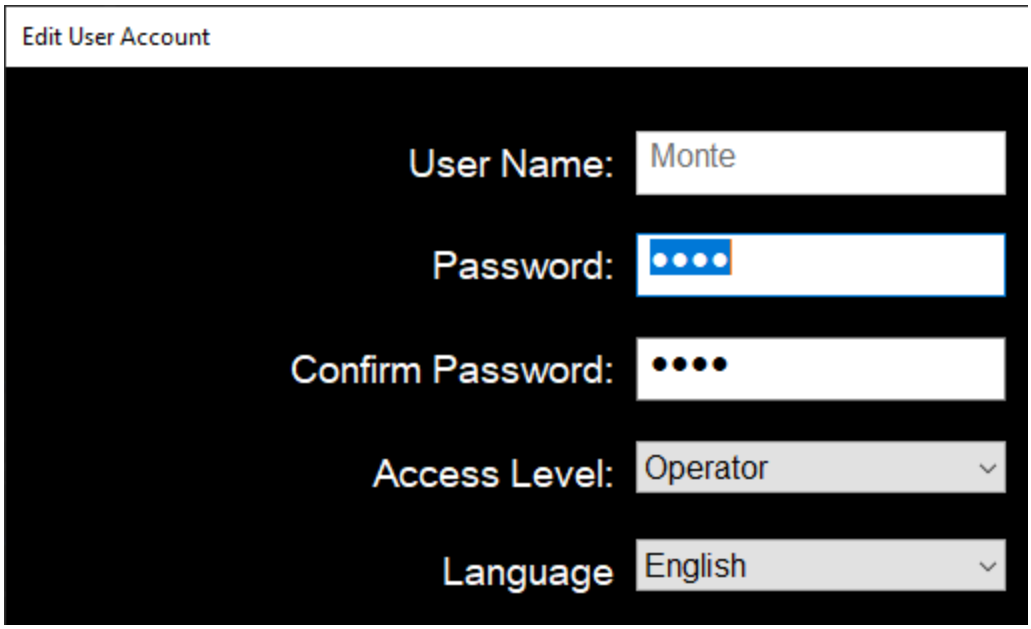
To change a password:



1. Press and hold the login button for one second. The manage users dialog is displayed.



2. From the drop-down menu, select the user name to change their password or access level.
3. Select **Edit**.



4. Make the desired changes. If changing a password, be sure to confirm the new password.
5. Select **OK** to save changes and exit.

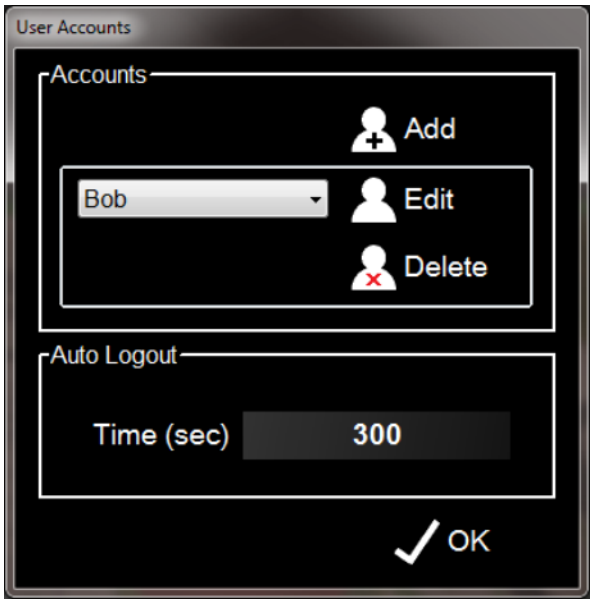
Custom Buttons

Administrator only

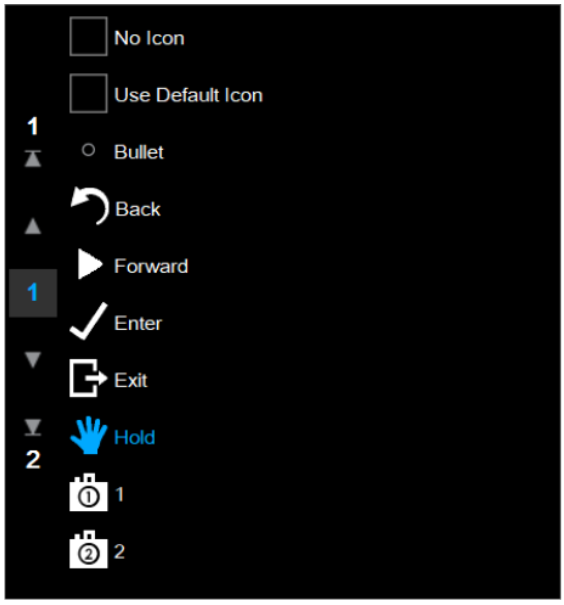
You can set up three custom buttons per user account. They will be seen at the bottom of the Control Panel. These buttons can be used to access frequently used functions.

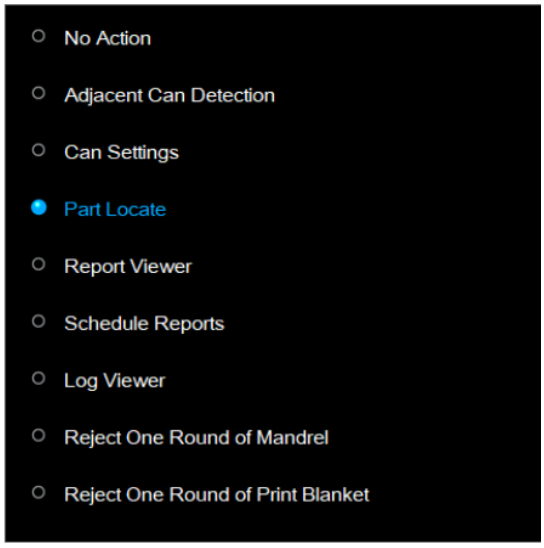
To set up a button:

1. Log in. Take the system offline (so the face of the button is not blue).
2. Press and hold the login button for one second. The manage users dialog is displayed.



3. Select a user from the drop down menu, then **Edit**.
4. Select the action next to Custom Button and choose from the available options. A default icon is presented.
    - Note: If you assign an Administrator-only function to an Operator level user, then the Operator will not be able to use that function.
    - Administrator-only functions are: Can Settings, Part Locate, and Report Viewer. Adjacent Can Detection has no function as of this publication.
    - Operator functions are: Schedule Reports (only Create Instant Report), and Log Viewer.
    - You could grant permissions to the user while you are in the Edit User Account screen, if desired. (Example, give an Operator access to Report Viewer)
5. If desired, select a custom button icon from the pop-up menu. (shown left below)





6. Select OK to save changes and exit. The next time the user logs in, he or she will see the custom buttons in the control panel.

Chapter 14 Troubleshooting

This section contains some possible errors that might occur with the DecoSpector system, and actions you can take.

Symptom	Possible Cause	Action
Cannot log in Pop-up window says "Deco has stopped responding" No camera images, or cameras not being found by system	Software error or crash	Restart the system: "Power On and Off at the Control Enclosure" on page 19 If the software is not responding, or restarting the system does not work, then: "Full Power Cycle for DecoSpector" on page 204
Reject rate too high, or false rejects	Learned parts or template have changed	Learn another set of parts: Relearn (or Learn Job)
	"Oil or Dirt on the Inspection Tunnel Windows" below	"Clean the Tunnel Windows" on the next page
	The incorrect can size or can style is selected	Select the proper Can Size and Can Style for your part in the job setup New Part (First Time Inspecting a Part)
Parts not being detected properly	Part location is not set properly. This often occurs when the part is not properly centered in the field of view, or there is more than one part appearing in it.	Check "Part Locate Settings" on page 68 Check "Lighting Settings" on page 80

Oil or Dirt on the Inspection Tunnel Windows

You may be able to see oil or dirt on the inspection tunnel windows through the software. Look at the live images on the home screen. When you look at the image, the spot may show up in a different place horizontally for each part, but remains in the same place vertically between parts, as shown below.

"Clean the Tunnel Windows" on the next page

Clean the Tunnel Windows

The inspection tunnel windows need to be cleaned at least once per shift, depending on plant conditions.

> *Important - Debris and contamination could build up on both the glass and plastic surfaces. This dirt could appear in the inspection windows, causing false rejects of parts, missed defects, or it could degrade lighting. Clean glass and plastic surfaces often.*

What you need:

- Soft, clean, oil-free cloths
  - Recommended: Part number: 81945. It includes one bottle of lens cleaning solution and one box of lens cleaning wipes.
  - You may use supplies already in your plant, designed to clean safety glasses, such as Uvex Clear S463 liquid lens cleaner, with Honeywell Uvex Clear Lens Cleaning Tissues
- Mild soap and water solution
- Flashlight to see inside tunnel area
- Stopped production line - only for a short time when you swing the tunnel open and closed

Do NOT use:

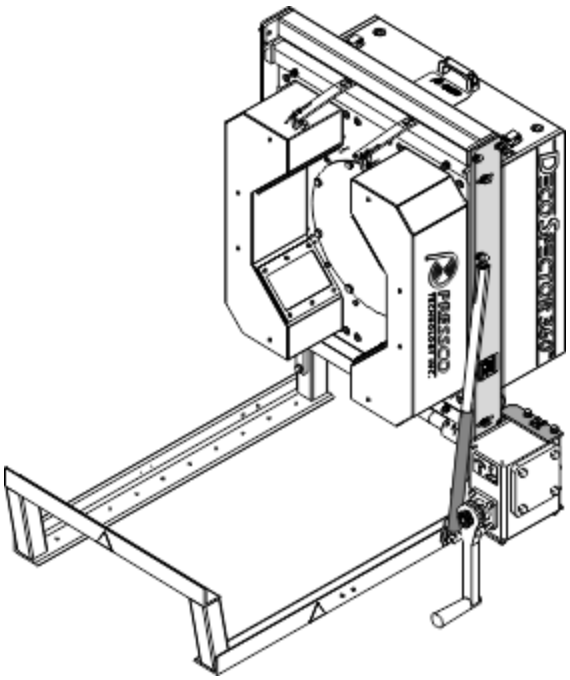
Regular paper towels to clean the surfaces. These may scratch the surfaces or leave lint.

Alcohol-based solvents. These may damage the plastic surfaces.

Harsh chemicals. These may damage multiple surfaces.

To clean the windows:

1. Ensure the production line is stopped, and the area surrounding the tunnel is clear (of people, parts, equipment).
2. Turn the service frame handle clockwise to move the tunnel up and away from the production line.
3. Push the locking mechanism into place.

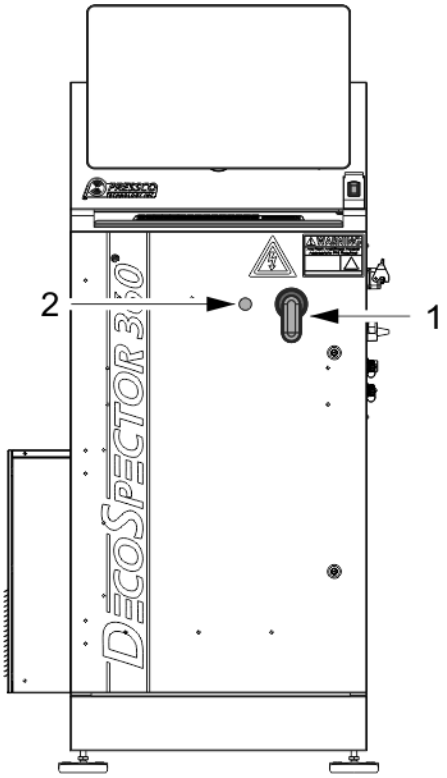


4. If desired, signal to someone in your plant to restart production, while you clean the windows.
5. Using a soft cloth and mild cleansing solution, clean all inspection and lighting windows inside the tunnel. Make sure all grease, oil, and other debris is removed.

6. If you have started production, signal to someone to stop it again.
7. Push to release the locking mechanism on the service frame.
8. Flip the switch to change directions of the service frame.
9. Crank the handle to lower the module back into place.
10. Start production.
11. Select the Relearn button in the DecoSpector 360™ software, so that the system learns parts with the newly cleaned windows.

Full Power Cycle for DecoSpector

This procedure should only be performed when a standard power cycle does not work (example: the software is not responding).



WARNING - Keep clear of reject devices. Projectiles may cause injury.

WARNING - When the system is powered down, there is still voltage present at the UPS. Only AUTHORIZED PERSONNEL should attempt to open the system. We recommend that only AUTHORIZED PERSONNEL have access to the keys.

1. If the software or Windows is locked up, then use [CTRL+ALT+DEL from the mechanical keyboard] and use Task Manager to stop "Deco.exe." Shut down the PC through Windows.
2. Turn off the main power switch [1].
3. Open the cabinet door, using the keys supplied by Pressco.
4. The UPS is on the back of the cabinet door. Shut off the UPS by pressing the on/off button for 3 seconds. Wait 1 minute before turning it back on, to allow components to discharge.

5. Turn on the UPS by pressing the on/off button for 3 seconds.
6. Close the cabinet door.
7. Turn on the main power switch on the cabinet. The software will start within a few minutes.

Chapter 15 DecoSpector OPC

OPC (OLE {Object Linking and Embedding} for Process Control) is a data communication standard developed by leading manufacturing equipment and software vendors, in conjunction with Microsoft. Its purpose is to promote interoperability between a wide variety of data sources and the consumers of that data, eliminating the need for diverse and incompatible “drivers” for each separate device or program.

The OPC specifications are developed and administered by the OPC Foundation: http://www.OPCFoundation.org

OPC Introduction

What is OPC?

OPC (Open Platform Communications) is a set of data communication specifications developed by leading manufacturing equipment and software vendors. Its purpose is to promote interoperability between a wide variety of data sources and the consumers of that data, eliminating the need for diverse and incompatible “drivers” or protocols for each separate device or program. It is an optional feature in the Pressco system.

OPC had originally meant “OLE for Process Control,” where OLE itself is an acronym for the early Microsoft Windows “Object Linking and Embedding” interoperability standard used in the original (“Classic”) OPC specifications. With the advent of the Unified Architecture specification, which does not use OLE (nor its successors COM / DCOM), the change was made to indicate a more generalized and vendor-independent standard – note that “classic” OPC only works on Microsoft Windows, while Unified Architecture is compatible with a wide variety of operating systems and embedded devices.

The OPC specifications are developed and administered by the OPC Foundation: http://www.OPCFoundation.org

To learn more about OPC, visit these links:

- What is OPC? https://opcfoundation.org/about/what-is-opc/
- Open Platform Communications: https://en.wikipedia.org/wiki/Open_Platform_Communications
- Or perform a search on the Internet, using “Open Platform Communications” or "OLE for process control" as the search criteria.

Pressco Systems and OPC

Pressco has OPC servers for vision systems supporting the OPC Foundation’s legacy or “classic” Data Access (DA) specifications, as well as the newer Unified Architecture (UA) specification.

The OPC UA specifications are not “versioned” the way the DA specifications are, and so it is only necessary to provide the appropriate “Endpoint URL” string (similar to a World Wide Web site address) to connect to the Pressco OPC UA server.

The Pressco OPC Servers are an optional feature - contact your Pressco sales manager for details.

OPC UA Node IDs and Namespace Index

If you have already set up a data collection configuration in your OPC UA client with the older version 1.0.X server, after updating the software to version 1.1.0 or later the node IDs in the existing configuration will no longer be valid (because the namespace index value changed to '2.')

There is a way to revert back to using namespace index 1 in the new server (with all values still being read-only).

In the OPC UA server versions 1.0.X (DecoSpector software versions 6.2.11 and earlier), the namespace index for all node IDs was always ‘1’.

However, beginning with version 1.1.0 of the OPC UA server (**DecoSpector software versions 6.2.22 and later**) some new features were introduced that required a change in the namespace index value from ‘1’ to ‘2’.

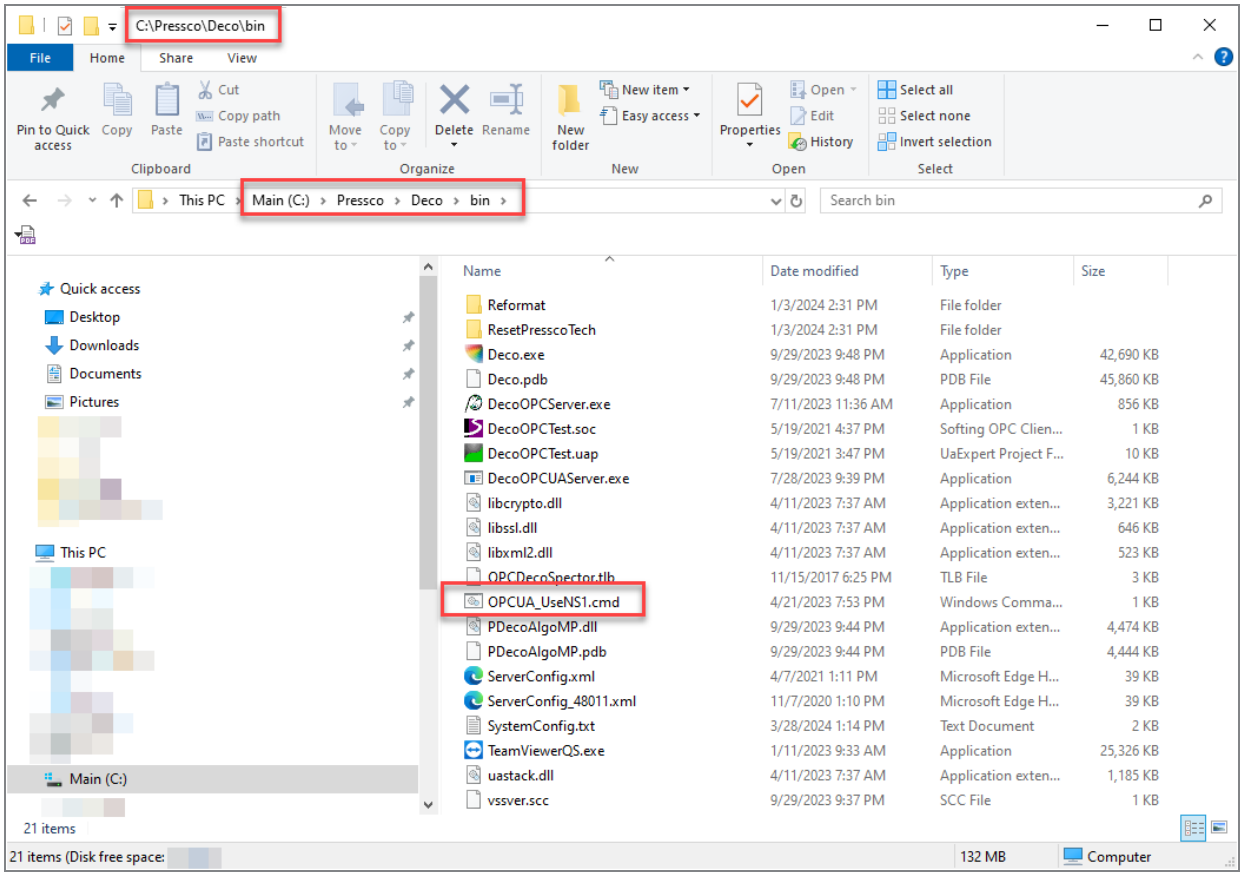
Revert to Namespace Index 1

If you have already set up a data collection configuration in your OPC UA client with the older version 1.0.X server, after updating the software to version 1.1.0 or later the node IDs in the existing configuration will no longer be valid (because the namespace index value changed to '2.')

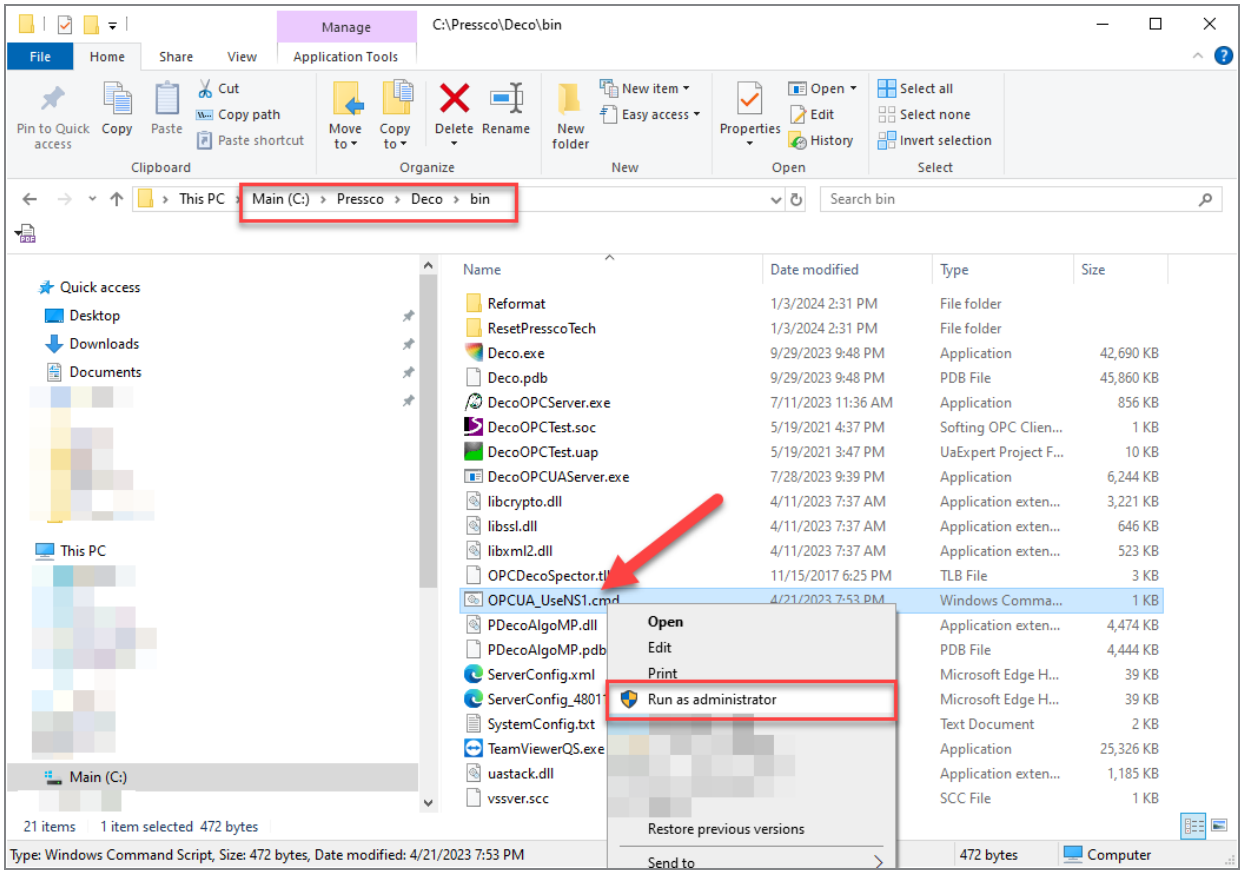
There is a way to revert back to using namespace index 1 in the new server (with all values still being read-only).

To go back to using namespace index 1 in the current version of the server:

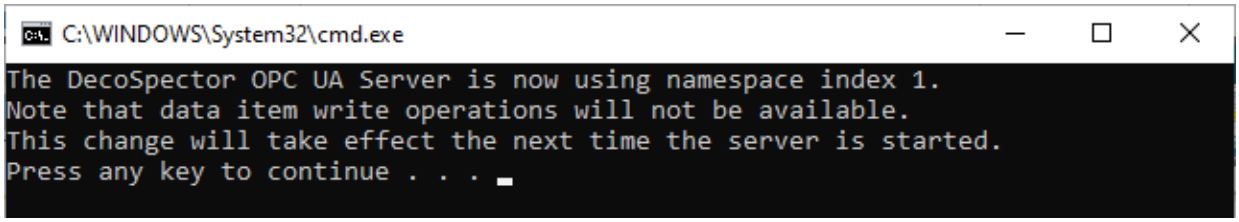
1. Open a Windows File Explorer window to browse the file system.
2. In the File Explorer window, browse to the folder “C:\Pressco\Deco\bin.”



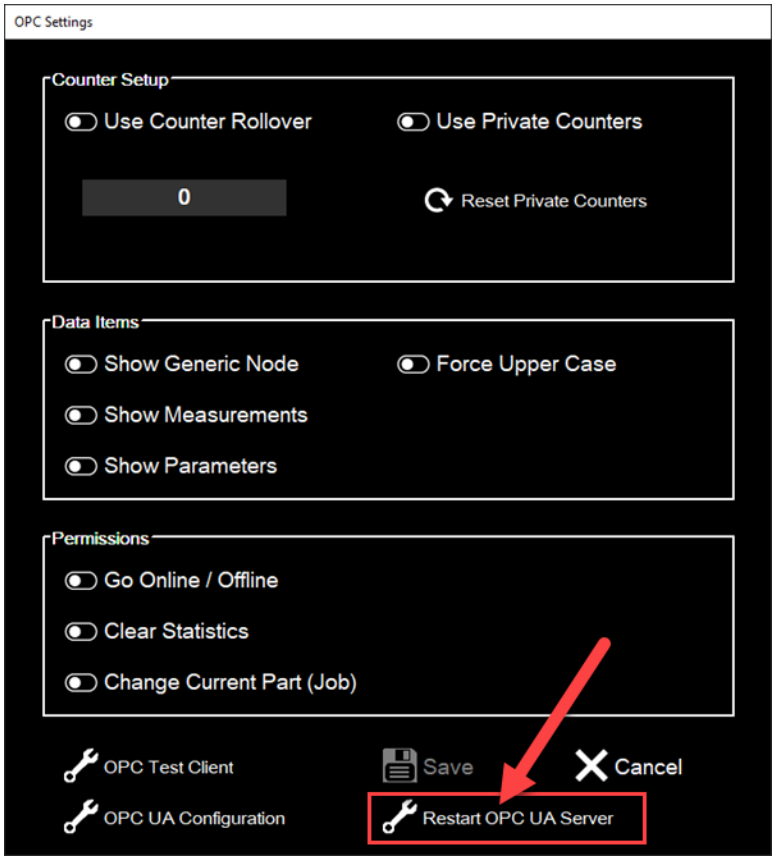
3. In that folder, right-click on the file “OPCUA_UseNS1.cmd” and then click “Run as Administrator” in the drop-down menu.



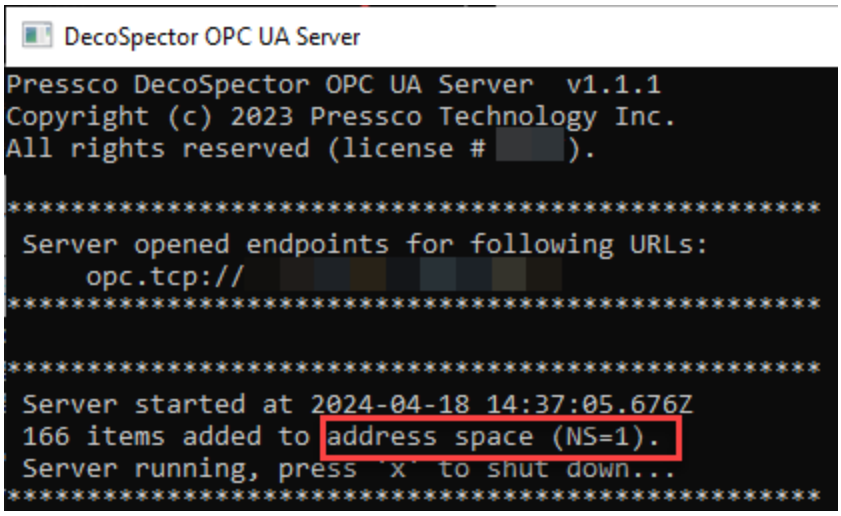
4. The following message window will be displayed indicating that namespace index 1 is now be used again. Press any key to close the message window.



5. Close the File Explorer window.
6. In DecoSpector, select **Settings** | **Global Utilities** | **OPC Settings**.
7. In the “OPC Settings” form, click the **Restart OPC UA Server** button to restart the server using namespace index 1.



8. When the server has restarted, you can see in its console window that namespace 1 is now being used.



9. Close the “OPC Settings” form.

Any existing data collection configuration in which the node IDs are using namespace index 1 will now be valid again.

The DecoSpector OPC Servers

Connecting to the Servers

To connect to the DecoSpector OPC Unified Architecture Server, your OPC UA client software will use an “Endpoint URL” to identify that. The endpoint URL is:

“opc.tcp://(DecoSpectorIPAddress):4840”

where (DecoSpectorIPAddress) is the IP address of the DecoSpector system assigned by your IT department on the plant network. 4840 is the standard TCP port number for OPC UA servers.

OPC UA uses “certificates” to provide secure communications. Our OPC UA Server will generate its own unique (but “unsigned”) certificate when first started. Your OPC UA client needs to be able to work with that (e.g. “accept unsigned certificate”).

Sampling rate

In OPC UA, the update rate can be configured for each individual data item.

The maximum update rate supported by the OPC Servers is 1000 milliseconds (i.e. one update per second); this may be less depending on the system configuration and part rates. Note that OPC does NOT support event-driven data updates; example, every 10,000 parts inspected or every rotation of a machine part.

Defect statistics

The data items available from the Pressco OPC Server include most inspection defect statistics produced by the system. In particular, the following items will be found:

TotalNumberOffline - the number of parts that have passed through the system while offline (and thus not inspected).

TotalPercentOffline - the number of parts while offline expressed as a percentage of the total number of parts that have passed through the system.

TotalNumberInspected - the number of parts inspected since last reset.

TotalPercentInspected - the number of parts inspected, expressed as a percentage of the total number of parts that have passed through the system.

TotalNumberRejected - the number of rejected parts since last reset.

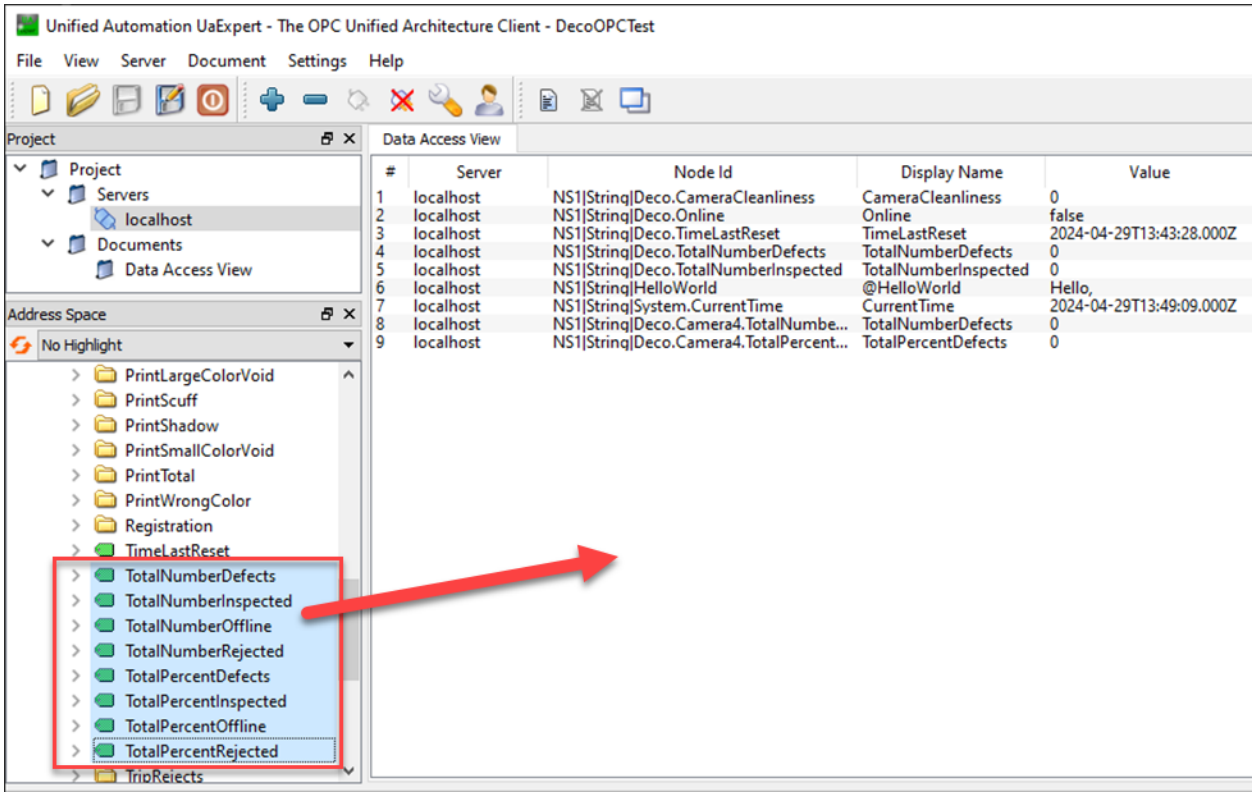
TotalPercentRejected - the number of rejected parts since last reset, expressed as a percentage of the number of parts inspected.

TotalNumberDefects - the number of defective parts identified since last reset.

TotalPercentDefects - the number of defective parts identified since last reset, expressed as a percentage of the number of parts inspected.

These data items are maintained for each part inspected as well as for each defect “category.” Some values are also available for the correlated machine parts when the system is configured to include correlation.

You can select and drag items to the right panel to monitor them through OPC,

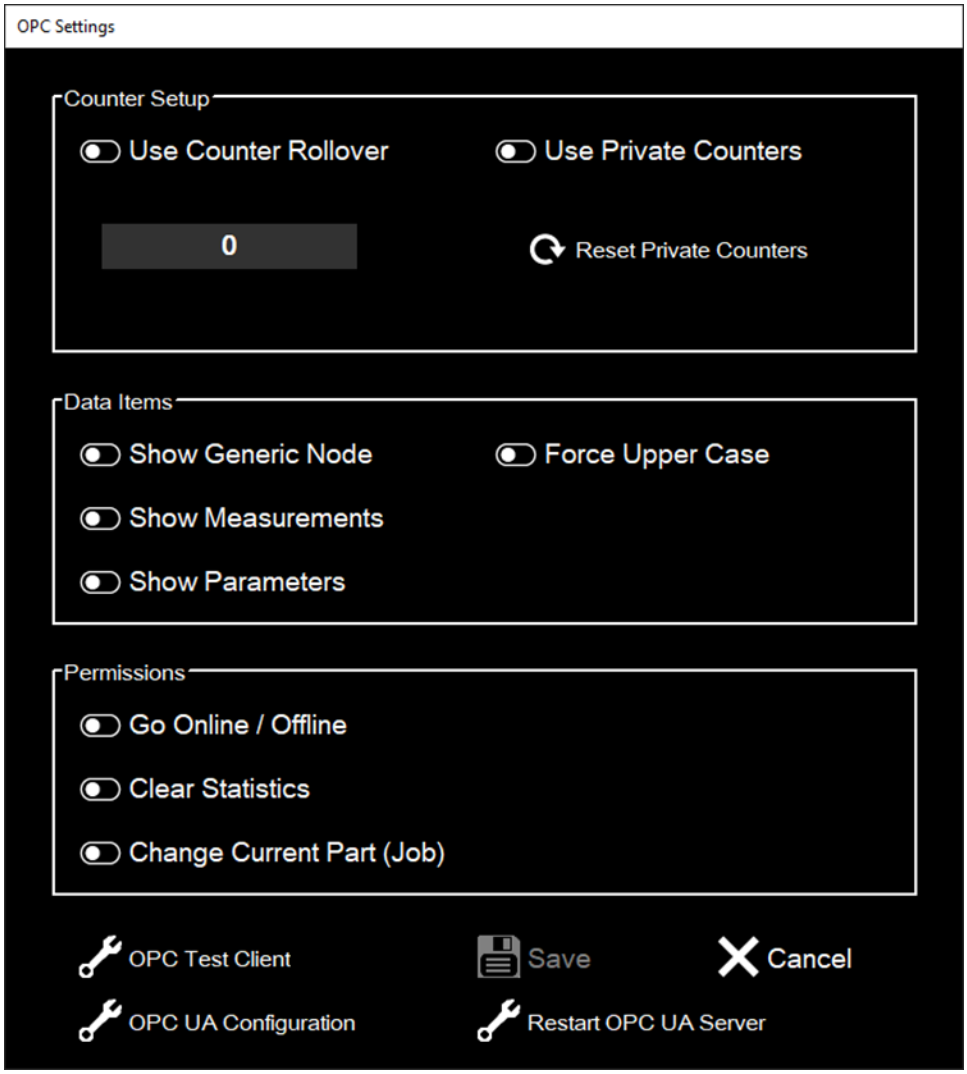


OPC Settings

The OPC Settings screen provides access and settings to the OPC server.

To get to this menu: Log in. Then go to **Settings** | **Global Utilities** | **OPC Settings**. *Administrator only*

> *Note: Select the desired items, and click the **Save** button to make changes. You must restart the DecoSpector software for the changes to take effect.*



Counter Setup section

"Use Counter Rollover" on the next page

"Use Private Counters" on the next page

"Reset Private Counters" on page 216

Data Items section

"Data Items" on page 218

Permissions section

Permissions *Pressco Technician access only*

Other OPC Settings section

DecoSpector OPC Test Client - Click this button to open the OPC test client application.

OPC UA Configuration - Opens the OPC UA Server "ServerConfig.xml" file. CAUTION: This is intended for Pressco Technicians only. If you make changes, this may affect OPC operation.

Restart OPC UA Server - Click this button to close and then restart the OPC UA Server. This may help resolve problems with connections to it or to "refresh" the set of data items that are available.

Use Counter Rollover

Counter Rollover is an advanced option for the OPC server. It allows the OPC server to behave like PLC counters if the digits are limited. For example, you may use a PLC where the data rolls over after 9,999. In this example, set the Counter Rollover value to 10,000. This would make the OPC data roll over after 9,999 to be compatible with your PLC.

> *Note: if your plant is not limited in the number of digits for your OPC counter, make sure the Use Counter Rollover switch is unchecked*

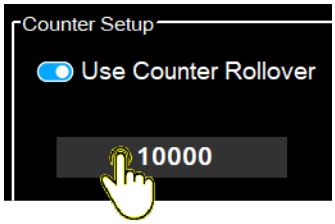
If you have a PLC that has limited digits, set the Counter Rollover to a number equal to one greater than your PLC's highest number. Examples:

- If your PLC rolls over after 9,999, then set Counter Rollover to 10,000
- If your PLC rolls over after 99,999, then set Counter Rollover to 100,000

To set Counter Rollover:

To get to this menu: Log in. Then go to **Settings** | **Global Utilities** | **OPC Settings**. *Administrator only*

1. From the OPC Settings menu, enable the **Use Counter Rollover** feature.



2. Press and hold the number field below the text. Enter the desired rollover value.
3. If you are finished making changes to this menu, select Save to save changes and exit the menu. The DecoSpector needs to re-start for the changes to take effect.
4. Under Global Utilities, select Exit System. This will close the DecoSpector application.
5. Re-start DecoSpector from the Windows desktop. Then log in as required and continue DecoSpector operation.

Use Private Counters

A separate set of OPC counters is available for long-term statistics tracking.

When the Private Counters option is **enabled**:

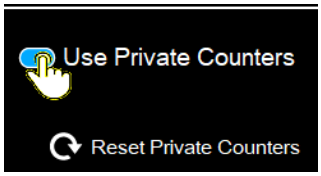
- The OPC counters are unaffected when the system statistics are reset either manually or automatically
- The OPC counters will only reset when:
  - A new job is loaded, or:
  - You use the **Reset Private Counters** button

When the Private Counters option is **not enabled**, the OPC counters are reset the same as the system statistics you see on the DecoSpector screen.

To get to this menu: Log in. Then go to **Settings** | **Global Utilities** | **OPC Settings**. *Administrator only*

To enable the OPC Private Counters:

1. From the OPC Settings menu, enable the **Use Private Counters** option.



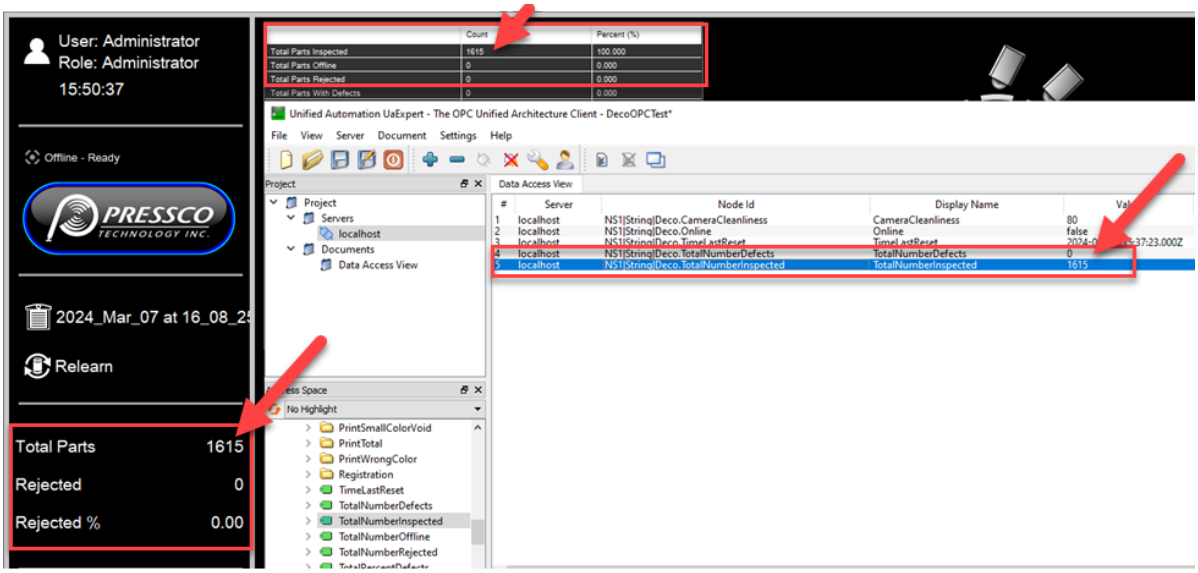
2. If you are finished making changes to this menu, select **Save** to save changes and exit the menu. The DecoSpector must re-start for the changes to take effect.
3. Under Global Utilities, select **Exit System**. This will close the DecoSpector application.
4. Re-start DecoSpector from the Windows desktop. Then log in as required and continue DecoSpector operation. The Private Counters option is enabled.

To see the difference between the statistics on the DecoSpector screen and the OPC Private Counters, use DecoSpector OPC Test Client.

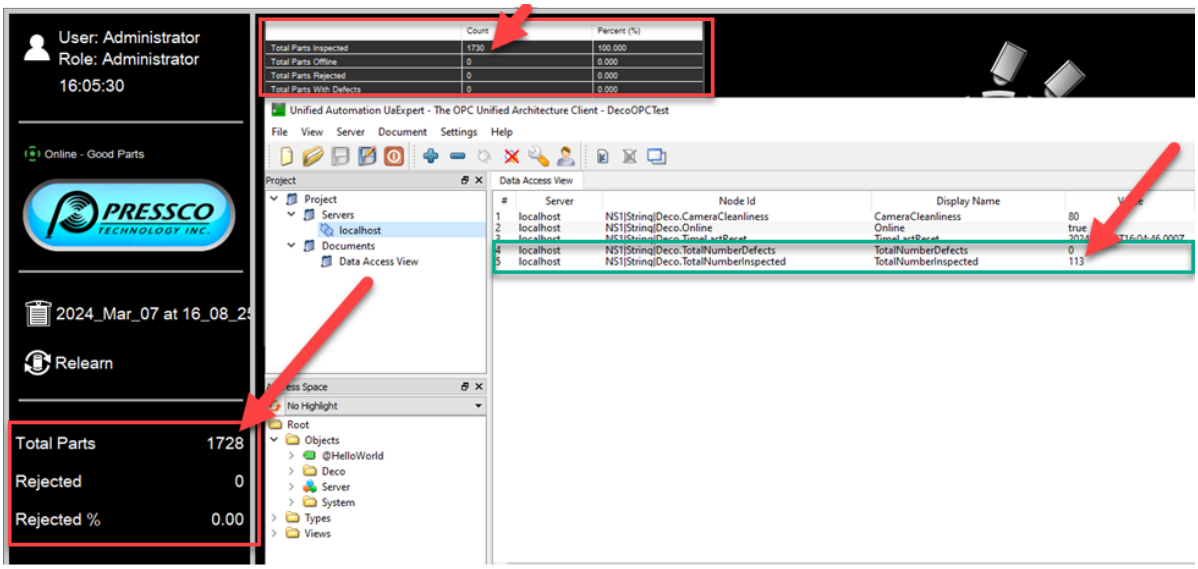
To view only items such as parts inspected, number of defects, etc., see "View Only Defect Data" on page 217.

Private Counters Example

A) Normal condition (Private Counters disabled): DecoSpector and OPC statistics are the same



B) Private Counters enabled: When the DecoSpector statistics are reset, the OPC statistics do not get reset. These can be reset separately: see "Reset Private Counters" below.



Reset Private Counters

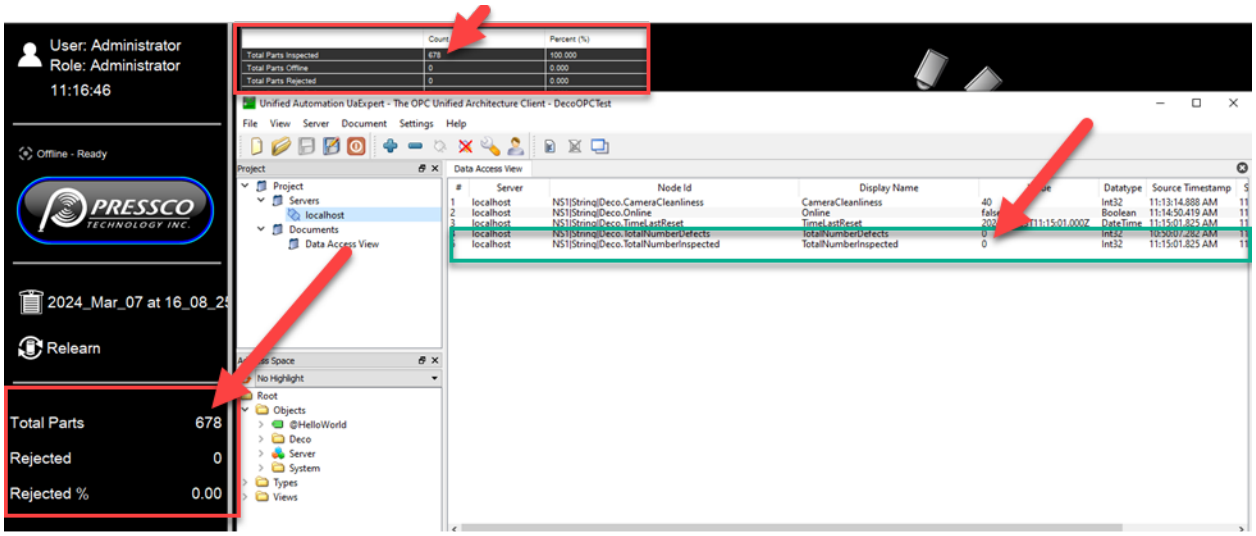
OFFLINE ONLY. When you use the OPC Private Counters option, you may need to manually reset the OPC data.

Settings To get to this menu: Log in. Then go to **Settings** | **Global Utilities** | **OPC Settings**. *Administrator only*

To reset the OPC Private Counters:

1. Select the **Reset Private Counters** button. A confirmation box appears to notify you that the counters will be reset on the OPC server.

2. Click OK. The OPC counters are reset, but the DecoSpector statistics are not.



View Only Defect Data

To see the effects of Private Counters, set up the OPC test client to show only the defect items such as parts inspected and number of defects.

Open the UaExpert OPC UA test client. Next, set up the data items to display only defect information.

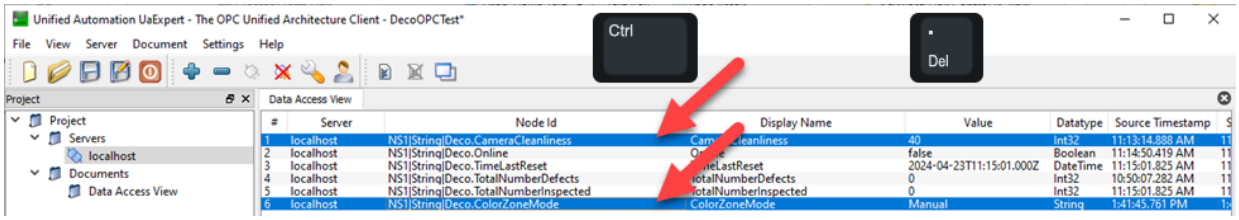
Next, set up the data items to display only defect information.

To see the defect items:

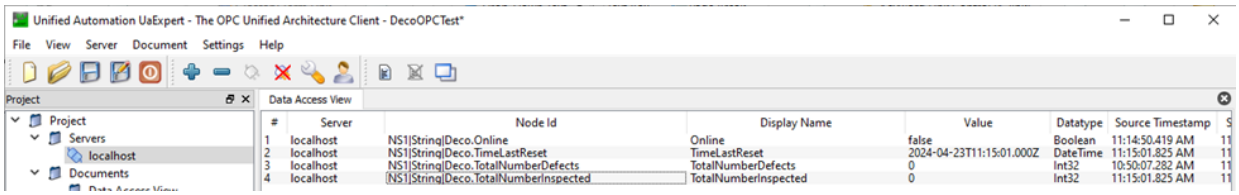
1. Remove the items that you do not want to see by clicking each item, then selecting the Delete button on the keyboard. (To select multiple items next to each other, hold the Shift key while selecting the desired items. To select non-contiguous items, hold the Ctrl key while selecting.) OR:

   Remove items by right-clicking the selected items and then selecting "Remove selected nodes" from the pop-up menu.

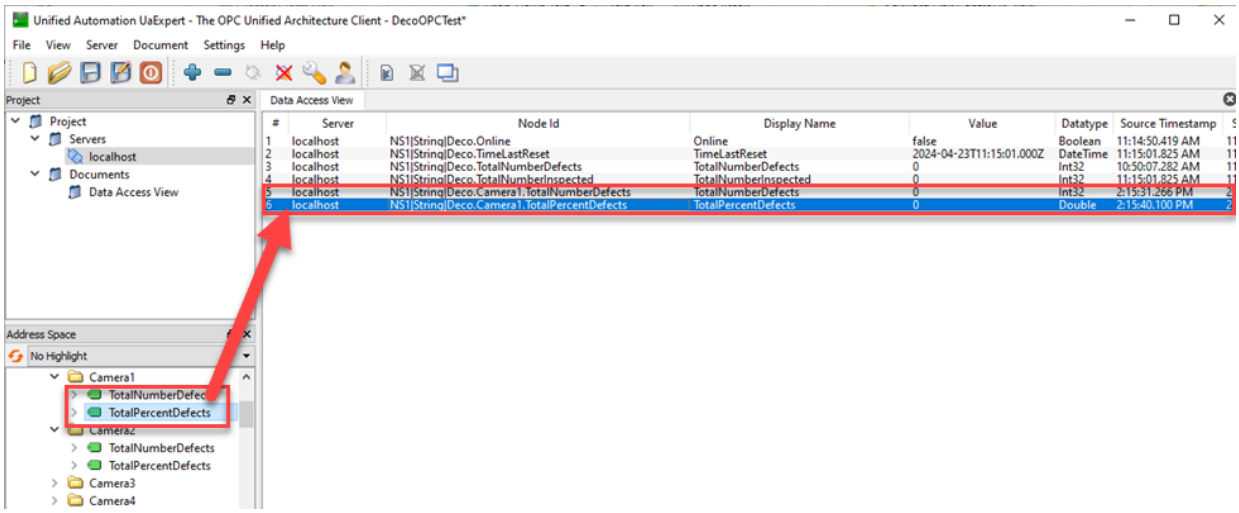
> *Important: do not click the "System" item in the left pane. If you remove that item, then none of the statistics items will be available to view.*



results in:



2. Choose the items that you do want to see. Expand the individual camera trees and choose the defect statistics for each camera, if desired. Click and drag those items to the right.



Next, test the Private Counters: Put the DecoSpector system online. Observe the defect data on screen and in the OPC test client. Notice that the numbers are essentially the same. Due to different update rates, the numbers may be slightly off at times. See example: "Use Private Counters" on page 214.

Data Items

From the "OPC Settings" on page 212 menu, there are several data items that allow specific data to be monitored through the OPC server.

Note: "Show Generic Node" is not used with OPC UA servers as of this publication.

Force Upper Case - This is only used for compatibility with a specific OPC client. In most cases it is not used.

Show Measurements - Use this to include measurement items, which are limited to values relating to color analysis. See the "Measurement Data Items" in "List of Data Items" on page 223.

Show Parameters - Reserved for future use.

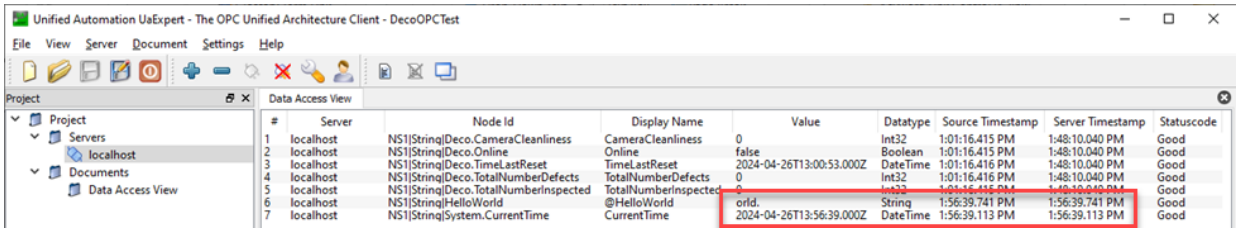
OPC UA Test Client

Your system will have a test client installed if you purchased OPC when you purchased the system. If you do not have it installed already on your system ask Pressco to install the UaExpert OPC UA Test client. This software will allow you to monitor the data items, and it is the only client software supported by Pressco.

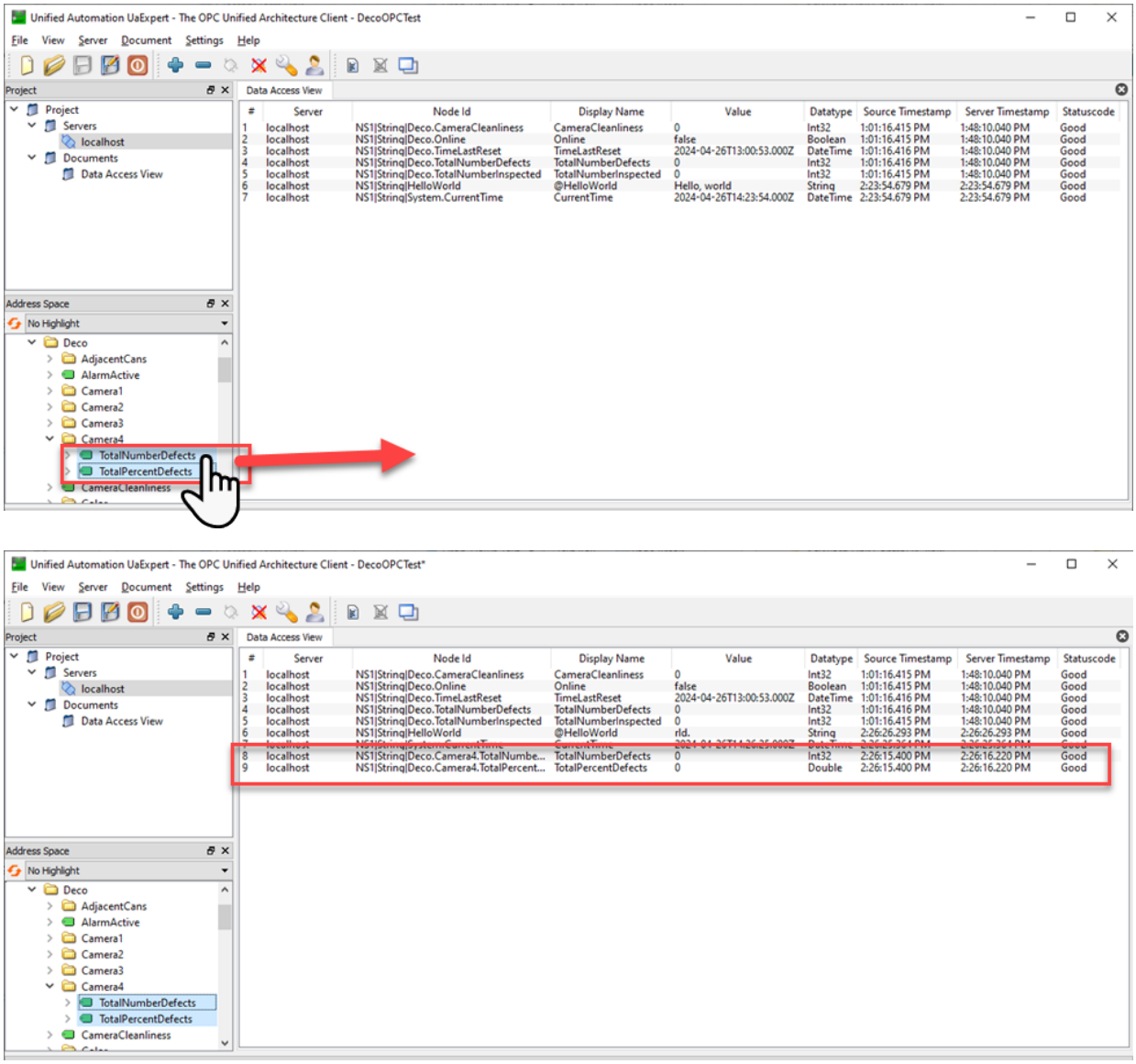
To use the OPC test client:

1. Log in to the DecoSpector.
2.

Select Settings | System Utilities | OPC Test Client.
3. Click **Open** on the program's toolbar (file folder icon). The File Open dialog box is displayed.
4. Look in: C:\Pressco\bin\OPC.
5. Click the DecoOPCTest.uap file | click Open. The items you have already selected to monitor appear in the middle Data Access View window.
6. Verify that data item "CurrentTime" is being updated once per second (if selected to monitor). You may need to expand the Value field.



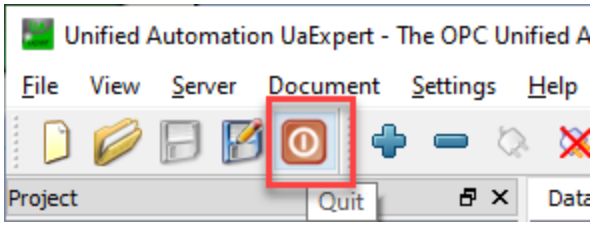
7. If desired, add more data items to monitor: In the left panel under Root, expand Lane, and select the items you want to monitor. Drag them to the Data Access View window to monitor them.



8. Select the Save button to save the list of data items to monitor.

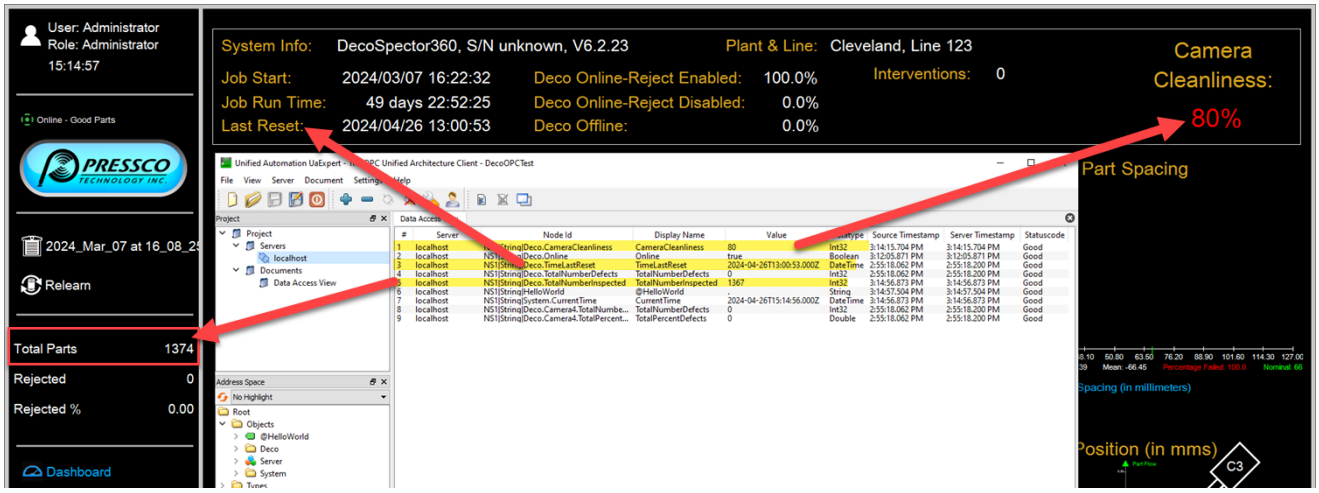
Exiting the Test Client

Select the Quit button. You will be asked if you want to save the current project. Select Yes or No, or Cancel to keep the test client open.



Interpreting the Data

The data items in the OPC test client correspond to the statistics on the DecoSpector screen. If you are monitoring defect categories, look at the corresponding statistics grid on the DecoSpector screen. Depending on which items you are monitoring, you will see them correspond to the items on screen. Note that due to different refresh rates, some numbers may be slightly different, such as "TotalNumberInspected."



Writeable Data Items

Certain data items allow a plant supervisor to make changes to the DecoSpector remotely through OPC.

Prerequisites:

- DecoSpector OPC UA server version 1.1.0 or later.
- These writeable data items need to be enabled in OPC Configuration by a Pressco Technician

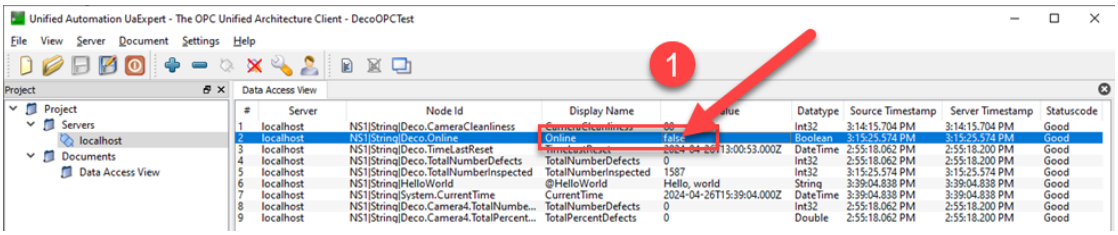
The items that can make changes to the DecoSpector are:

- Put the system Online or Offline
- Reset Statistics

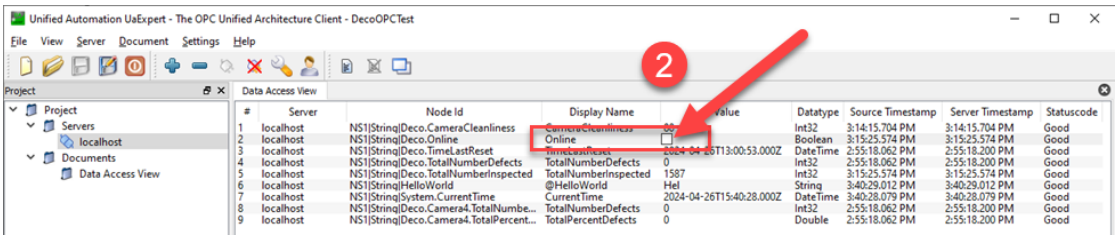
Put the System Online or Offline

Make sure the **Deco.Online** data item is added to the Data Access View on the right side of the OPC client. This item allows you to put the system online or offline. To put the system online, check the box in the Value field for the Online item.

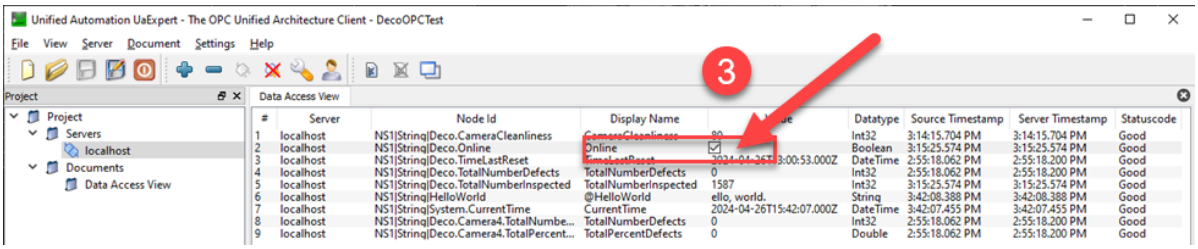
1. Double-click the word "false" to see the check box.

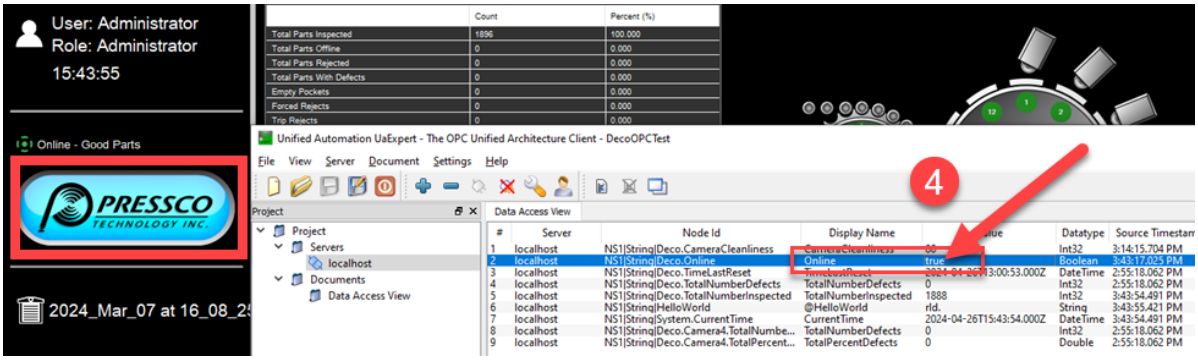


2. Click inside the check box to check it.



3. Press Enter to confirm the selection. The lane goes online, and the Value changes to "true."



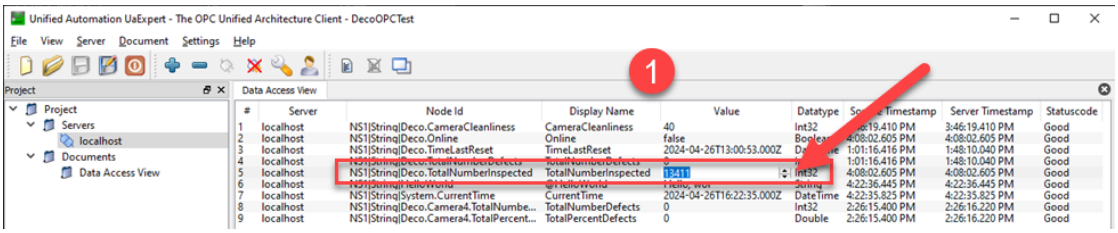


To take the lane offline, double-click the word "true" to see the check box, de-select the check box and press Enter.

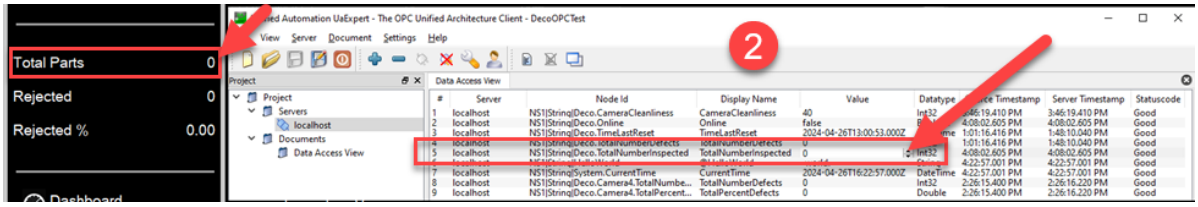
Reset Statistics

The TotalNumberInspected data item allows you to reset the statistics.

1. Make sure the **Deco.TotalNumberInspected** data item is added to the Data Access View.
2. To reset the statistics, double-click the TotalNumberInspected **Value**. You will see up/down arrows to change the values.



3. Type 0 [zero] for the value and press Enter. This resets the statistics for the selected lane. (Values other than zero are ignored)



Note: If the "Use Private Counters" option is enabled in OPC Configuration, the statistics will be reset only in OPC and not the main system or other reports.

List of Data Items

The following list contains the common data item IDs that are available on the DecoSpector OPC Server. See the DA Browse tab. Note that the names of certain data items (e.g. the color names when 'Show Measurements' is enabled) depend on your system configuration.

Statistics

TotalNumberInspected - Total number of parts inspected since statistics were last reset.

TotalPercentInspected - Percentage of parts inspected since statistics were last reset.

TotalNumberOffline - The number of parts that have passed through the system while offline (and thus not inspected).

TotalPercentOffline - The number of parts while offline expressed as a percentage of the total number of parts that have passed through the system.

TotalNumberRejected - Total number of parts that were rejected since statistics were last reset.

TotalPercentRejected - Percentage of parts the were rejected since statistics were last reset.

TotalNumberDefects - Total number of defective parts found since statistics were last reset.

TotalPercentDefects - Percentage of defective parts per the total number of parts inspected since statistics were last reset.

System Status

Online - True if parts are currently being inspected with defective parts being rejected or False if they are not.

AlarmActive - True if the red light on the light tree is currently illuminated or False if it is not.

WarningActive - True if the yellow light on the light tree is currently illuminated or False if it is not.

AnnunciatorActive - True if the horn or buzzer on the light tree is currently sounding or False if it is not.

EncoderFrequency - The number of encoder pulses being produced per second (which is proportional to the conveyor speed).

PartRate - The number of parts to be inspected passing through the system in units of parts encountered per minute.

CurrentPart - The name of the currently selected job.

TimeLastReset - The date and time that statistics were last reset to zero.

MissedAcquisitions - The total number of parts for which a usable image was not received from the camera.

MissedInspections - The total number of parts the system did not inspect because all the inspection threads were busy.

MissedResults - The number of parts that reached the reject point on the conveyor before the system was able to determine if the part was defective or not.

MissedRejects - The number of parts that should have been rejected but were not. This is only applicable if the Reject Confirm feature is part of the system.

EncoderOverspeed - The number of times the encoder frequency exceeded the maximum that the part tracker can handle.

Defect Categories

Empty Pockets - The system tests to see if a part is present before proceeding with inspection. If a part is not present, then this is called an Empty Pocket. For accurate production numbers, we need to locate empty pockets. No inspection takes place (for the current part) if the system finds an empty pocket. Empty pockets are found when the system does not locate any feature edges during part location. This can happen if the part is too short, too dark, the part has fallen off the conveyor, or there is another severe defect that causes the system not to find the part.

Forced Reject - The number of parts rejected because the system is set to force all parts encountered to be rejected. The system will reject all parts associated with the selected components, regardless of the pass/fail condition of those parts.

Part Locate - This error often occurs when the part is not properly centered in the field of view, or there is more than one part appearing in it.

Adjacent Can Errors - An adjacent can error occurs when the system sees another can (in addition to the can being inspected) in the field of view. The adjacent can may cause shadows or reflections on the part being inspected.

Out of Round - An out of round error occurs when the system finds a part that is not formed properly (the rim of the part appears to be an oval instead of a circle).

Registration Errors - A registration error occurs when the system does not find the top or side edges of a part.

Orientation Errors - An orientation error occurs when the part is tilted too much. This is also the reason for failure if the system detects a 'tramp can' or wrong label. This check is done automatically by the system.

Print Total - This is a composite of Wrong Color, Scuff, Shadow, Large Color Void and Small Color Void. Note that this is NOT the arithmetic sum, as multiple defects of these types on the same part only count as one Print Total defect.

Wrong Color - The system found color somewhere on the label where it was expecting a different color, such as finding green when it was expecting to see red.

Scuff - The system found an area on the label that was too bright.

Shadow - The system found an area on the label that was too dark.

Large Color Void - The system found an area less colorful than expected, such as pink or gray when the system was expecting red. These are set up to be larger areas of Color Voids. To catch color voids, you may need to lower sensitivity and increase defect size.

Small Color Void - The system found an area less colorful than expected, such as pink or gray when the system was expecting red. These are set up to be smaller areas of Color Voids. To catch color voids, you may need to lower sensitivity and increase defect size.

Correlation information

Mandrel - Inspection statistics specific to the Mandrel machine parts. Note that the items within this branch are vectors, where each vector element corresponds to a single Mandrel.

PrintBlanket - Inspection statistics specific to Print Blanket machine parts. Note that the items within this branch are vectors, where each vector element corresponds to a single Print Blanket.

Pin - Inspection statistics specific to the Pin (on the pin chain) machine parts. Note that the items within this branch are vectors, where each vector element corresponds to a single pin on the pin chain.

Measurement information

If the ‘Show Measurements’ option in OPC Settings is enabled, there will be a series of ‘**ColorZone (#)**’ nodes present in the OPC address space where (#) is a decimal number indicating which color zone it is. Within each of those nodes, the following measurement items are available.

Name - This is a string value giving the name of the color for this color zone.

DeltaE - The “Delta E” value, giving an overall indication of how far the measured color for this color zone deviates from the reference color in the template image.

DeltaL - The “Delta L” value, indicating deviance in the “L” (luminance) component of the color (used in the computation of Delta E).

DeltaC - The “Delta C” value, indicating deviance in the “C” (chrominance) component of the color (used in the computation of Delta E).

DeltaH - The “Delta H” value, indicating deviance in the “H” (hue) component of the color (used in the computation of Delta E).

LCH_L - The measured “L” (luminance) component of the color in LCH color space.

LCH_Lref - The reference “L” (luminance) component of the color in LCH color space.

LCH_C - The measured “C” (chrominance) component of the color in LCH color space.

LCH_Cref - The reference “C” (chrominance) component of the color in LCH color space.

LCH_H - The measured “H” (hue) component of the color in LCH color space.

LCH_Href - The reference “H” (hue) component of the color in LCH color space.

RGB_R - The measured “R” (red) component of the color in RGB color space.

RGB_Rref - The reference “R” (red) component of the color in RGB color space.

RGB_G - The measured “G” (green) component of the color in RGB color space.

RGB_Gref - The reference “G” (green) component of the color in RGB color space.

RGB_B - The measured “B” (blue) component of the color in RGB color space.

RGB_Bref - The reference “B” (blue) component of the color in RGB color space.

System information

Application Name - String giving the name of the Pressco product. This always returns the value “DecoSpector 360”.

Version - String giving the major, minor and build numbers of the software currently running on the DecoSpector 360 system.

SerialNumber - String giving the system serial number.

CurrentTime - Current date and time as given by system clock. This changes at a rate of once per second and can provide a useful “heartbeat” indication.

CurrentUser - String giving the name of the user currently logged onto the system, or an empty (blank) string if no user is currently logged on.

UserAccess - String giving the privilege level associated with the user currently logged onto the system.

PowerFail - Boolean indicating if the AC power to the system has failed and it is operating off of the battery in the Uninterruptable Power Supply (UPS).

LowBattery - Boolean indicating if the battery in the Uninterruptable Power Supply is now almost exhausted (in which case automatic system shutdown is imminent).

OverTemperature - Boolean indicating if the overall system temperature is exceeding acceptable limits (in which case automatic system shutdown is imminent).

CPUOverTemperature - Boolean indicating if the computer CPU temperature is exceeding acceptable limits (in which case automatic system shutdown is imminent).

References

To learn more about OPC, visit these links:

OPC Foundation (https://opcfoundation.org/)

OLE for process control (http://en.wikipedia.org/wiki/OLE_for_process_control)

Or perform a search on the Internet, using "OLE for process control" as the search criteria.

Chapter 16 Appendix - Reference Topics

This section contains reference topics for features that are not part of the standard software.

Deco Can Printing Position Requirement

Specification

We require that two millimeters (2mm) of bare aluminum be present at the top of each can. This is required for proper part location. Less than 2mm may result in part location issues, which impacts inspection.

Unrolled Image Save

This feature uses a separate hard drive to save all defective images and a periodic sampling of good images for up to six (6) months. You will be able to view the saved images from the DecoSpector interface, or copy them to view on your own computer.

Note: the Unrolled Image Save tool is an optional feature. To purchase this feature, please contact your Pressco Sales Manager. Additional hardware may be required, depending on your system.
Note: We recommend only Pressco Field Service engineers install this option

What you need:

- Unrolled Image Save is an option and therefore has to be part of the original install, or purchased as an upgrade.
- A separate hard drive is installed to support this database. An eight (8) TB hard drive is installed (as of this publication). This drive is partitioned into two 4TB partitions.
- DecoSpector™ software versions 6.2, 6.3, and above (released March 2022 and later)
- Microsoft Windows 10 and above

Notes about Unrolled Image Save

- Unrolled Image Save is designed to limit interference with the inspection system. This means that under high system load images may not be recorded as the database has to yield to the inspection system.

- We cannot guarantee that all images are saved because of memory constraints and available time for writing images to a hard drive.
- The file size is fixed. The entire hard drive space is allocated upon initial setup. When the database reaches its maximum number of images, it stops recording images. An alarm may be set for warning prior to the hard drive filling up.
- The feature is designed to save images for up to 6 months.
- The system will automatically discontinue the saving of images if free disk space drops below 1% of the total disk space. Images will not be saved on that partition until space is cleared.

Settings for Unrolled Image Save

Settings | **System Settings** | **Unrolled Image Save**.

Enabling the application

This feature must be enabled before you can use it.

> *Note: only users with **Pressco Technician** access may enable or disable the feature.*

Select Enabled or Disabled from the right side of the dialog.

Reformatting the Partition

Administrator only

> *WARNING - All data on the partition will be permanently deleted. This action cannot be undone.*

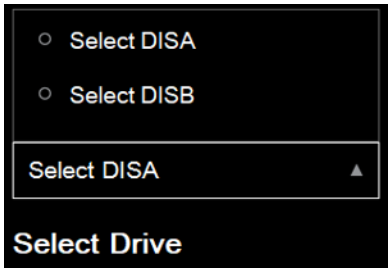
Before using the application or changing partitions, it's a good idea to reformat the selected partition.

Select the reformat button in the right, bottom corner of the dialog. Only the currently selected partition, which is displayed below the list box, will be reformatted.

Selecting a Partition

Administrator only

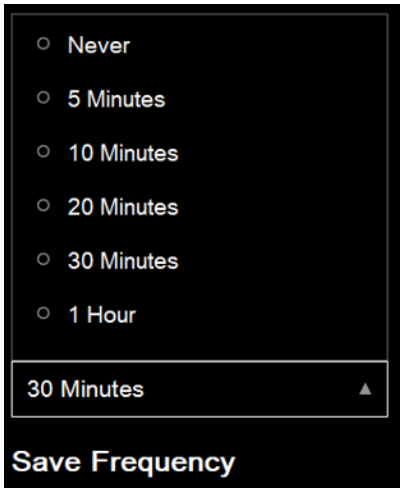
Select between the two partitions (DISA or DISB) to save images. The selected partition will be displayed below the list box.



Saving Good Images

Administrator only

Good images are only saved if you choose. You can select how often good images are saved. All defective images are saved automatically.



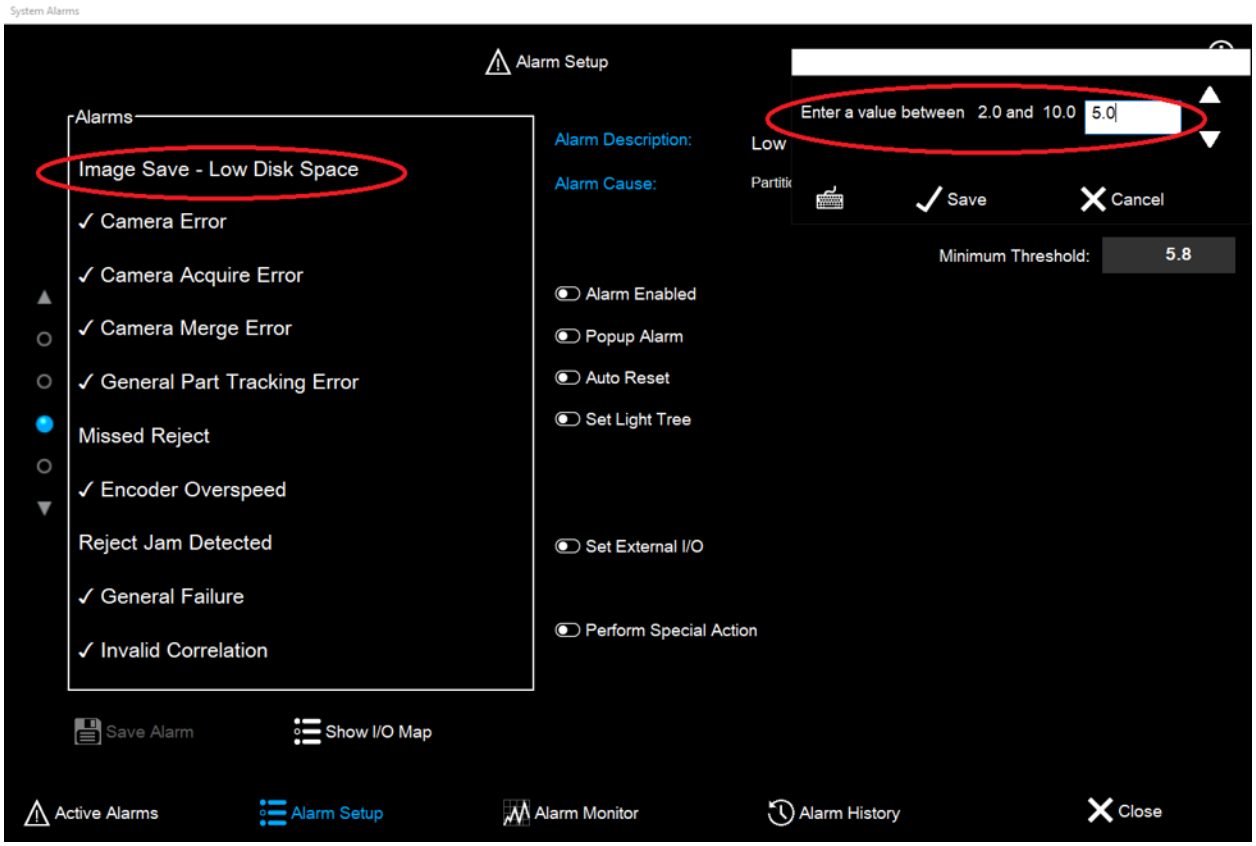
The good images are saved only on the system clock interval. Example, if you select "10 minutes," then a good image would be saved at 1:00, 1:10, 1:20, and so on. If there are no good images between 1:00 and 1:01, then no good images will be saved during that interval.

Low Disk Space Alarm

An alarm is available for monitoring disk space. It can be configured to trigger when free disk space drops below 2% to 10% of total disk space.

To set up the alarm, select the Alarm icon | **Alarm Setup** | scroll down to **Image Save - Low Disk Space** in the left column. Select the **Minimum Threshold** value to change the value.

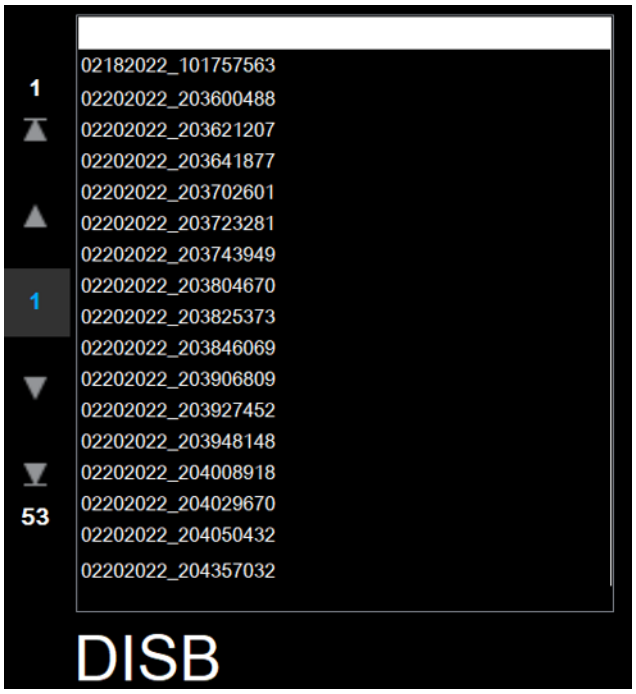
Additionally, the system will automatically discontinue the saving of images if free disk space drops below 1% of the total disk space. Images will not be saved on that partition until space is cleared.



Using Unrolled Image Viewer

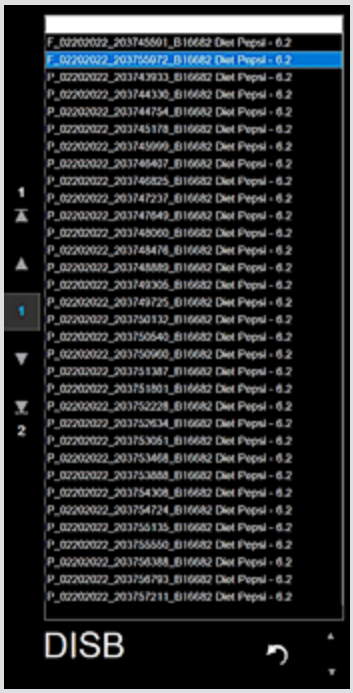
Operator level and higher can access

Settings **Settings | System Settings | Unrolled Image Save**.



This feature allows you to view images. First select a directory from the list box on the left side of the screen. Scroll through multiple pages by using the arrow keys to the left of the listbox. The current partition will be displayed at the bottom.

Each directory is named with a timestamp from when it was created. The format is MMDDYYYY_ HHMMSSmmm(Hour-Minute-Second-Millisecond).



When a directory is selected, a list of image files will populate the listbox. The file name follows this format: X_ XXXXXXXX_XXXXXXXXX_ JobName.

- 1st field – P for pass – F for fail
- 2nd field – MMDDYYYY
- 3rd field – HHMMSSmmm – Hour-Minute-Second-Millisecond
- 4th field – Job Name – name of job running

You can scroll through multiple pages by using the arrow keys to the left of the listbox.

You can also scroll through individual images using the arrows on the bottom right or the arrows on the keyboard.

Using the return button on the bottom right returns to the previous list of directories.

When you select an image file, it will automatically be displayed to the right of the list, with defect information displayed below the image.

Copying Images Outside of the System

Administrator only

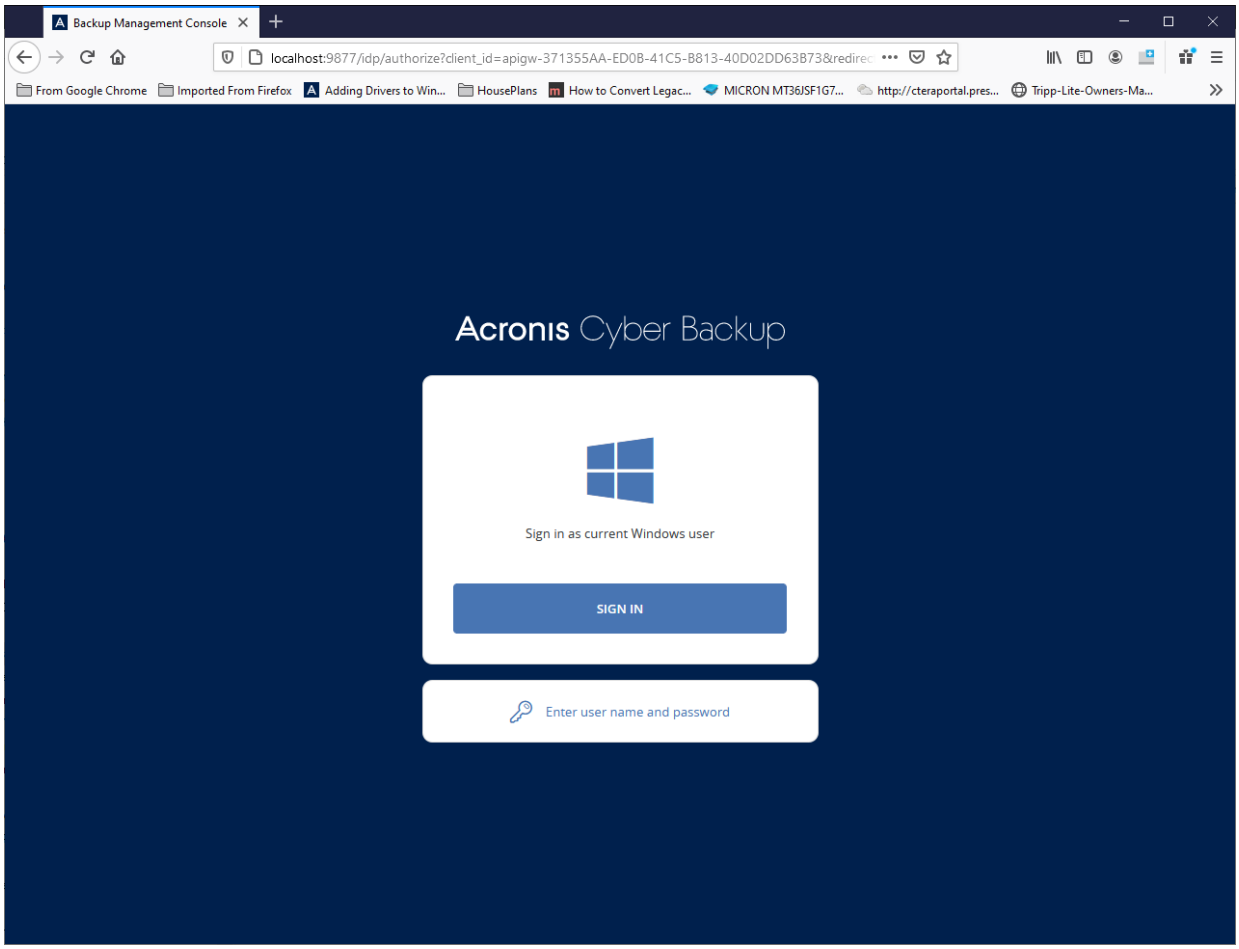
You can copy images outside of the DecoSpector system to view them on your own computer. Typically, you will access the DecoSpector hard drive(s) from your internal network.

Use Windows Explorer to locate the DISA and DISB drive partitions to copy the images to your network.

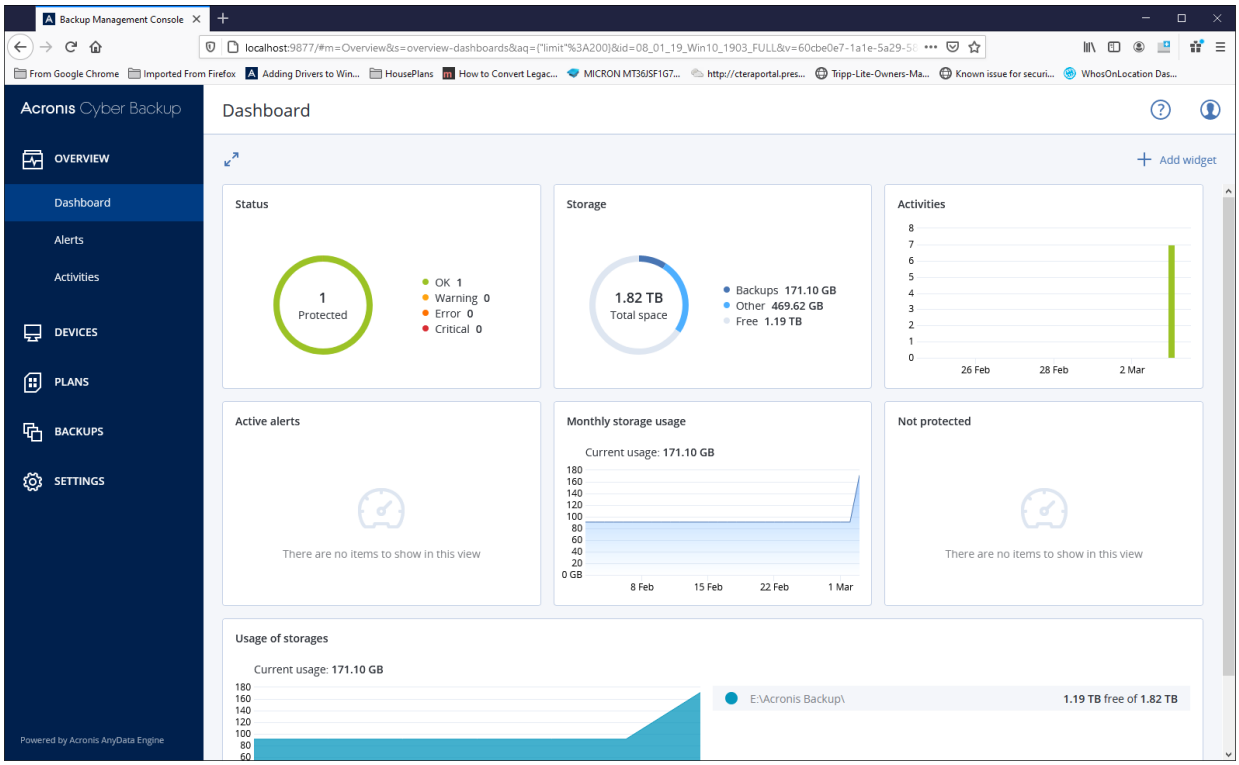
Create an Acronis Backup

This procedure makes a backup of the whole system. The backup may be used if the hard disk needs to be replaced.

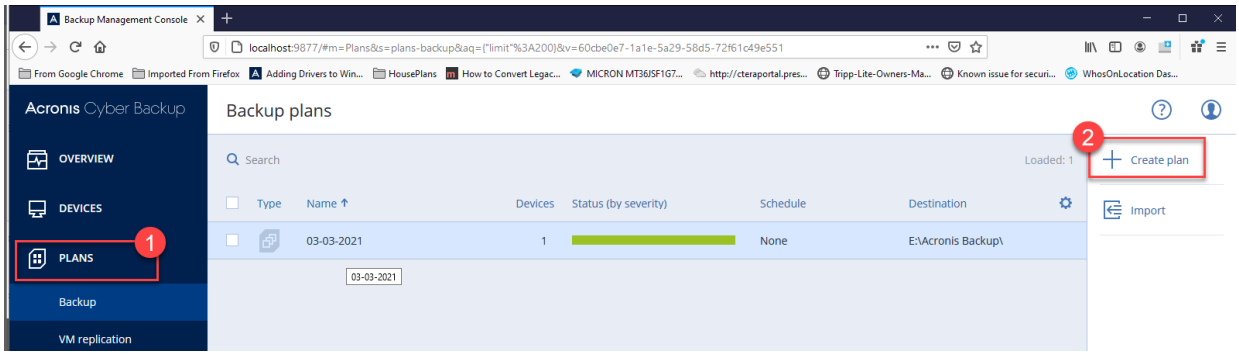
1. Launch Acronis & click “Sign in as current Windows user.”



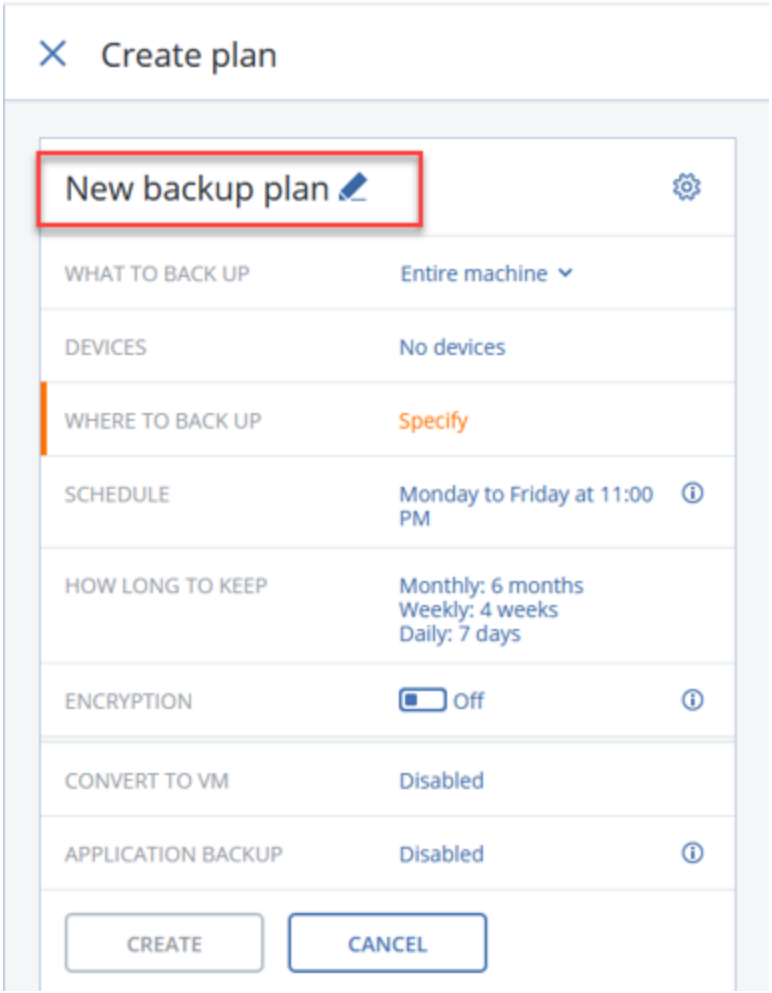
2. If it is the first time you are running Acronis, it should present the Dashboard.



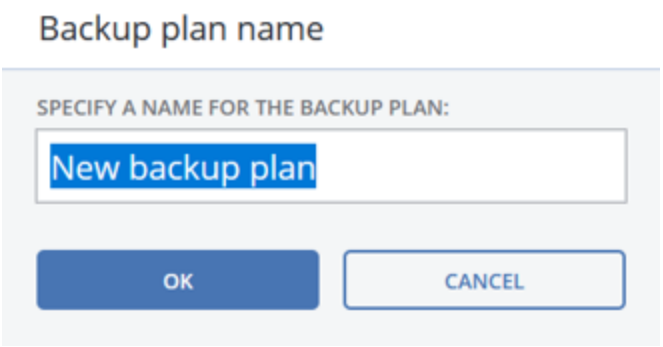
3. Click on Plans. (if you had a previous back up made it will show as well) On the far right, select Create Plan.



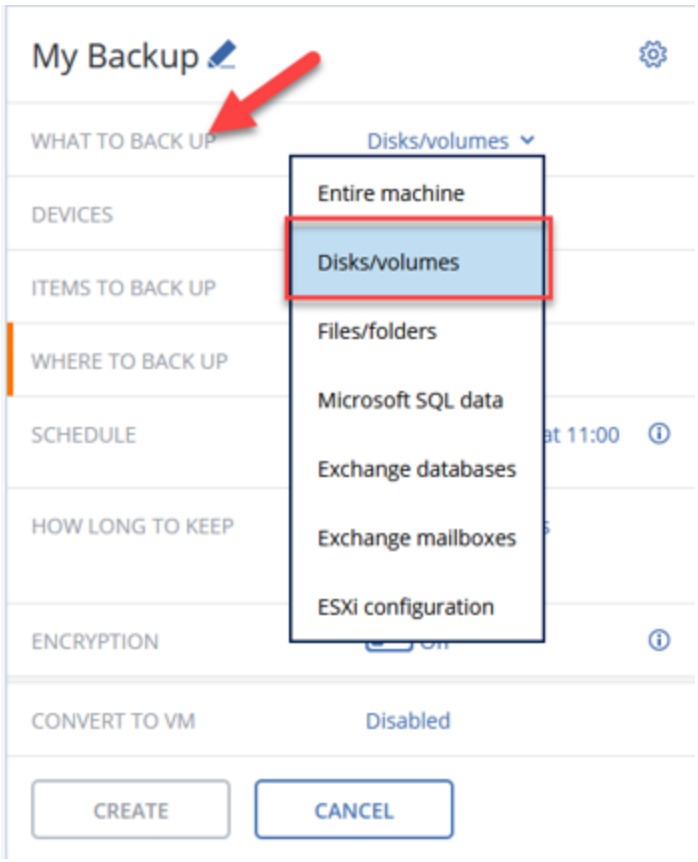
4. Select New Backup Plan.



5. Click on new back plan and enter new name.

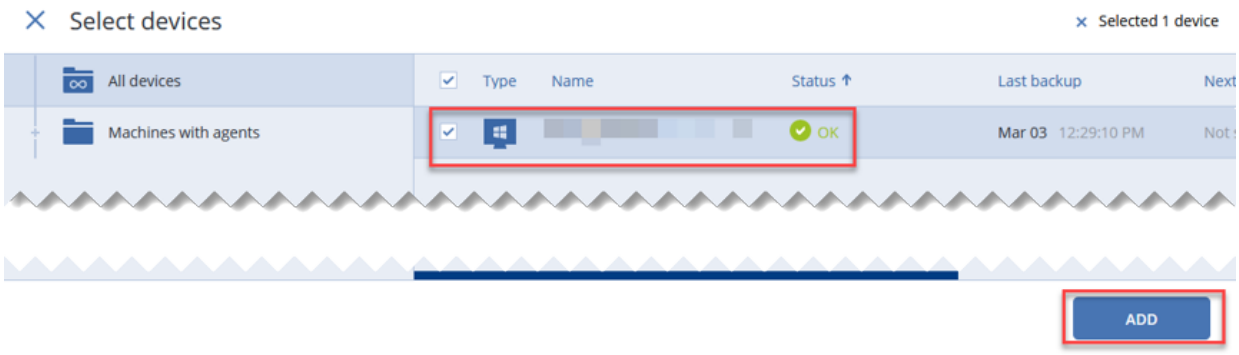


6. Click “WHAT TO BACK UP” and select “Disks/Volumes.”

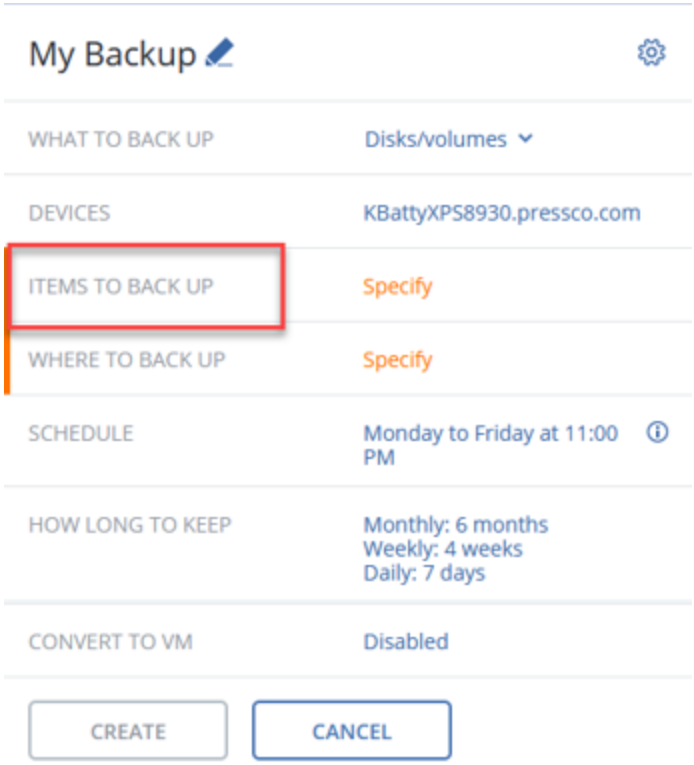


7. Click DEVICES -> Add.

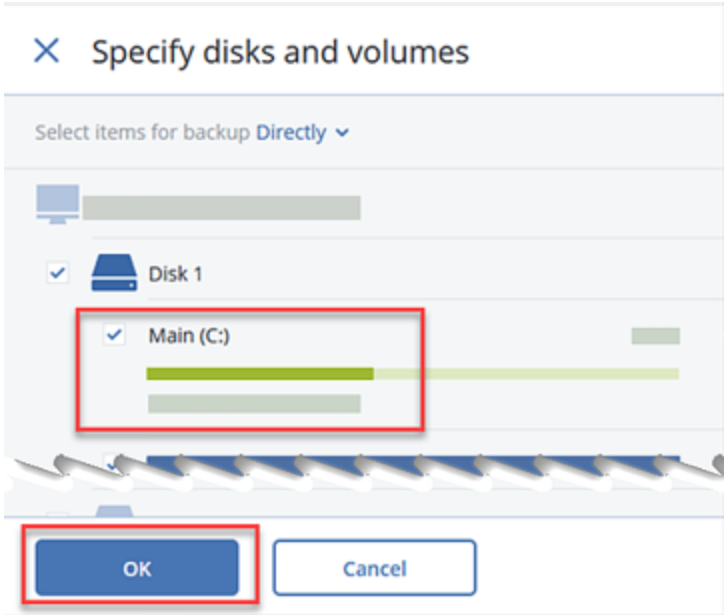
8. Select your machine name -> click Add -> Done.



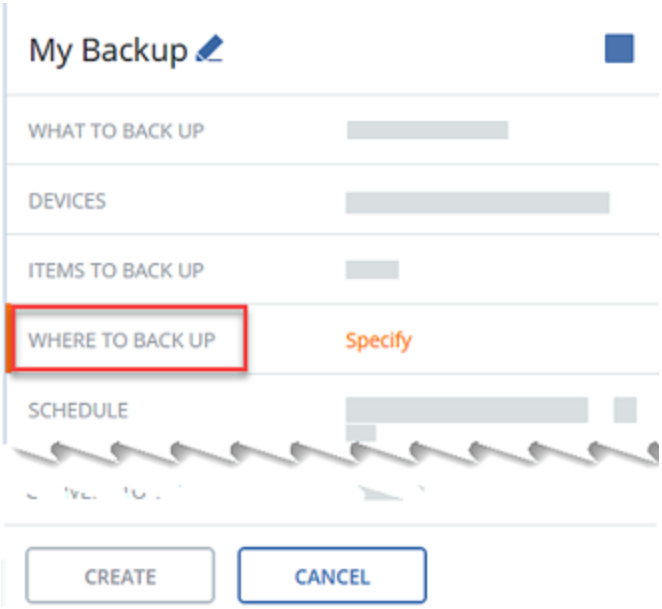
9. Click “ITEMS TO BACK UP.”



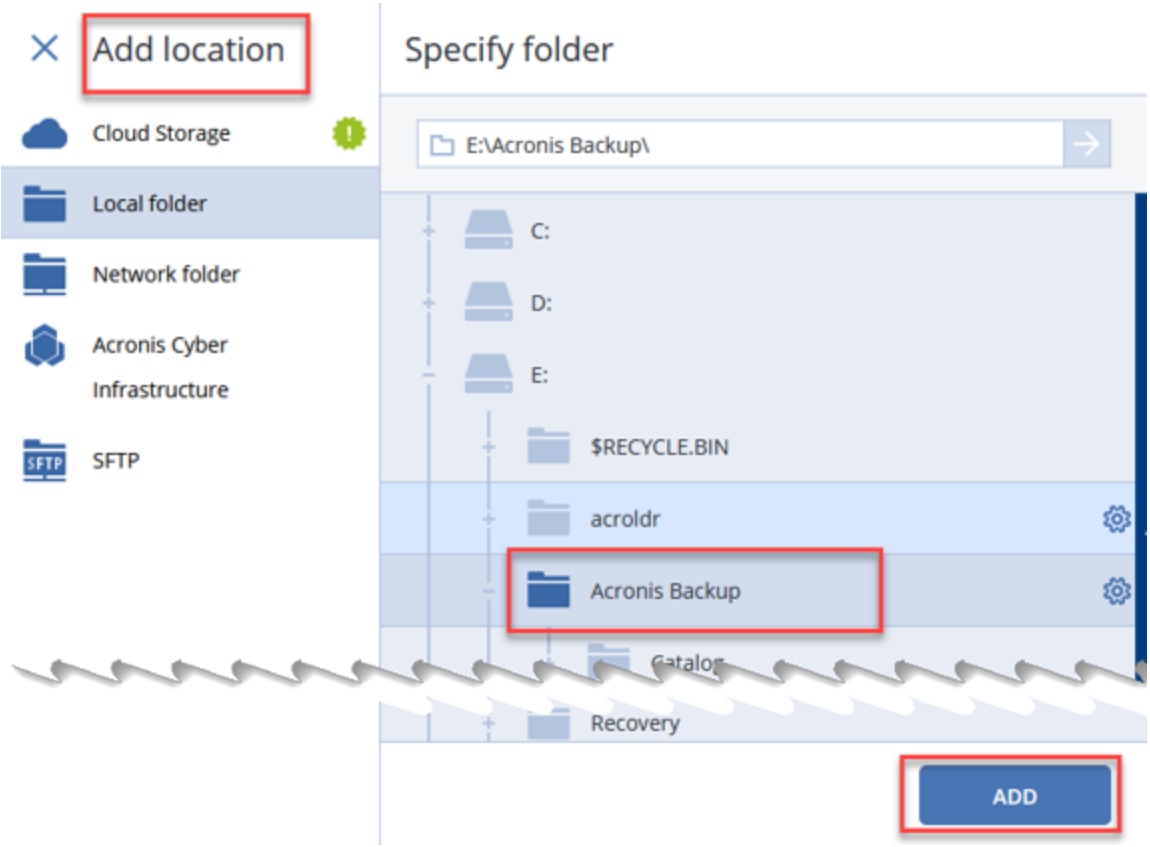
10. Click the main “C” drive and Select OK.



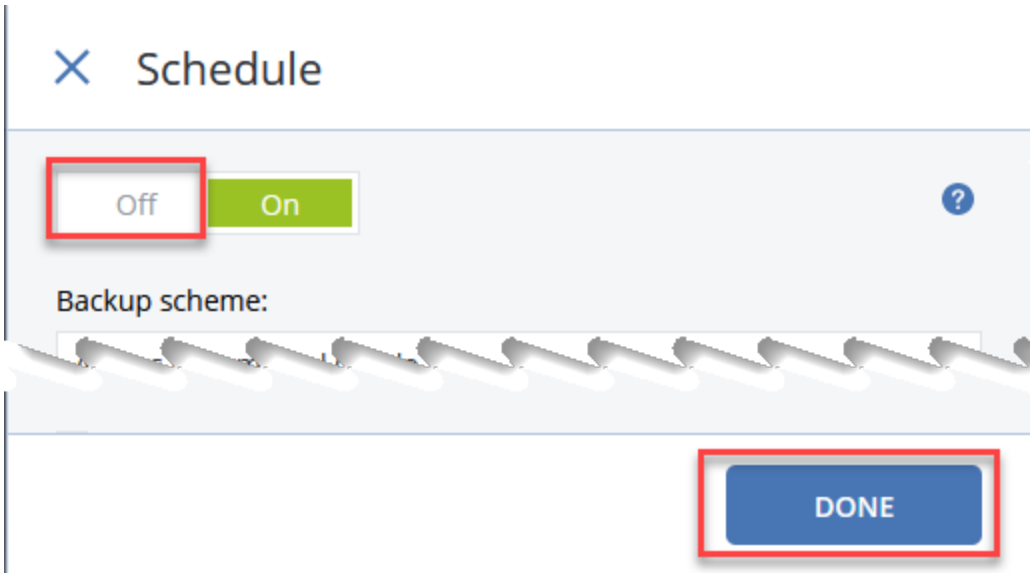
11. Click “WHERE TO BACK UP.”



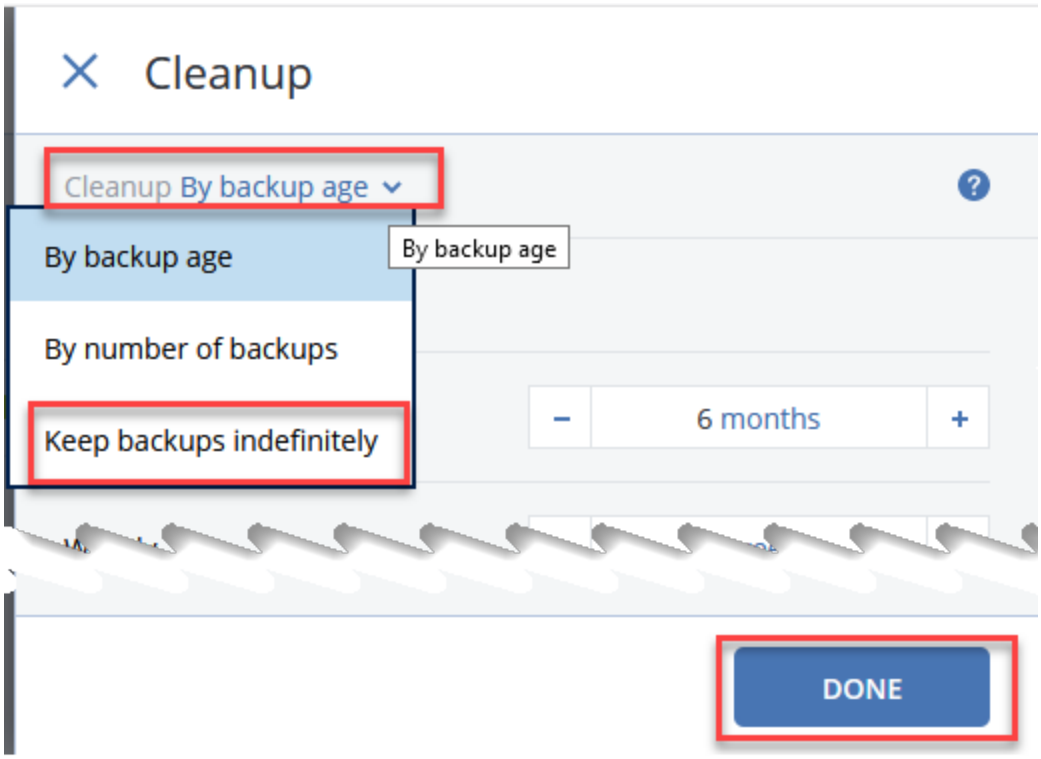
12. Click “Add location” and specific path on backup drive. Then click ADD.



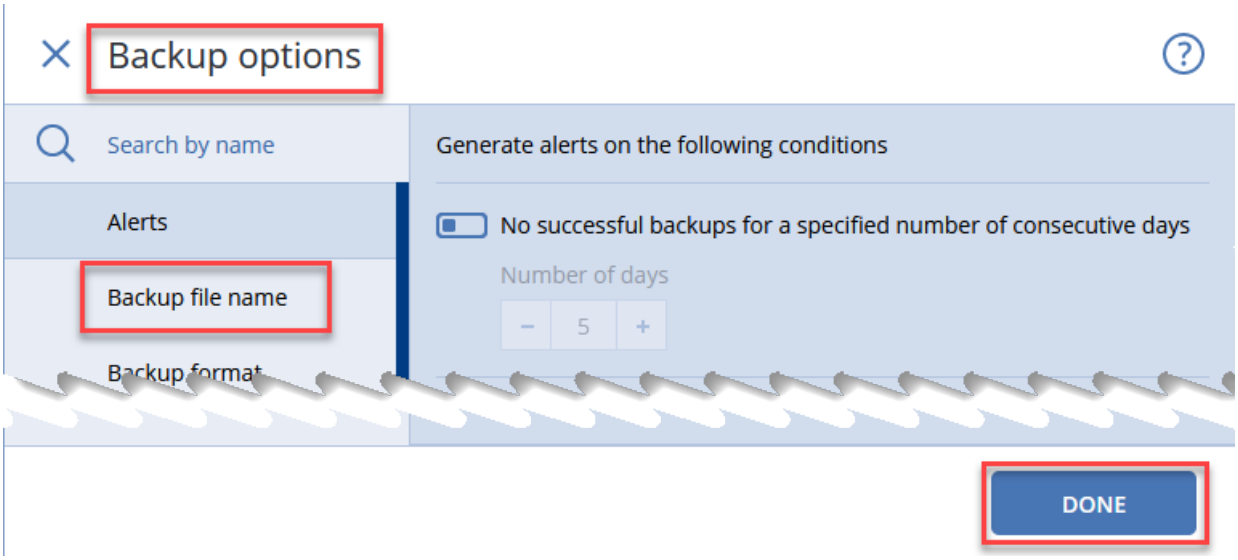
13. Click SCHEDULE-> click “Off” -> Click Done.



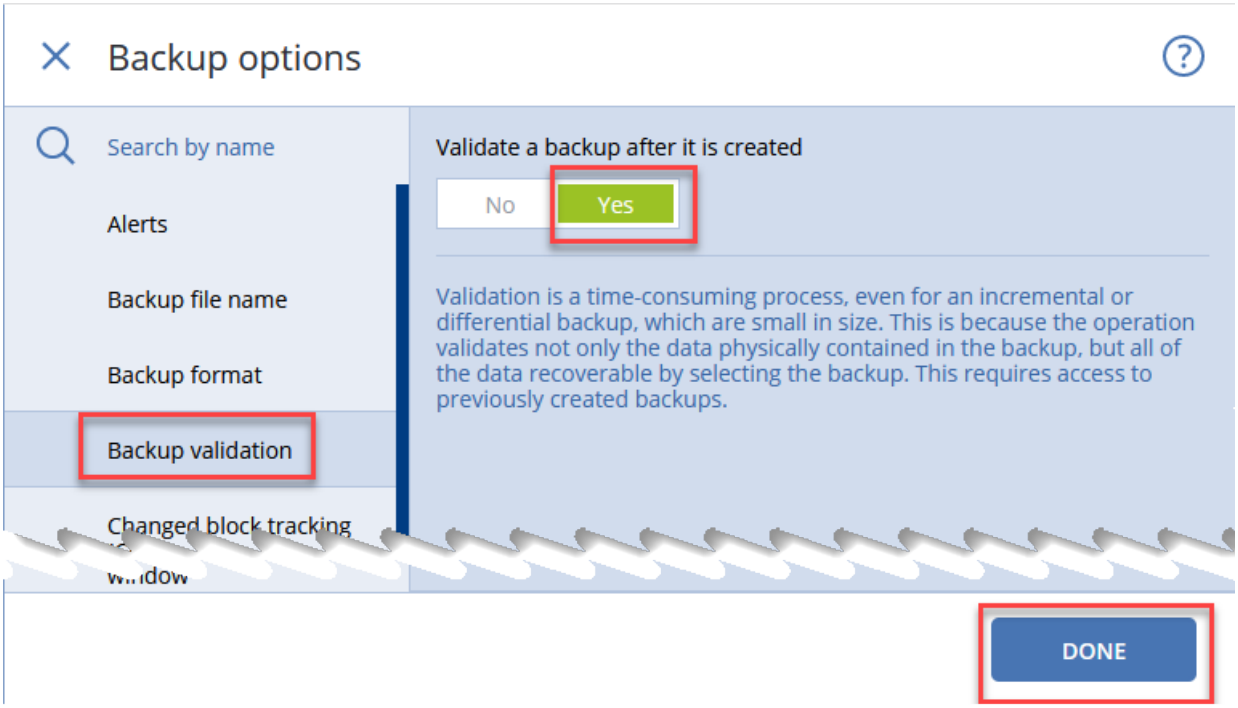
14. Click “Cleanup” -> click “By backup age” -> select “Keep backups indefinitely” -> Click DONE.



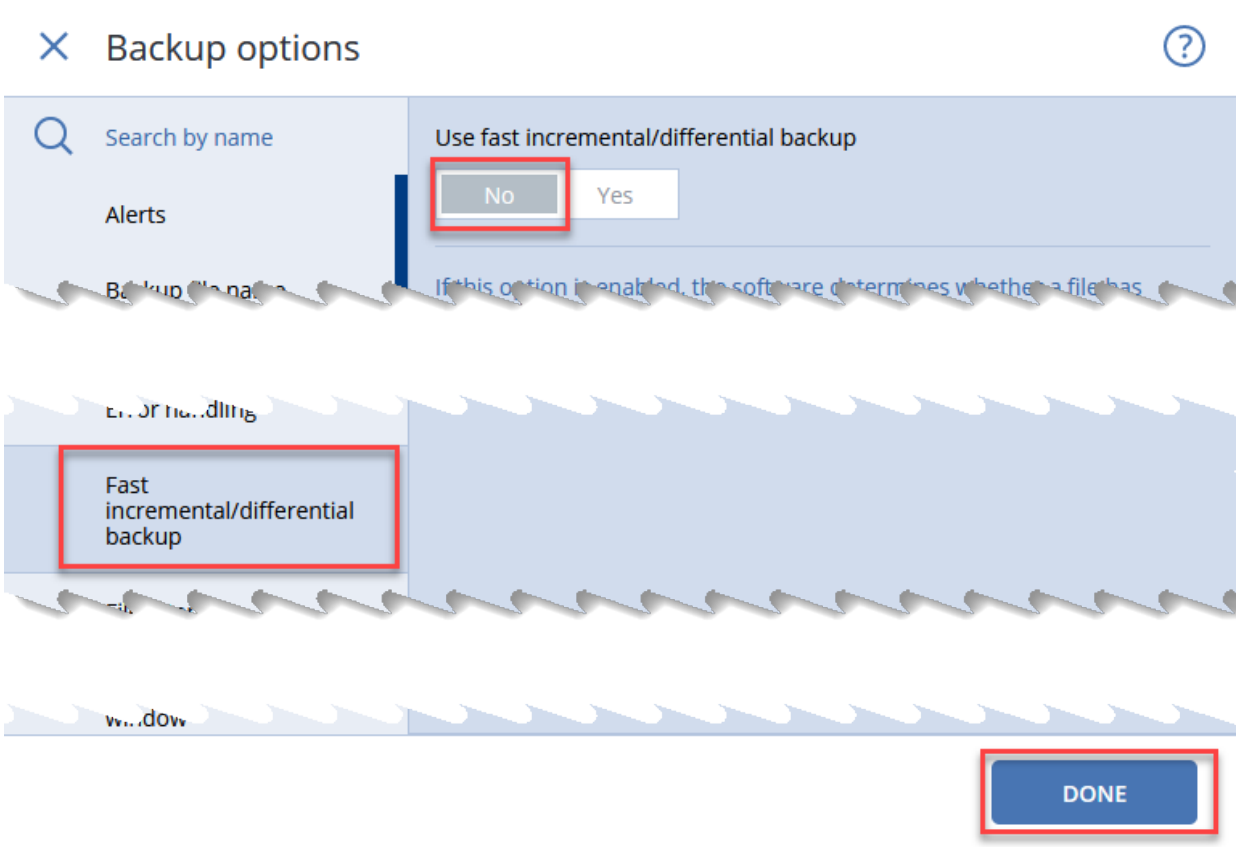
15. Set Backup Options by clicking gear icon next to backup name. Select Backup File Name, then Done.



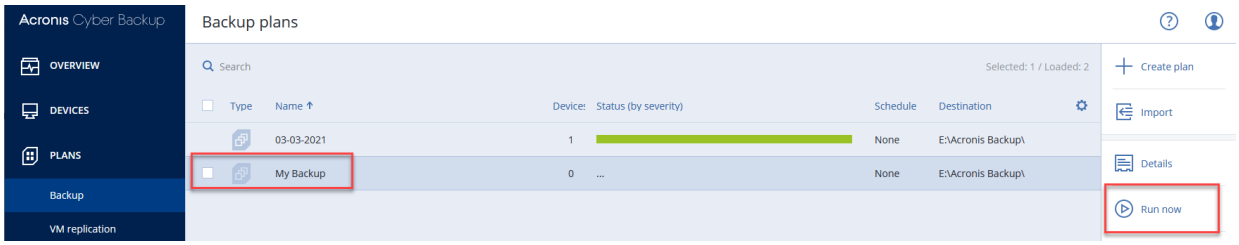
16. Setup backup file name -> Click OK
17. Set Backup Validation to “Yes” -> Click Done.



18. Set “Fast incremental/differential backup to “No” -> Click Done.

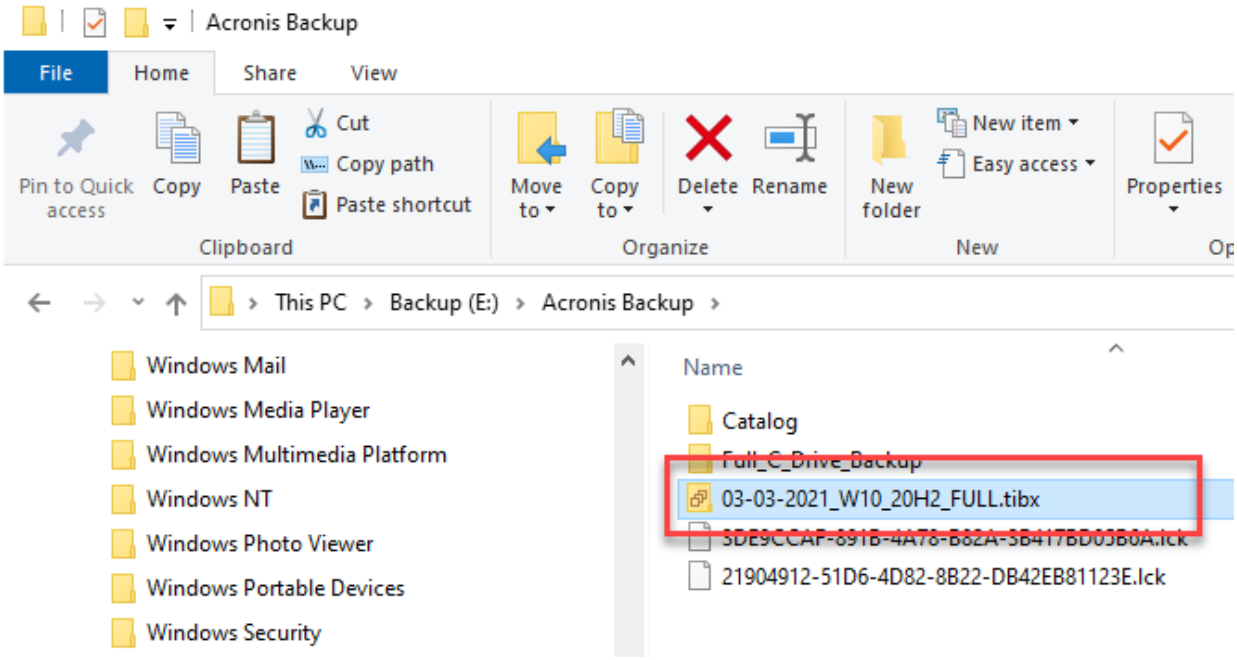


19. Click Create to create plan.
20. Select newly created backup plan by clicking on it. Then click Run Now on right side.



21. You can watch progress by clicking on Activities below the Run Now.

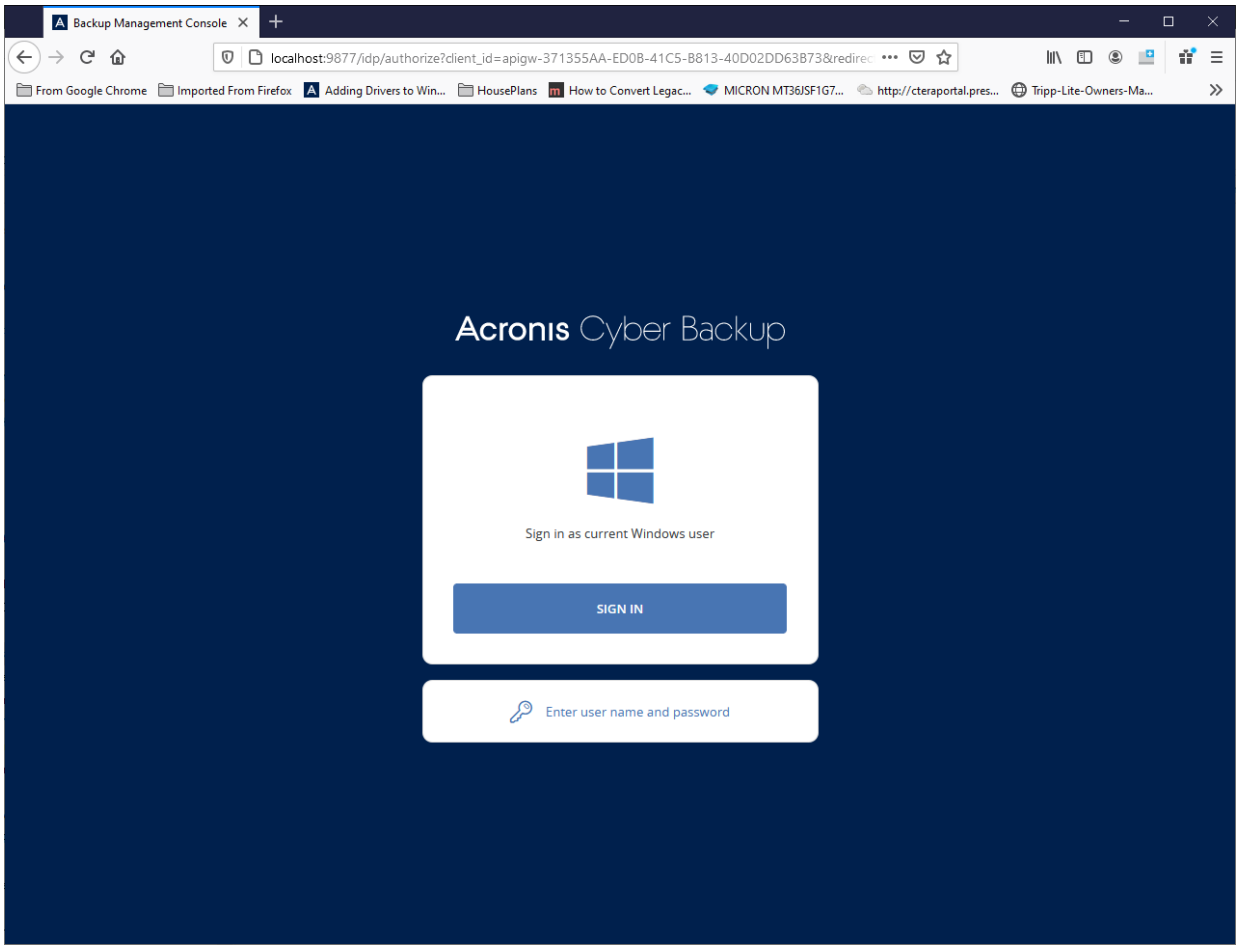
22. After backup is complete, you can launch Windows Explorer to view the tibx file.



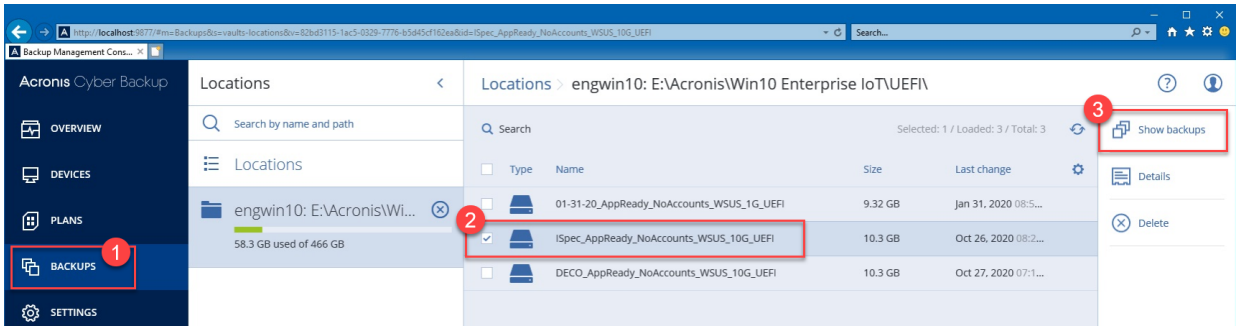
End of procedure.

Restore an Acronis Backup

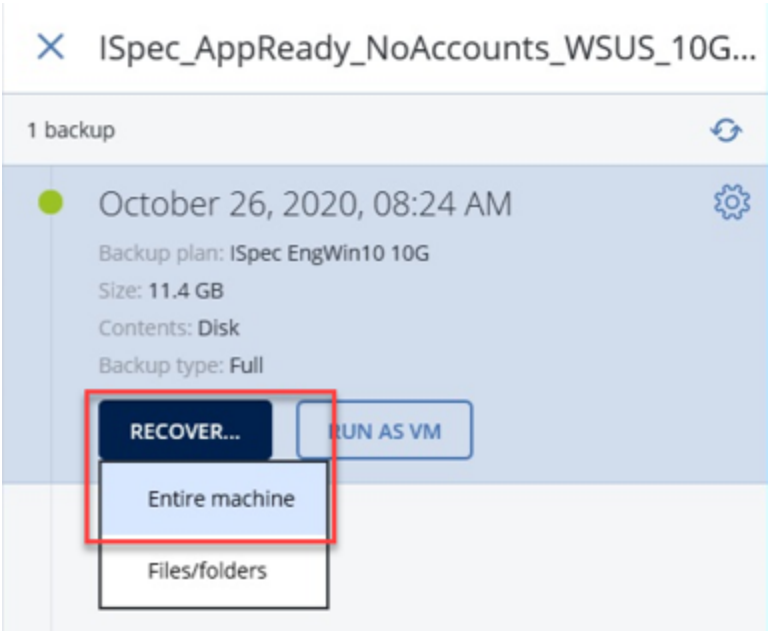
1. Launch Acronis and click “Sign in as current Windows user.”



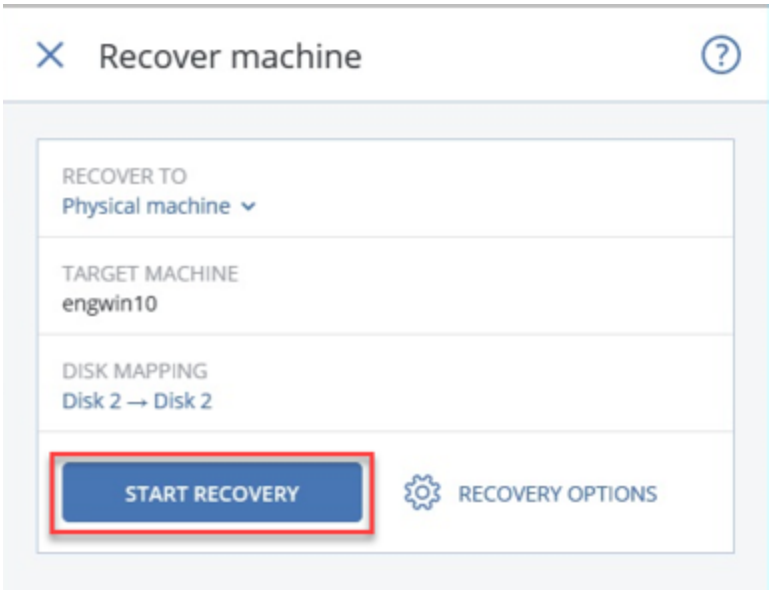
2. Select Backups, select the location of backup in right panel, select backup (if more than one in that location), and click on Show Backups on far right.



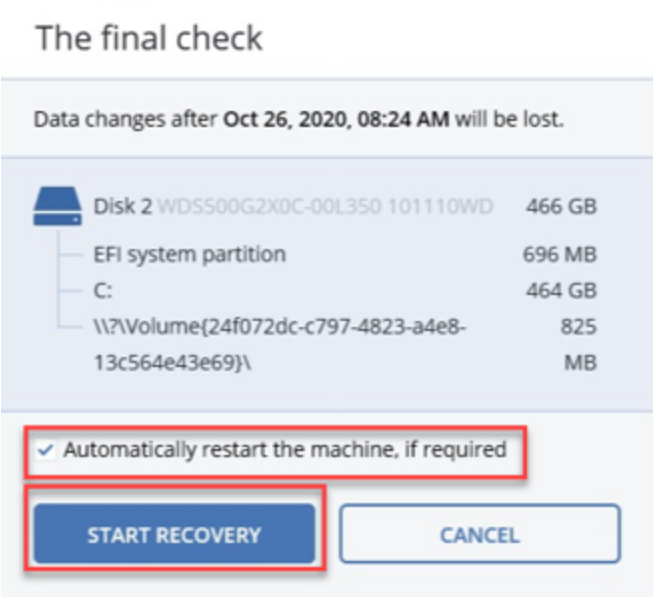
3. Click Recover-> Entire machine.



4. Click Start Recovery.



5. Make sure “Automatically restart machine, if required” is selected. Click Start Recovery.



6. The system will reboot to recover. With dual NVMe drives, this process should be much quicker than normal.

End of procedure.