Universal Press Recorder

Version 6.6.3

A component of the Wheel Shop Management Suite (WSMS)

User Guide

AIC Rail

Revised 2021-08-20

Contents

Introduction

Overview

The Universal Press Recorder program is part of the Wheel Shop Management Suite. It is used to record and print mounting charts and to collect the manufacture data for components of a wheelset. The Universal Press Recorder accesses data from the database server via the TCP/IP protocol and works with Microsoft Windows 7.

Layout

The Universal Press Recorder has a home screen where you can select options for mounting components and system configuration. There is a menu bar along the top that displays the application copyright information and version number.

System Requirements

This application has minimum system requirements as described below. These requirements must be met for the application to operate as designed.

This application supports the following Microsoft Windows operating systems.

- Windows 8.1 (x86 and x64) [1]
- Windows 10 (x86 and x64) [1]

The application requires the Microsoft .Net Framework (4.6.2 or later) which can be obtained from https://dotnet.microsoft.com/download

The application requires the following hardware at a minimum.

- 2.0 GHz Processor
- 1 GB installed RAM
- 100 MB available disk space
- Ethernet Card

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[1] When installed on a 64 bit operating system, the application will run in a subsystem of Windows called WOW64 (Windows-on-Windows 64 bit). WOW64 is included on all 64 bit versions of Windows and is designed to make differences between the operating systems transparent to the user.

Getting Started

Installing Universal Press Recorder

You will need Administrator rights to install Universal Press Recorder.

Make sure you have the latest version of our Universal Press Recorder Setup program. Contact our support team for assistance. To install Universal Press Recorder, run the setup program and follow the on screen prompts as described below:

Click Next to continue.

Accept the license agreement and click Next.
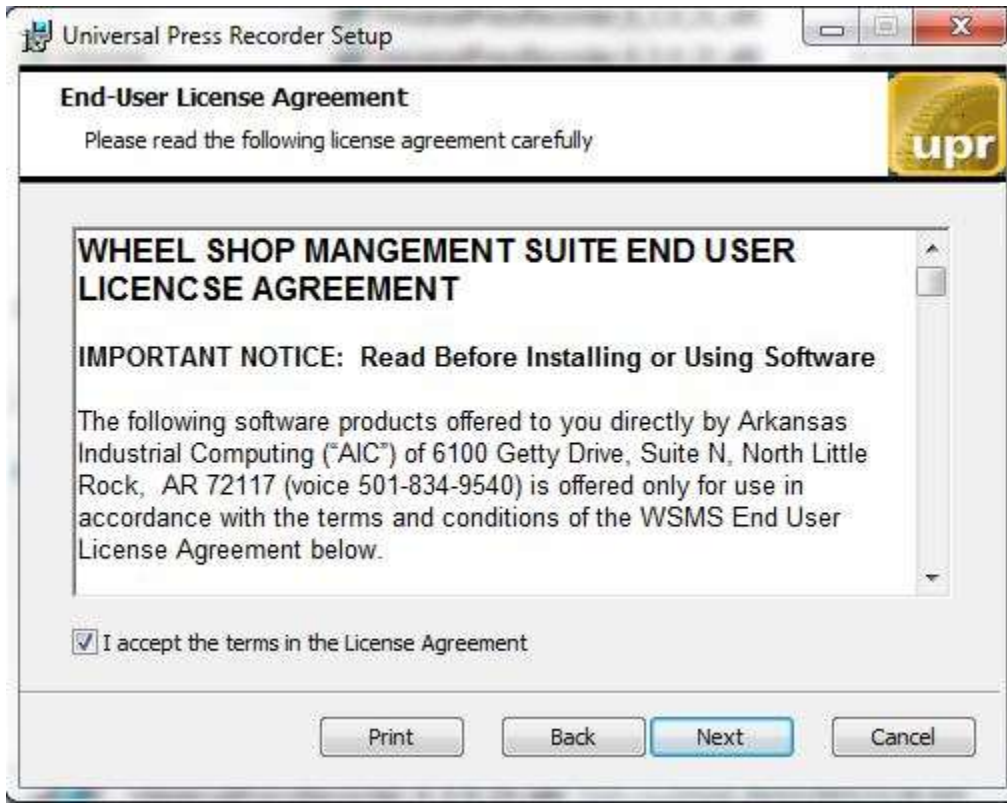
Select the location where you would like to install Shop Manager and click Next.
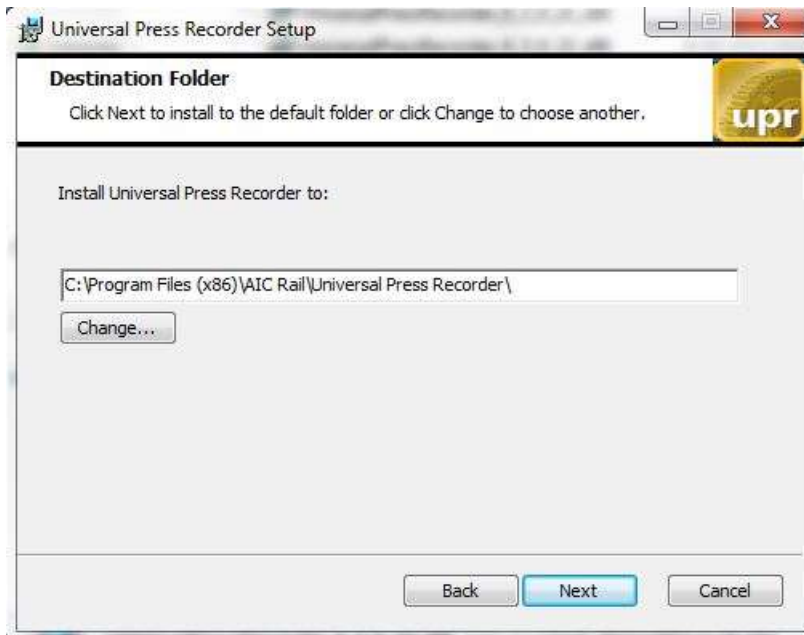
Click Install to being the installation.

You may be asked to allow the setup program to install Universal Press Recorder on your computer.
Select Yes. Wait for the program to install and then Select Next.

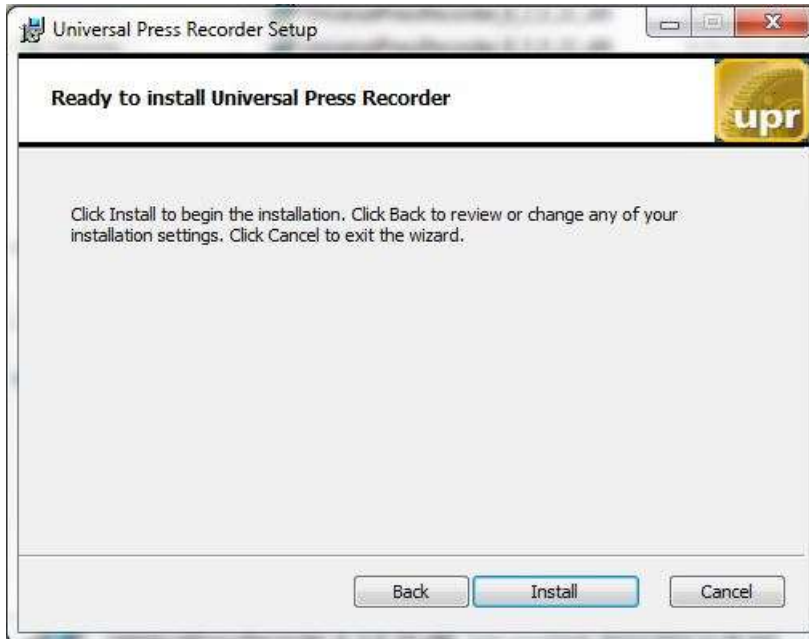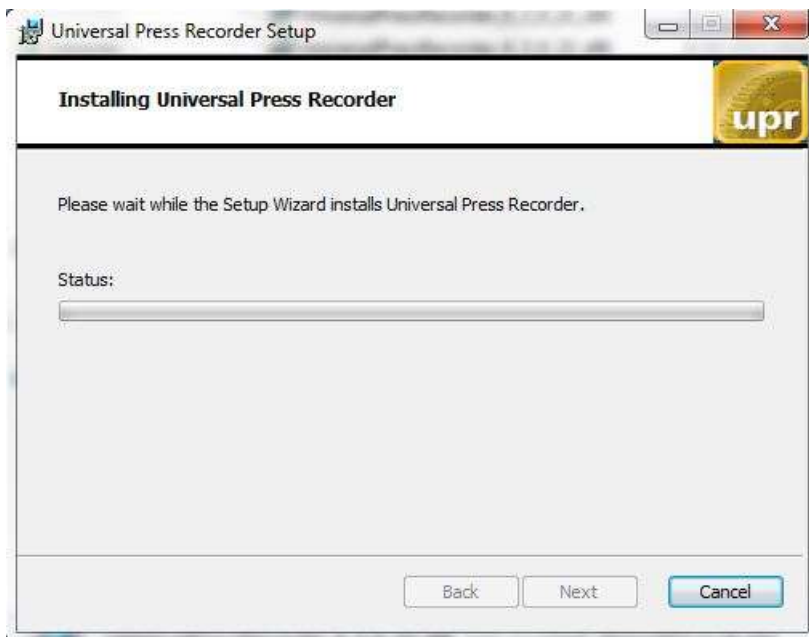When the installation has completed, click Finish to close the setup application.

Initial Setup

Once you have installed Universal Press Recorder you can double click the desktop shortcut to start the application.
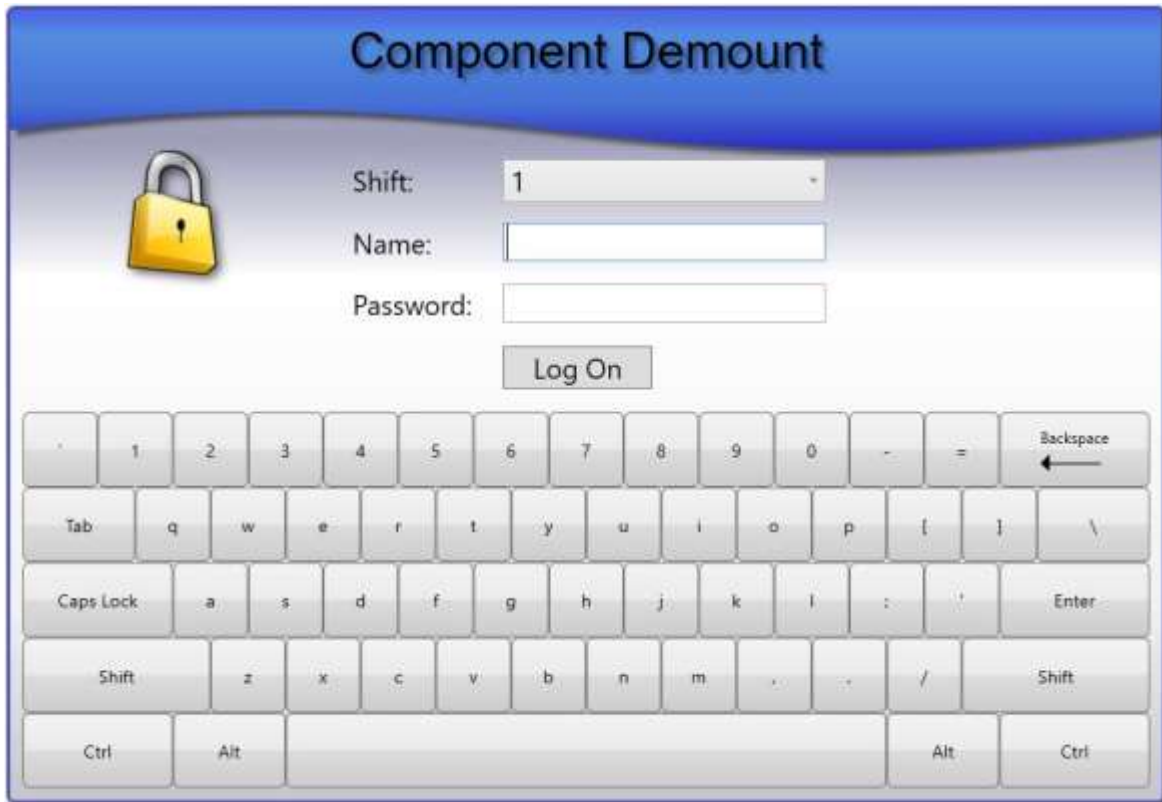
Universal Press Recorderrequires access to an instance of the WSMS database which can be installed on the same computer or any computer with network access and the required permissions. The first time you run Universal Press Recorderyou will be prompted to enter your database connection information.
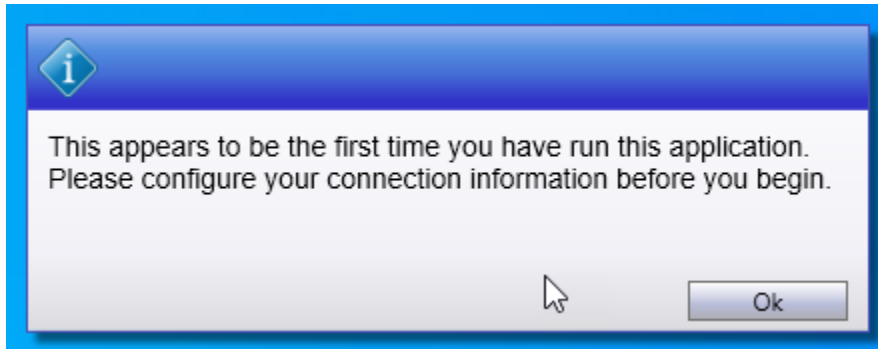
Refer to the section on Connection Settings for more information on configuring the database connection.

Login

Each user is given a unique username and password for the WSMS system authentication and accountability. You must provide your shift, username and password each time the application starts before you can begin using it. Your login also determines what functions you have permissions to perform. If you do not have this information, contact your manager or a system administrator.

Menu Bar

The menu bar is used to access the home screen, as well as important tools like Documents, Chat, and Get Support.

Home

Navigate to the Home screen. For more information refer to the section on Home.

Documents

Opens the Document Viewer portal for viewing electronic documents. For more information refer to the section on Document Viewer.

Chat

Opens the Chat feature for communicating with other WSMS users or stations. For more information refer to the section on Chat.

Get Log Files

Used to retrieve the diagnostic log files so they can be sent to AIC Support team. After clicking Get Log Files you will be prompted for a folder and file name to save the information to a ZIP file. After saving this file, you can send it to AIC Support for help troubleshooting. For more information contact AIC Support.

Get Support

Used to submit a support ticket for the current station. Refer to the Get Support section for more information.

Clock

Displays the current time of day based on the computer date and time settings.

11:33 AM

Home

The Home screen provides access to the important settings and features of Universal Press Recorder. Features are grouped together based on their purpose.

User

Displays the currently logged in user.
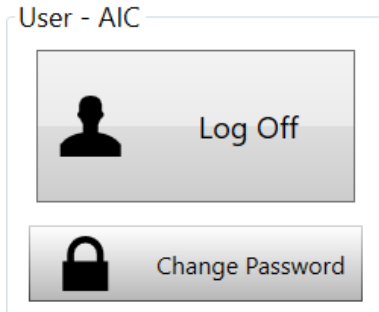
- Log Off - logs out the current user.
- Change Password – Opens the change password dialog to let the currently logged in user change their password.

Help

Provides information for getting help with the current application.
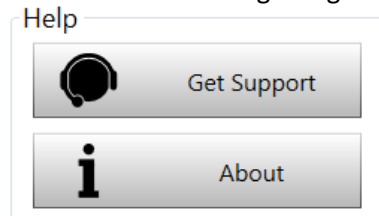
- Get Support - Opens the AIC Support website in the default web browser. This requires internet access be available at the station.
- About - Opens the About dialog that displays information about the current version of the application.

Maintenance

Provides access to configuration and setup for the current station, as well as Downtime, and Calibration.
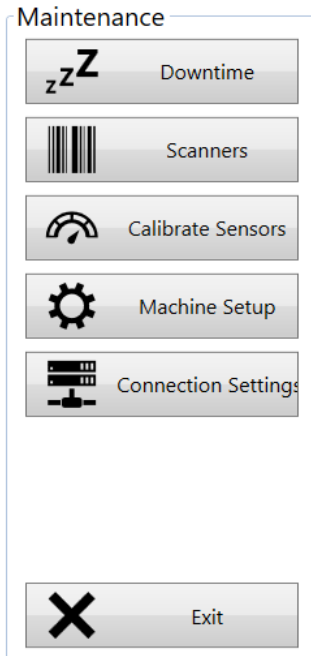
- Downtime – Navigates to the Downtime screen for managing the current machine status. Refer to the section on Downtime for more information.
- Scanners - Opens the scanners dialog to troubleshoot problems with your barcode scanner, or to configure a new scanner or barcode label. Refer to the section on Scanners for more information.
- Calibrate Sensors – Navigate to the Calibration screen for calibrating the force and distance sensors that are used to record the mounting charts. For more information refer to the Calibration section.
- Machine Setup – Opens the settings dialog to configure settings for this machine. For more information refer to the section on Settings.
- Connection Settings – Opens the Connection Settings dialog to configure the database connection information for the WSMS database. For more information refer to the section on Database Connection Settings.
- Exit – Closes the application and returns to the Windows desktop. The user must have 'ExitApplication' permission to be able to exit the application.

Production

These are the most common functions and will be available to all users that have access to log in to the application.
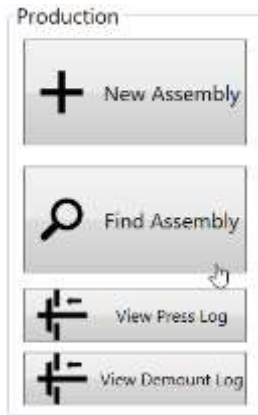
- New Assembly – Navigate to the New Assembly screen to create a new assembly record and begin data collection. Refer to the section on the New Assembly screen for more information.
- Find Assembly – Navigate to the Search screen to review the History of the assemblies that have been mounted from this machine or Search for an assembly. Refer to the section on Search and History screen for more information.
- View Press Log – Navigate to the Press Log screen to view a list of all components pressed on this machine.
- View Demount Log – Navigate to the Demount Log screen to view a list of all components demounted at this machine.

Launch

Launch external applications
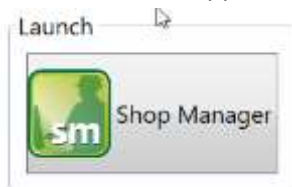
- Shop Manager – Launches the Shop Manager application, if it is installed. Refer to the Shop Manager User Guide for information on Shop Manager.

Recent Assemblies

Display a list of the most recent assemblies where one or more components where pressed at this station. To load a recent assembly, select it from the list and click Load.

Machine Inspections

Provides access to the Machine Inspections feature for recording periodic setup, maintenance, and validation inspections. Machine Inspections let you record electronically what you previously had to keep up with on paper. For more information on Machine Inspections refer to the sections on setting up Machine Inspections and performing Machine Inspections

Barcode Scanner and Labels
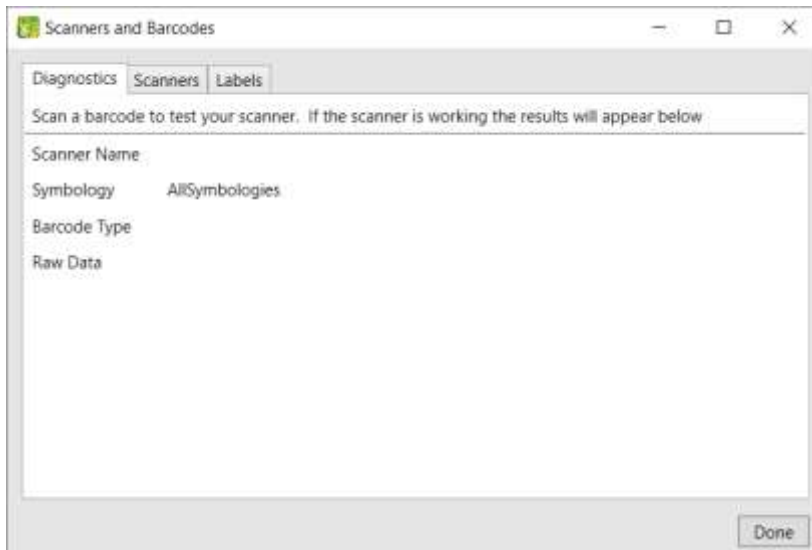
Diagnostics

Test and diagnose issues with barcode scanners. While on this tab, scan a barcode with one of the barcode scanners connected to the machine. If the scanner is set up properly, you should see the barcode and scanner information populate.

- Scanner Name – The name assigned to the scanner that read the barcode. If more than one scanner is configured this name should be unique to help you identify the scanner.
- Symbology – The Symbology of the barcode that was scanned. It will either show the symbology like **DataMatrix, Code128, PDF417, etc.** or it will show **Unknown** If the symbology cannot be detected. When the symbology cannot be detected the scanner most likely is not configured to transmit the AIM ID prefix that identifies the barcode symbology. This may cause the barcode to be misidentified or not identified at all.
- Barcode Type – The label definition type that was matched to the barcode being scanned. If the Barcode Type is Unknown, it means the barcode that was scanned is not matching any of the known label definitions, either because the data is in the wrong format or the symbology does not match. Refer to the section on Labels for more information.
- Raw Data – The character string that was read from the barcode, not including the symbology AIM ID prefix if it exists.

Scanners

View and configure barcode scanners.
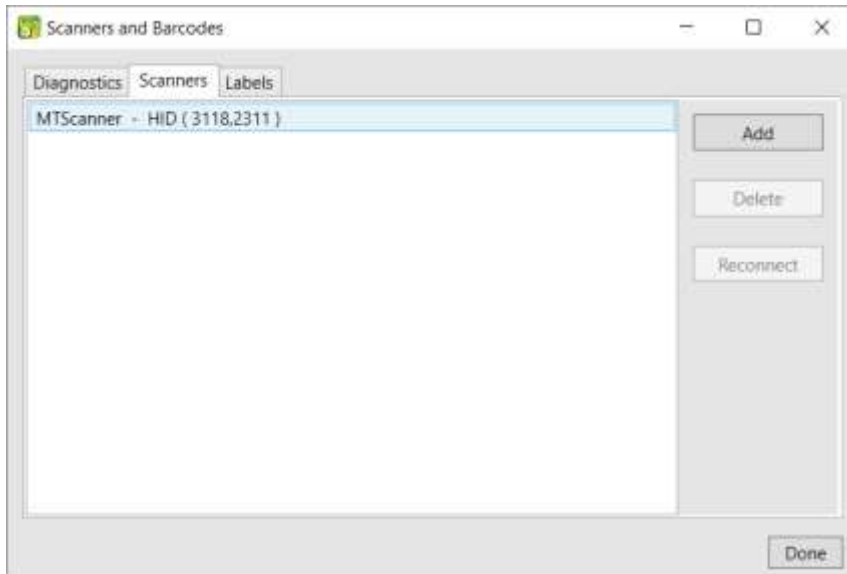
- Add – Configure a new barcode scanner for use with the application.
- Delete – Remove the selected barcode scanner from use.
- Reconnect – Disconnect the selected barcode scanner and attempt to reconnect.

Adding a Scanner

To add a new scanner, Click Add. In the popup dialog, enter a name to identify the scanner and select the scanner interface type (HID, RS232, etc).
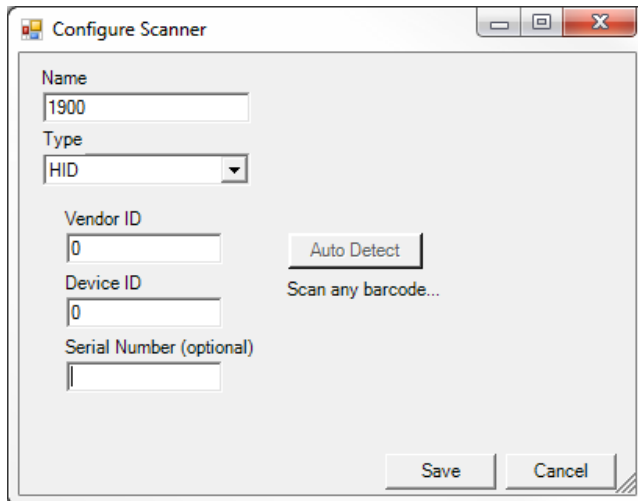
Depending on the Type selected, you will need to enter some parameters that are required to connect to the scanner. In most cases you can use the Auto Detect feature to automatically detect these parameters.

- Click Auto Detect button
- Scan a barcode (other than a programming barcode) with 15 seconds.
- A message will appear below the Auto Detect button to indicate if the auto detection was successful. The parameters should populate automatically.

Note: For USB barcode scanners, the Serial Number parameter is optional if you are only using one scanner at the station. Leaving it blank will allow you to replace a scanner without having to reconfigure it, as long as the make and model are the same. If using more than one scanner (example: Wheel A and Wheel B or Left and Right) the serial number is required to distinguish between the scanners.

Labels

View and configure barcode label definitions. Label definitions help the system to identify different types of barcode labels. For example WIP ID labels vs 1D Component ID labels vs 2D Component labels (Wheels, axles, etc).
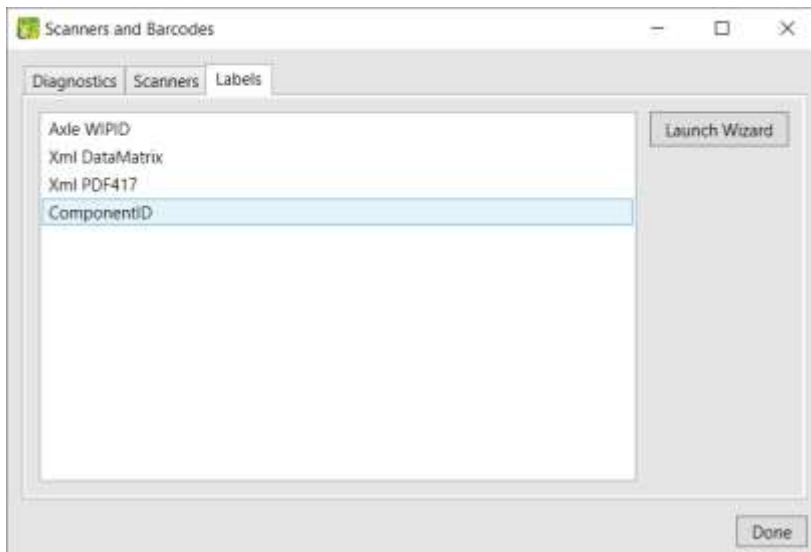
- Launch Wizard – The only way to configure a label definition is with the Label Definition Wizard. Click Launch Wizard to start the label definition wizard.

Label Definition Wizard

The first page of the Label Definition Wizard lists all of the current definitions and provides controls to add, edit, remove, etc.
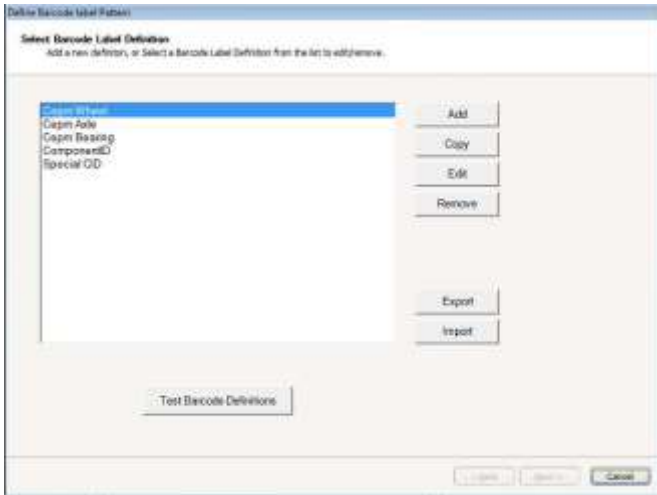
- Add – create a new label definition
- Copy – create a new label definition by copying the selected label definition
- Edit – Modify the selected label definition
- Remove – delete the selected label definition
- Export – save the current label definitions to a file so it can be imported to another system
- Import – select a file that was exported from another system to import into your system
- Test Barcode Definition – go to the Test Label Definition screen to scan a label and verify it is properly detected.

Add Label Definition

To add a new barcode label definition, click ADD. You will then add the label definition description and properties such as the Symbology and Barcode type. Click NEXT, to configure the barcode label.
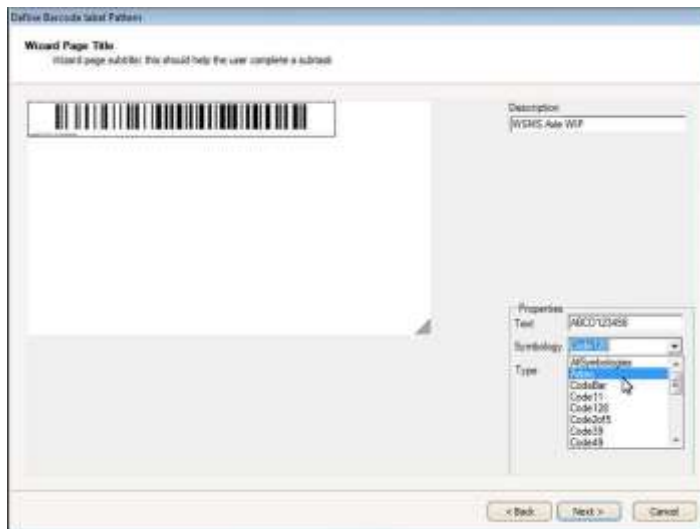
Configure Barcode Label

Add a new label definition or select and existing label definition and click Copy or Edit.

Configuring the barcode label requires describing the data that will be in the barcode. Define what data elements are contained in the barcode in order from left to right of the barcode raw data. Define individual properties of the data and what the data looks like in the "What does the data look like?" box. Use the Help button to guide you through the correct syntax.

Select the correct barcode symbology.

Test Barcode Label

Once you have configured your barcode label you can test the definition. Scan an example barcode label. If the barcode label configuration contains more than one barcode you must scan all barcodes. Click "Back" to make any changes, or "Next to save the configuration.
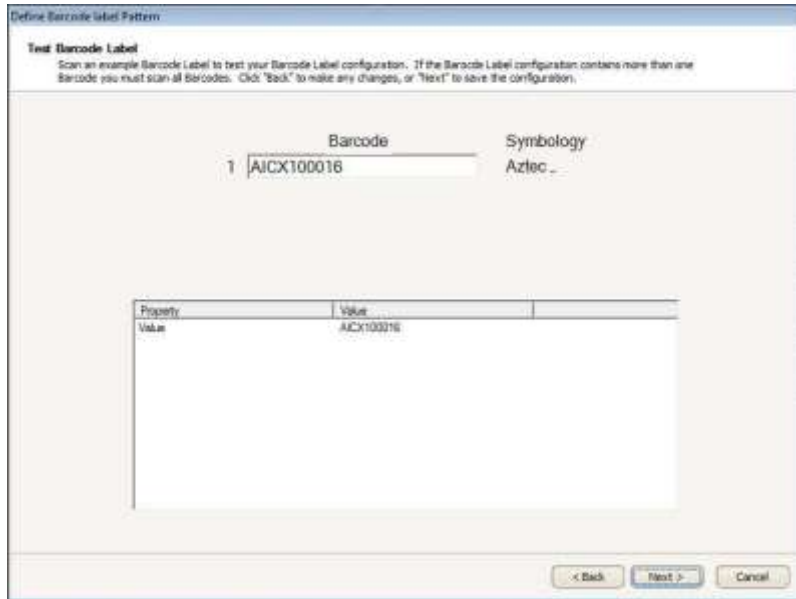
Database Connection Settings

Access to an instance of the WSMS database is going to be required, which can be installed on the same computer or any computer with network access and the required permissions. The first time you run the application you will be prompted to enter database connection settings.
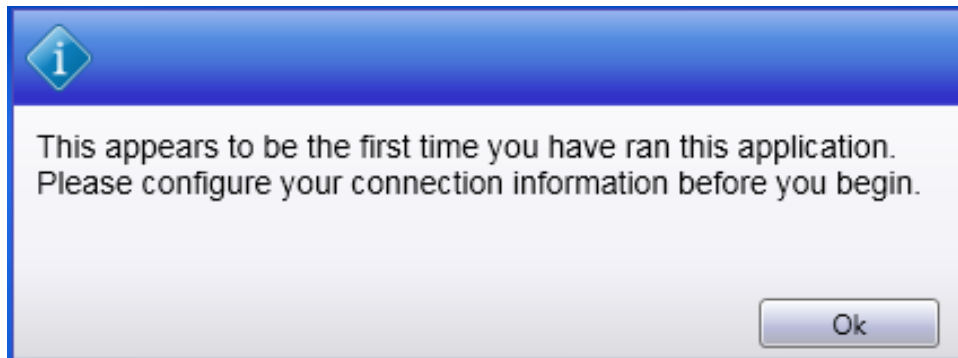
Click **OK** to display the Connection Settings dialog. Enter Server Name, User, password.

A list of available databases will appear after typing the security information. Select the desire database. If you are unsure about the Server Name, User or password, contact your IT Department or our support team.

Click **TEST CONNECTION** to verify your settings. If the information you enter is correct, you will see the following dialog, click **OK** to continue.
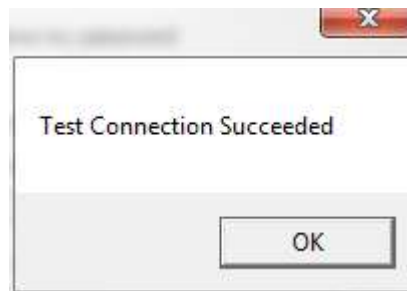
Once you have configured the Database Connection information click the **Shop Name** drop down to select the location for which you want to configure this installation. WSMS can support multiple

locations or 'shops' hosted in one database. To isolate the data and settings to your location you must provide this information.

After you have selected the Shop Name click on **Machine Name** and select the machine you are installing on. Some settings are stored per machine so this setting will be used to differentiate each installation.

Click **OK** to save your changes.
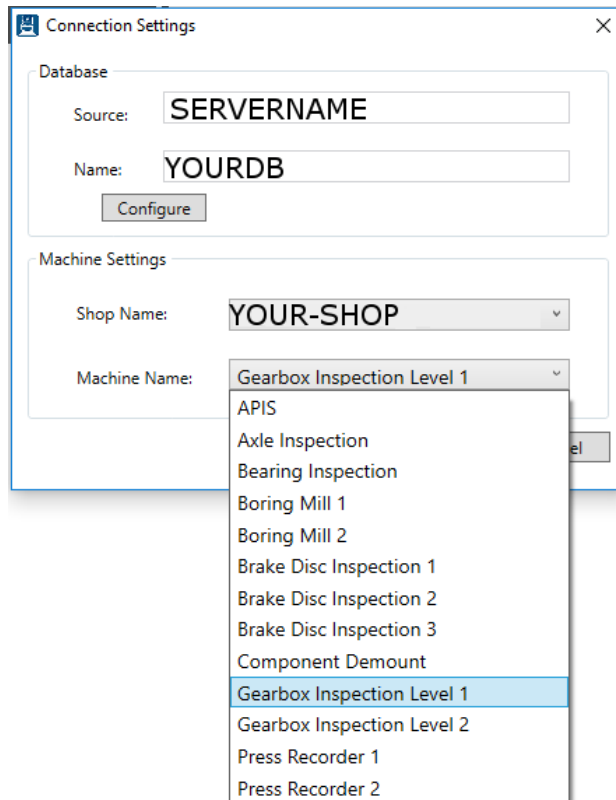
Once you have entered your database settings the application may require a restart for the connection settings to take effect. Click **YES** to restart.
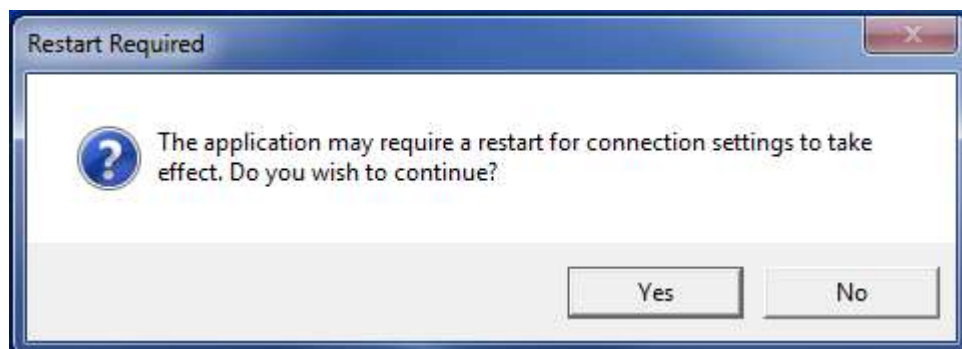
You will then be taken to the Log On screen. After configuring the database connection, the Log On screen will be the first screen you see each time you run the application.

Machine Setup

	Configuration	Timestamp	Traveler #	Axle Serial Nu
1	locomotive	12/17/2020 1:08 PM	19941	16037JS598T
2	locomotive	12/17/2020 11:03 AM	19940	YPRXI14F070
3	locomotive	12/17/2020 10:11 AM	19939	EMD61274
4	locomotive	12/17/2020 7:51 AM	19938	YVEX96I394
5	GE Locomotive	12/17/2020 6:56 AM	19933	PVRC100
6	locomotive	12/16/2020 10:44 AM	19937	YCAEW0499M
7	locomotive	12/16/2020 9:59 AM	19936	YPRXI005MU

Select the Machine Setup Button

User Interface
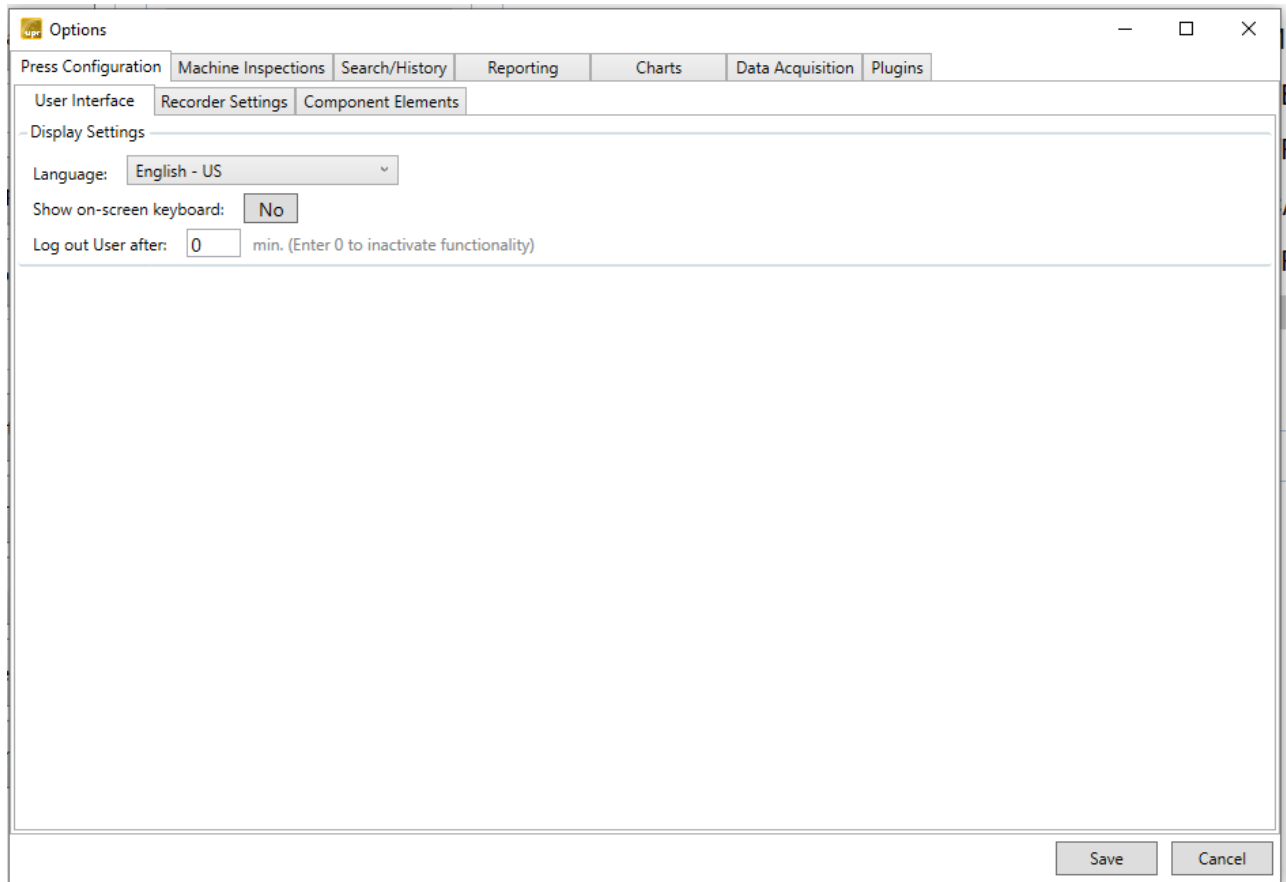
Language – set the language for the application.

Show on-screen keyboard – enables\disables the on-screen keyboard.

Log out User – set the amount of time to allow the application to run idle before automatically logging out the user. Enter 0 to disable.

Recorder Settings
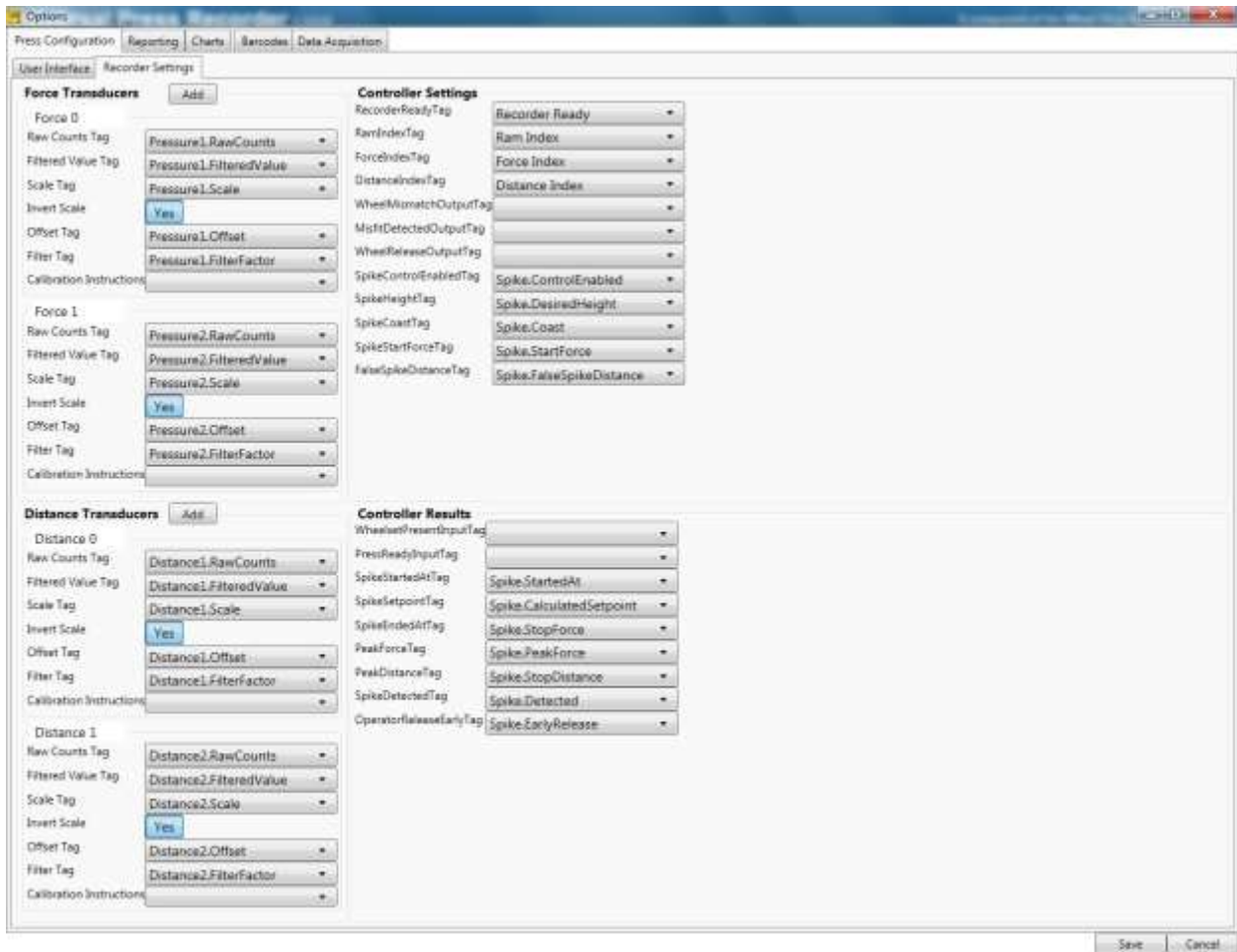
Configure the recorder application tags with the tags in the PLC. This is done during the initial installation. **Only AIC technicians should make changes on this screen.**

Component Elements
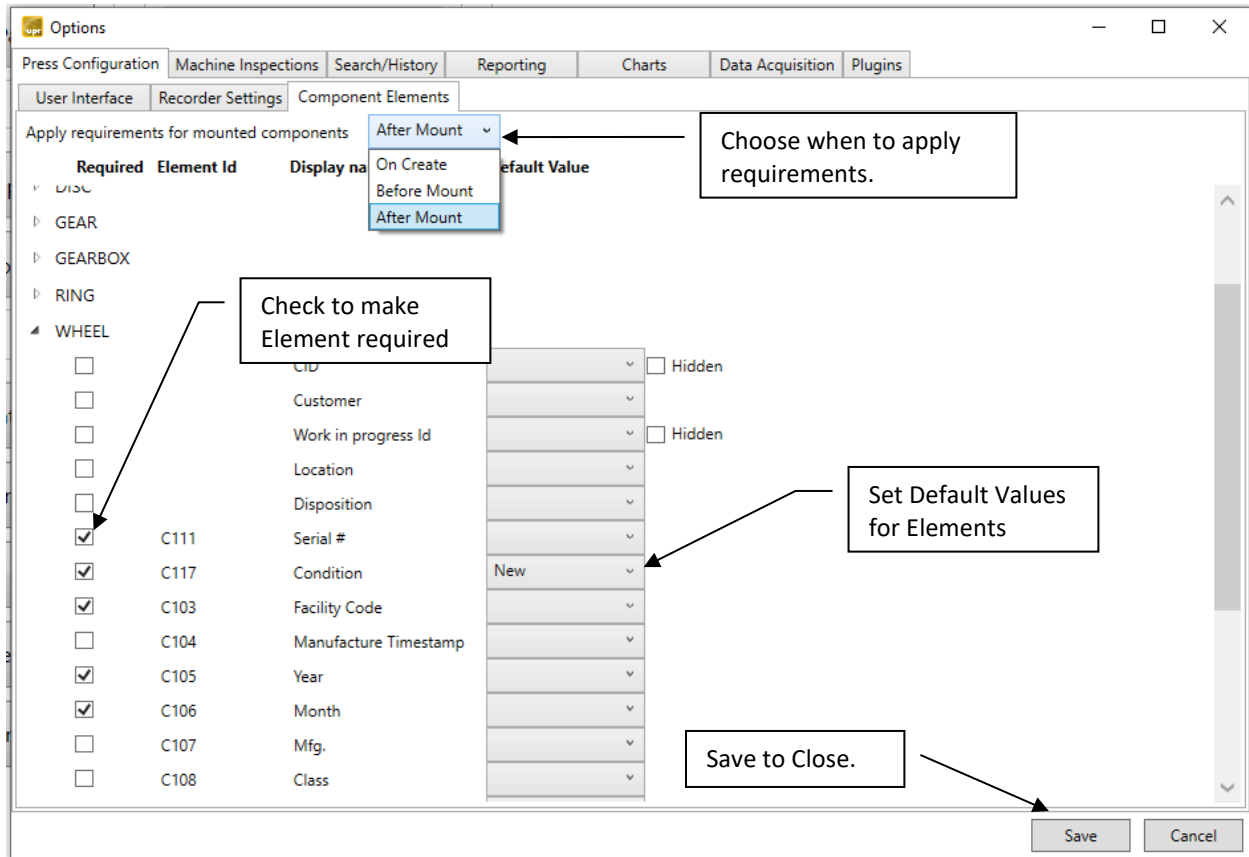
Set up Component Element Requirements and Default Values.

Applying Requirements only applies to mounted components (wheels, bearings, etc.). Wheelset and non-mounted components will always be required when creating a new assembly.

Search/History
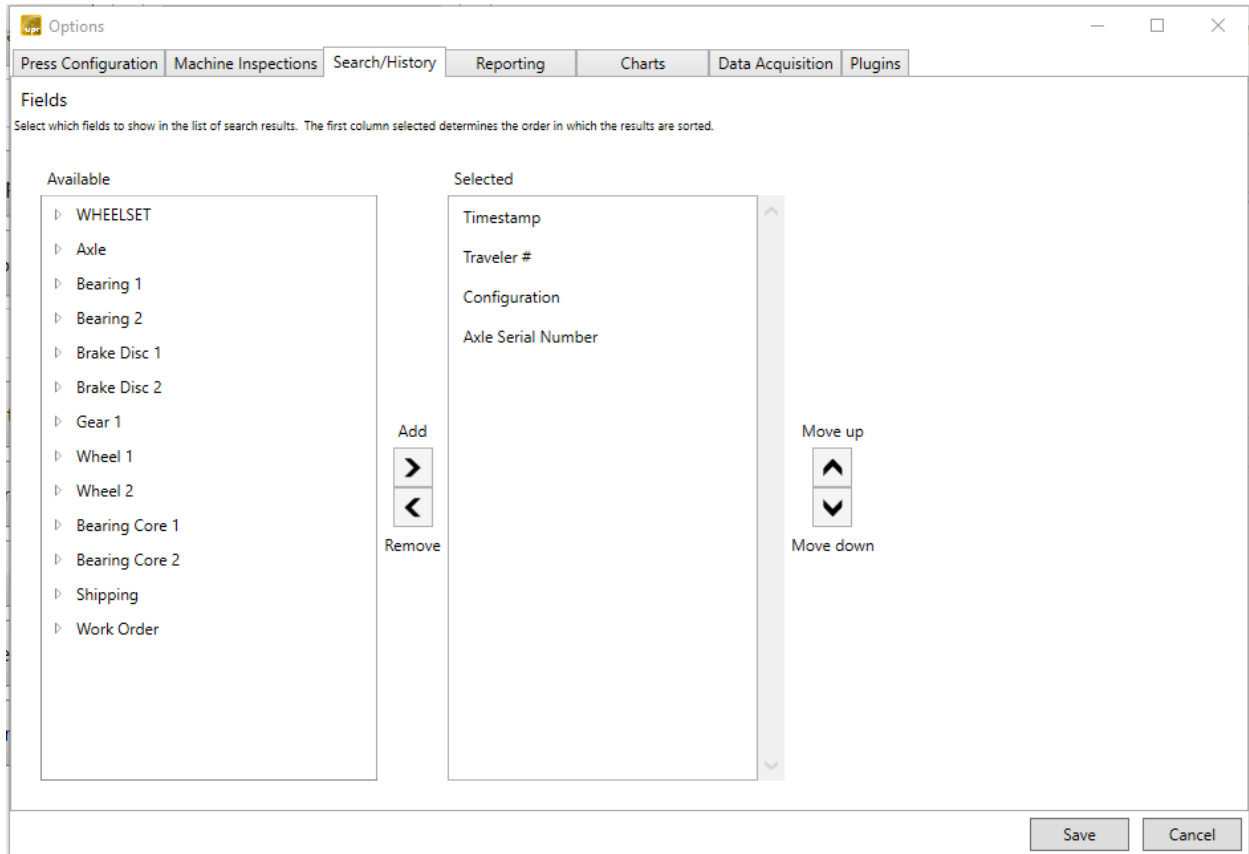
Search/History – Select which fields to show in the list of search results. The first column selected determines the order in which the results are sorted.

Reporting

Assembly Report – select the report you want to print at the completion of an assembly. Enable this option by selecting the check box.

Mounted Component Report – select the report you want to print after each component is mounted. Enable this option by selecting the check box.

Chart Settings

Each machine can be configured to customize how the mounting charts are displayed.

Each component has its own chart settings.

For the press recorder, the machine's chart settings override any chart settings the user may have configured in Shop Manager.
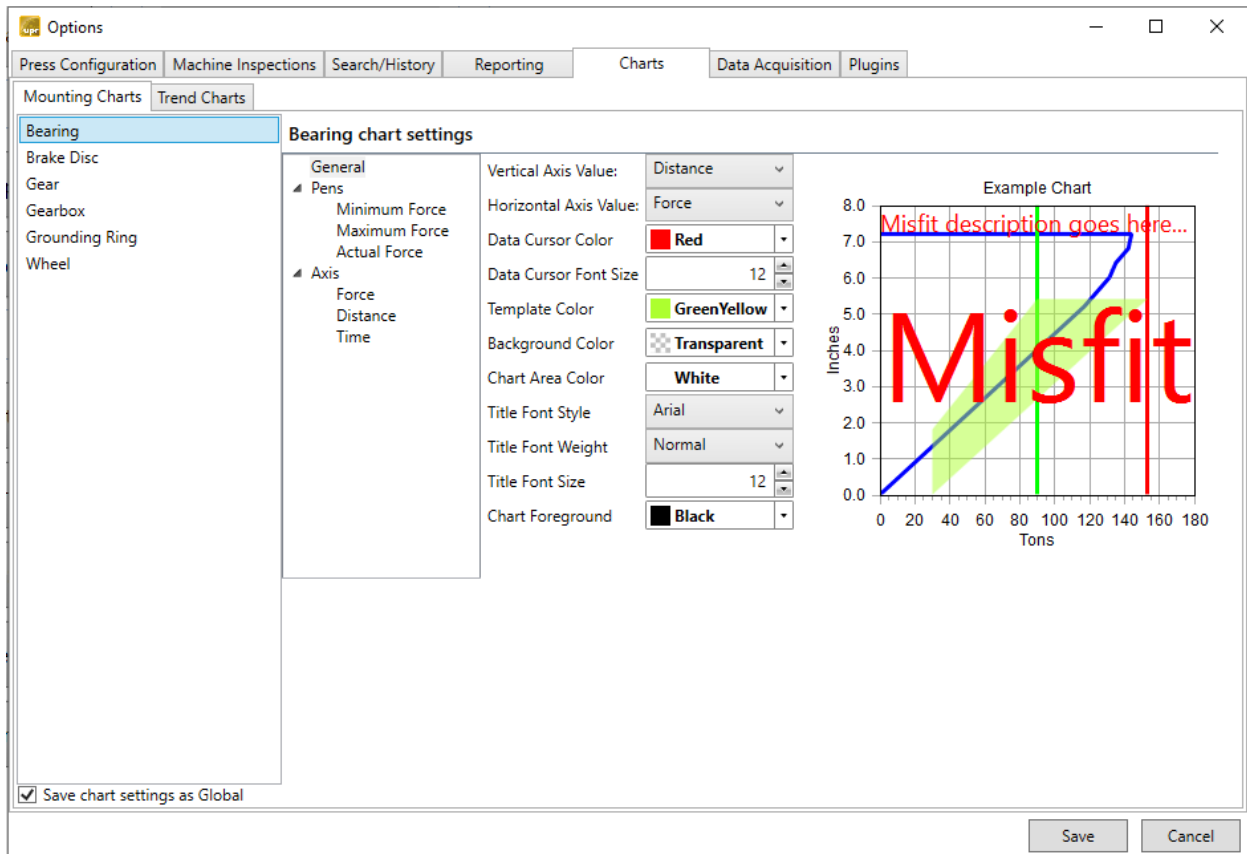
General – customize the way the chart is displayed.
Pens – customize the way the force lines are displayed.
Axis – customize the way the axes are displayed.

Data Acquisition

In order to interface with electronic sensors and devices such as the Force and Distance transducers or stack lights for status indication, you must configure how the application will interact with the sensor. You must configure a Tag for each input sensor or output device.

Devices

Before you can configure the tag, you must first specify the communications device and how you will communicate with it. The preferred method is OPC (OLE for Process Control) but there are other options as well.

To add a new Device, click New and follow specify a Name and the Device Type along with the connection information.
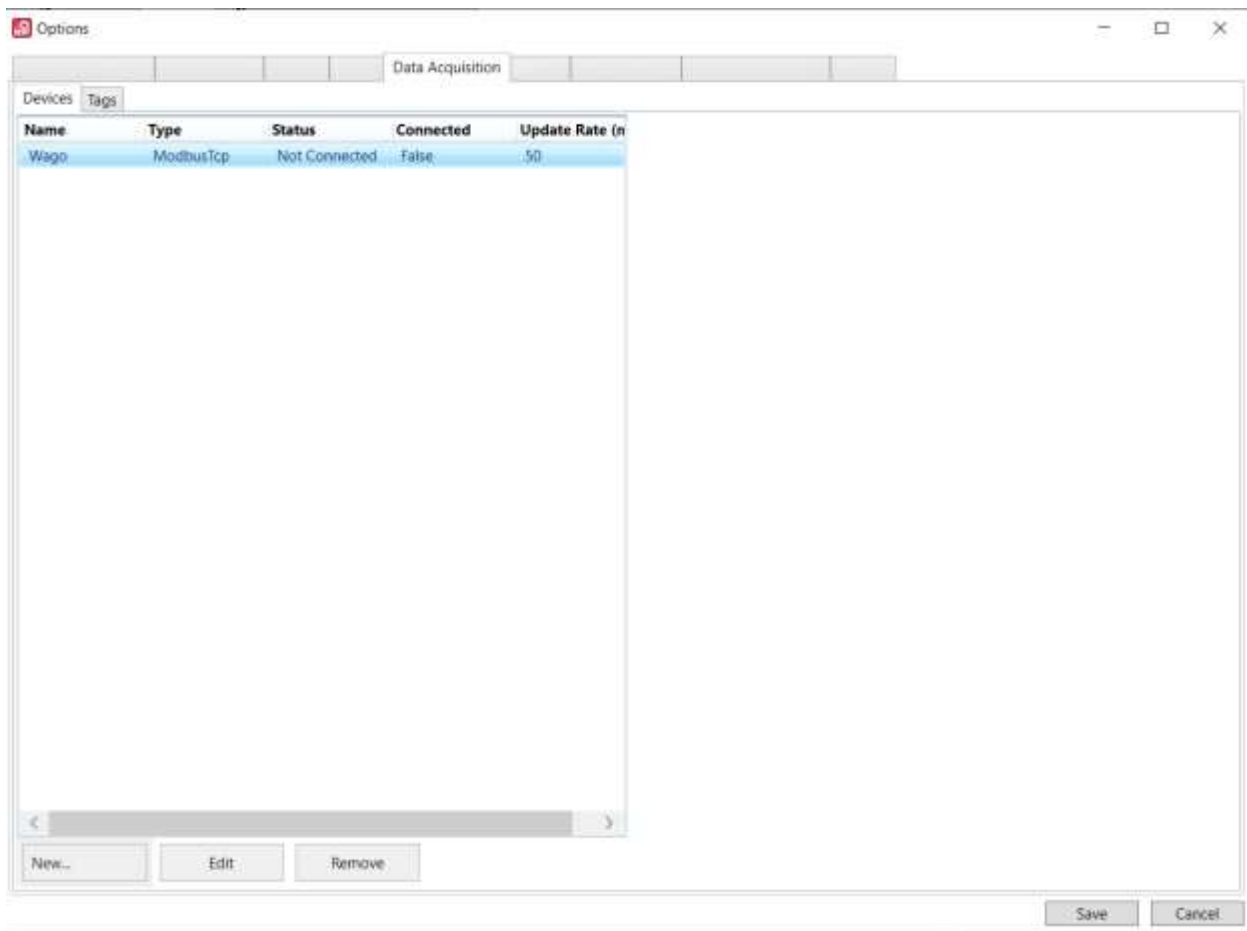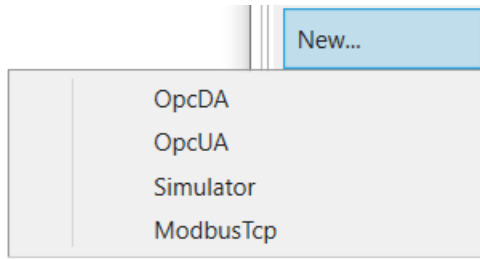
Tags

After you have specified the communications device, you must next configure each of the sensor/output Tags that you will communicate with. Use the Tag Manager to add/edit tags.

Name	Raw Value	Description	Device	Address	Data Type	Deadband	Eng. Value	Filtered Value
Pressure1.Filte	0		Wago	12288	System.Single	0.25	0.0000	0.0000
Pressure1.Scal	106.48		Wago	12296	System.Single	0	0.0000	0.0000
Pressure1.Offs	-1.312684		Wago	12298	System.Single	0	0.0000	0.0000
Pressure1.Filte	175		Wago	12368	System.Single	0	0.0000	0.0000
Pressure1.Dea	0.5		Wago	12300	System.Single	0	0.0000	0.0000
Distance1.Raw	0		Wago	12321	System.Int16	0	0.0000	0.0000
Distance1.Filte	0		Wago	12290	System.Single	0.1	0.0000	0.0000
Distance1.Scal	404.8		Wago	12302	System.Single	0	0.0000	0.0000
Distance1.Offs	-1.267292		Wago	12304	System.Single	0	0.0000	0.0000
Distance1.Dea	0.25		Wago	12306	System.Single	0	0.0000	0.0000
Recorder Reac	False		Wago	12880	System.Boolean	0	0.0000	0.0000
Pressure1.Raw	0		Wago	12320	System.Int16	0.25	0.0000	0.0000

After you have defined your tags, you can specify more details about the tag, clicking the "Edit" button. It will show a section on the right side where you can enter some extra information, such as Min. and Max. value.

ne	Raw Value	Description	Device	Address	Data Type	Deadband	Eng.
e1.Filte	0		Wago	12288	System.Single	0.25	0.00
e1.Scal	108.48		Wago	12296	System.Single	0	0.00
e1.Offs	-1.312684		Wago	12298	System.Single	0	0.00
e1.Filte	175		Wago	12368	System.Single	0	0.00
e1.Dea	0.5		Wago	12300	System.Single	0	0.00
e1.Raw	0		Wago	12321	System.Int16	0	0.00
n1.Filte	0		Wago	12290	System.Single	0.1	0.00
e1.Scal	404.8		Wago	12302	System.Single	0	0.00
e1.Offs	-1.267292		Wago	12304	System.Single	0	0.00
e1.Dea	0.25		Wago	12306	System.Single	0	0.00
r Read	False		Wago	12880	System.Boolean	0	0.00
e1.Raw	0		Wago	12320	System.Int16	0.25	0.00

Identification

Name: Pressure1.FilteredValue

Type: Single

Description:

Device: Wago

Address: 12288

Data Properties

Deadband: 0.25

Filter (%): 0

Min Value:

Max Value:

☐ Trigger   Edit

Scaling

Edit   Copy   Remove   Accept   Discard

Machine Inspections

Configure the inspections to be performed in the machine station to ensure quality and good performance during production. It has same functionality as a normal inspection with some variations.

- Name – Set a name for the Inspection.
- Inspection Definition – Select a preconfigured inspection definition for that machine.
- Inspection View – Select a preconfigured user interface for collecting component and inspection data.
- Downtime Reason – Specify a default reason for the machine to be down. Check the box "disable downtime on Machine Inspection" to not put the machine on downtime during this inspection.
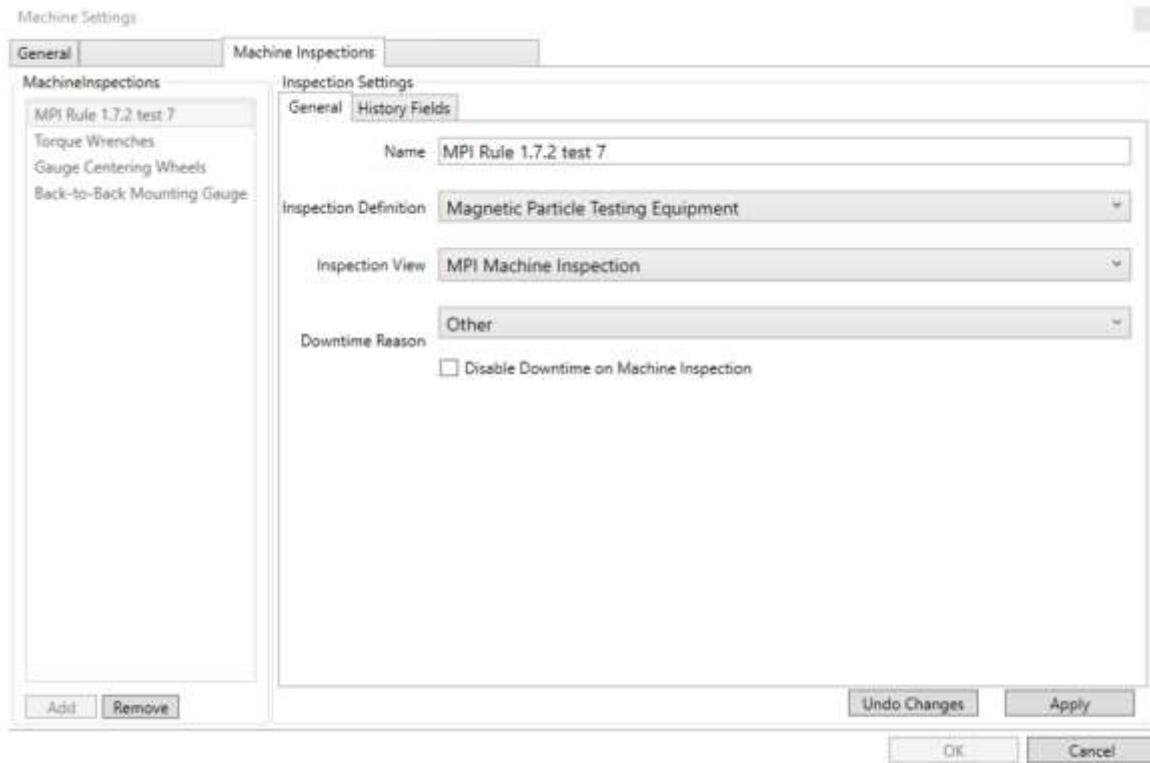
You will be able to register a new Machine inspection from the main menu in the application by clicking on the name of the inspection. To look at the previous inspections, click on the number at the right side, it will take you to the History search tab.

Settings – Plugins

The WSMS applications come with various plugin points in their code where custom behavior can be injected to fit them to your specific needs. In order to use a plugin, you will need to copy a plugin file, supplied by us, into the Plugins folder for your application. This folder needs to be located in the same directory as your application's

executable file, typically C:\Program Files (x86)\AIC Rail\APPLICATION NAME.
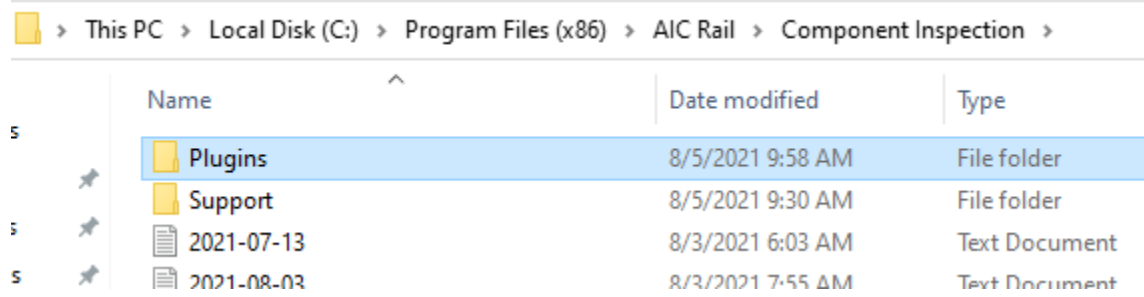
If the Plugins folder does not exist, you may need to create it.

Once you have your plugin file in place, you can use the Plugins tab in the settings window to enable and configure your plugins. Each of the sections on the settings screen corresponds to a plugin point within the current application, and any plugins in your file will show under the corresponding section. To enable it, simple check the box next to its name.
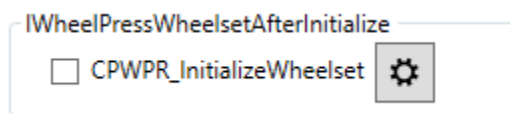
If your plugin includes any configuration options, they can be accessed by clicking on the cog button next to the plugin name. Since not all plugins require configuring, this may not have any effect on your system.

Chat

The Chat button can be used to communicate with other WSMS applications in your system.

Clicking it will open the Chat dialog. You can select a recipient from the dropdown based on the stations set up in your system.
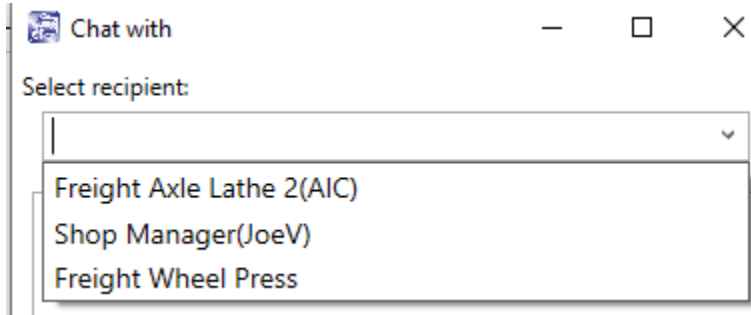
The name of each station is listed, and if a user is currently logged in, their name will appear in parentheses next to the station. You can send a message to a station even if no one is logged in, and it will display the next time someone is at the station. Messages you send will be shown in orange, and messages you receive will be shown in white.
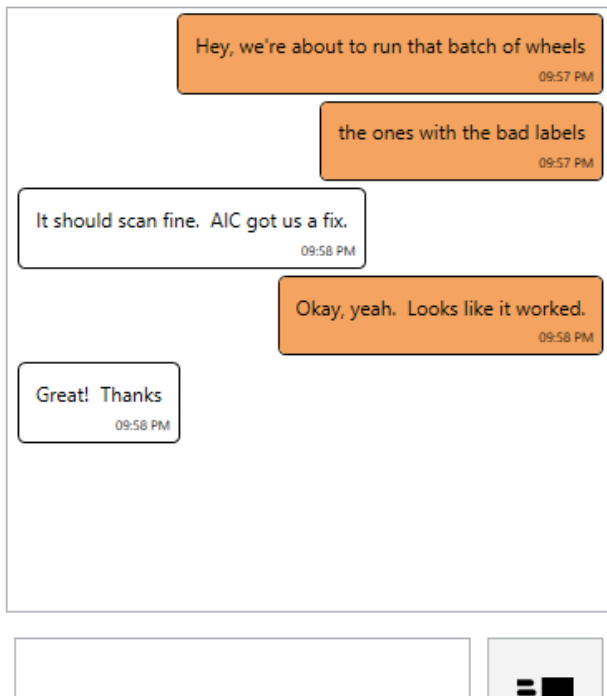
Get Support

The Get Support feature will collect relevant information about your problem and attempt to submit a support ticket online (**ticket submission requires the WSMS6 Service to be running and have internet access**). Clicking the button will open the support dialog as shown below:

Name (Required): Your name, or the name of the relevant contact person.

Email (Required): The best email address to which we should respond with updates about your issue.

Phone Number: The best phone number in case urgent action is required.

Can we notify anyone else?: Include email addresses for any additional people who might need to be included on the conversation. You can enter multiple email addresses, separated with commas (,).

Description: Please include as much detail about the problem as possible. Information such as what you were attempting to do, which screen you were on, and any error messages that you received will help us resolve the issue more quickly.

We'll grab your logs and settings. Are there any other files you think we need?: We'll automatically package your logs, application settings, and take a screenshot. Use this dialog to include any additional files that we might need (ie. A document you're trying to import).

Clicking the Send button will attempt to submit the ticket to our support site. If your system is unable to submit the ticket, you'll get an error message prompting you to save the files locally. Once you select a location and file name, we'll create a .zip file containing the information you submitted and any files that would have been attached to your ticket. You can contact AIC Rail Support via email at support@aicrail.com and attach the .zip file or call us at 501-834-9540, and we'll give you more instructions on how to get use these files.

Document Viewer

The document section is design to keep every important information available to the operator at the station and easy to access from every step of the production process.

Common documents only need to be updated once for all stations that use it.

Display any document Windows recognizes:

- Word, Excel, PowerPoint
- PDF
- Images: jpeg, png, gif
- any website (URL)
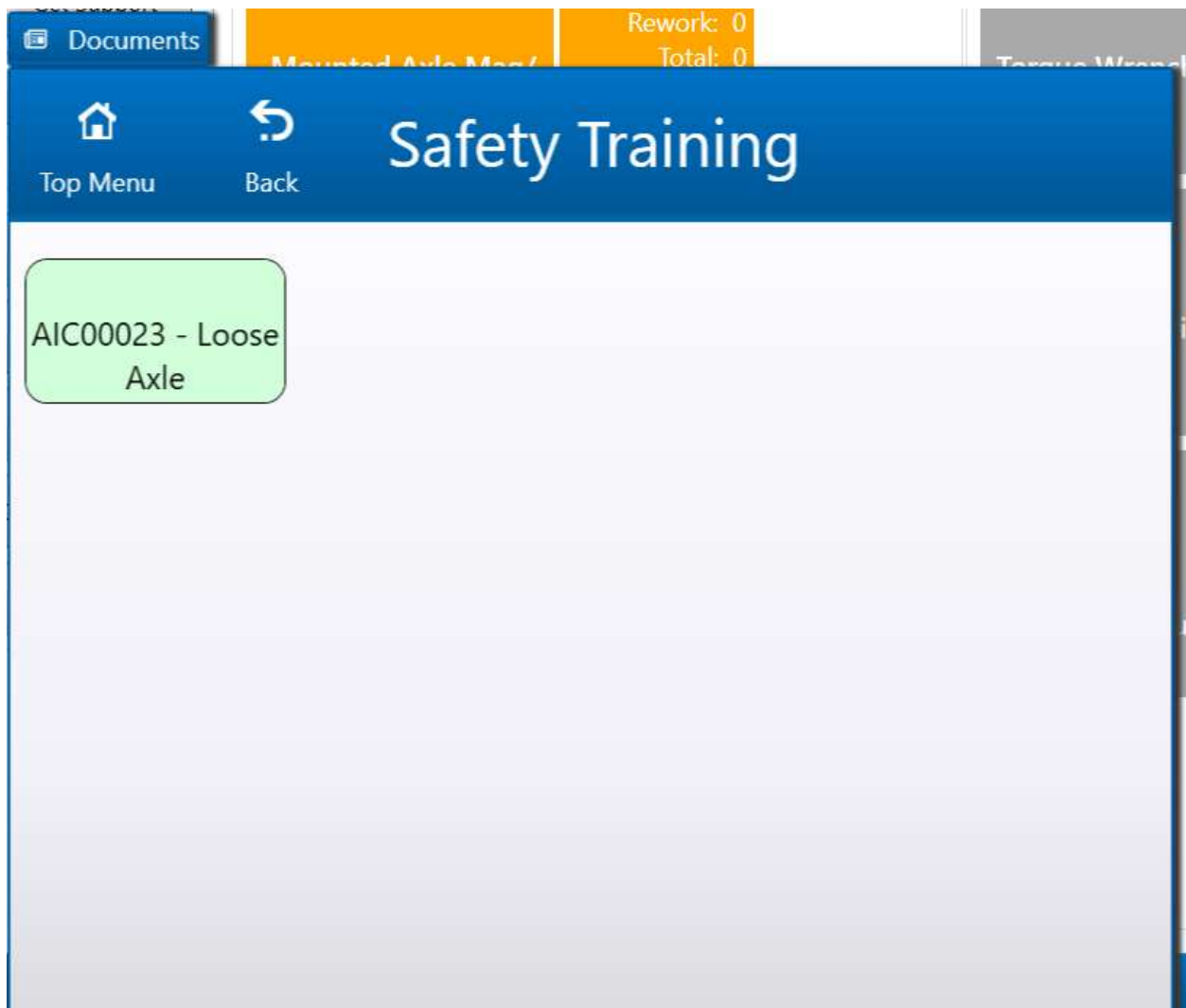
The viewer will show the files available to open and on top of the window, you will find two buttons.

Top Menu, it will send you to the top level of the files available. The back button will only move back one level.
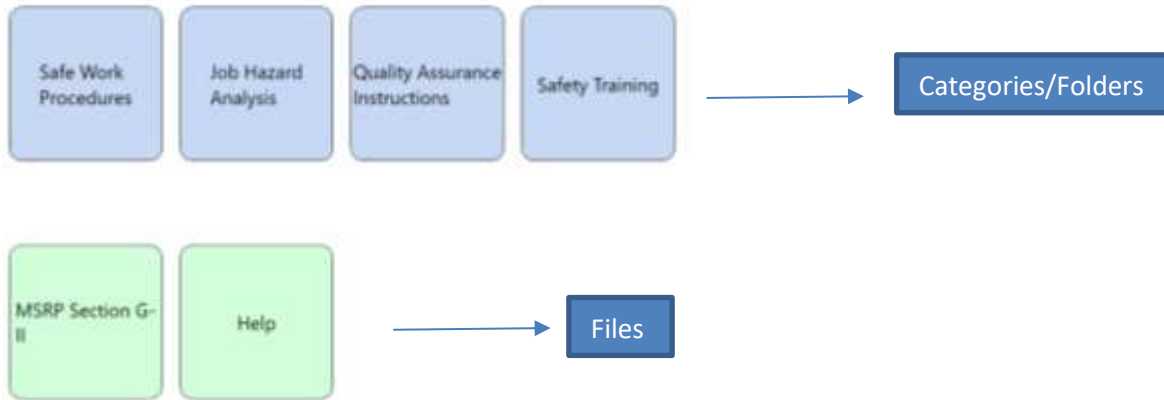
To configure the structure desire for how the documents viewer will look, you will need to open Shop Manager application, look for the settings Icon and click on documents, to add, delete or modified files.

Downtime

Use the Downtime feature to track equipment efficiency. If the station is not able to be used because of machine repair, operator staffing issues, material shortage, or some other reason you can enter these downtime events to track the frequency and duration of issues.

Set out of service

To start a downtime event, you must first select a reason from the list of Downtime Reasons (configurable in Shop Manager). The operator can optionally enter a comment to explain in further detail why the station is down. Then click 'SET OUT OF SERVICE' to start the downtime event. The date and time the downtime event was started will be recorded along with the operator that initiated it and the reason selected.

Return to service
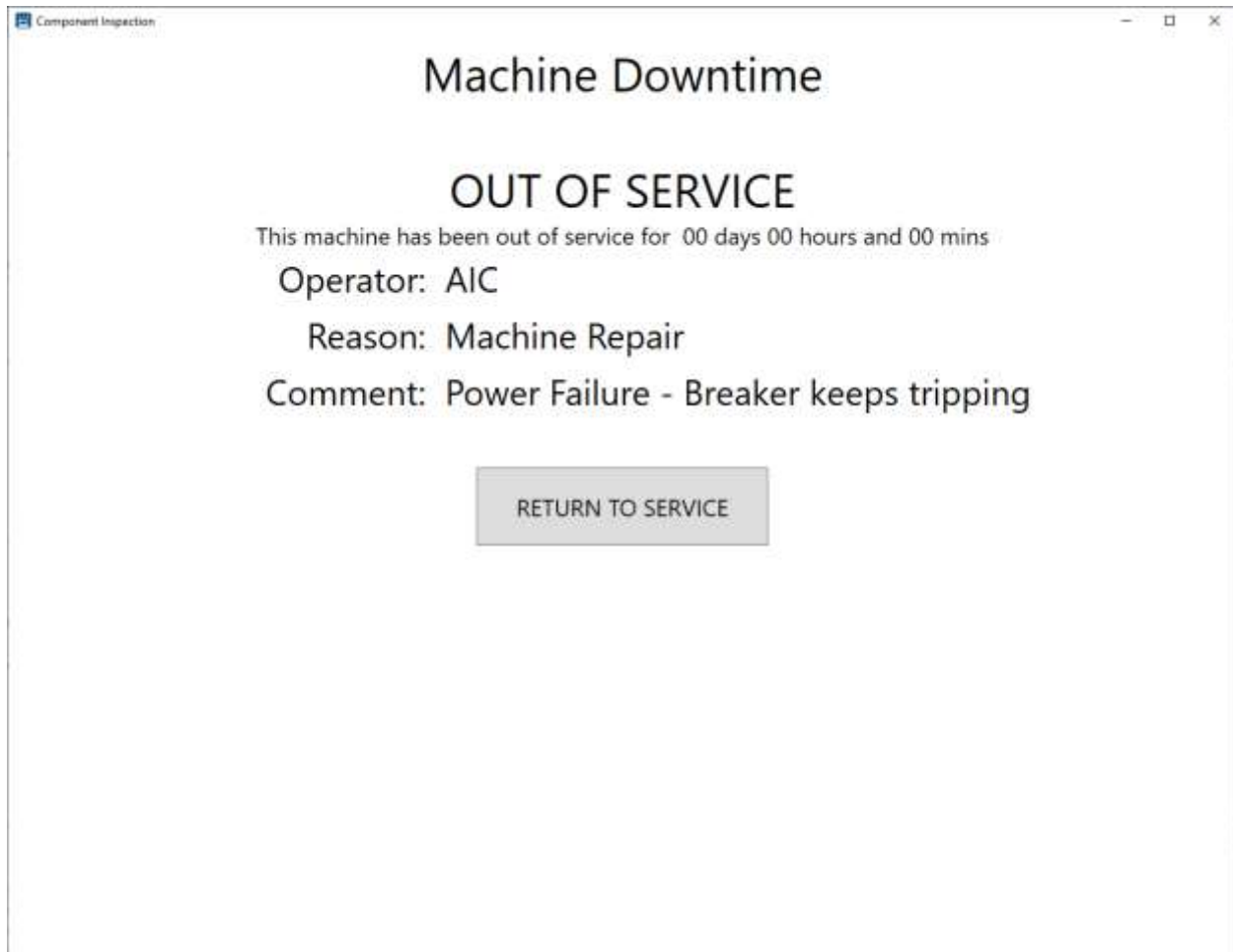
To end the downtime event and return the station to service simply click 'RETURN TO SERVICE'. The date and time the machine returned to service will be recorded and the total time the machine was down can be calculated for the event

Calibrate Sensors

The calibrate menu item will take you to the Calibration screen. The currently logged on user must have permissions to calibrate, or this menu item will be disabled.

The calibration screen allows you to calibrate the force and distance transducers. It also shows you the current value based on the most recent calibration. To calibrate the force or distance transducer, press the corresponding button and follow the steps in the calibration wizard.

Sim Force

Current Calibration

Calibrated by: AIC
Calibrated at: 6/27/2019 10:01 AM
Scale   1.001
Offset   0.085
Filter   1
Previous Calibration
Scale   1
Offset 0.1
Filter   1

0.1

0

[Calibrate]

· Show Less

Sim Distance

Current Calibration

Calibrated by:
Calibrated at:
Scale   1.0
Offset   0
Filter   1

0

0

[Calibrate]

· Show More

Distance Calibration

Step 1

Fully retract the hydraulic cylinder. Measure the amount of cable that extends from the base of the transducer.

Enter the length of the cable that extends from base of the cylinder and click "Read"

| 0.9 | [Read] |

Current transducer value : 1605.0

> Enter a value when the ram is fully retracted and then select the Read Button

Step 2

Extend the hydraulic cylinder to the furthest distance it would be extended during a typical mount.

For example, if the cylinder typically has to extend 12 inches to mount the first wheel but it would extend 18 inches to mount the second wheel, Extend the cylinder approximately 18 inches.

Enter the length of the cable that extends from base of the cylinder and click "Read"

| 9 | [Read] |

Current transducer value : 1605.0

> Enter a value when the ram is extended and then select the Read Button

Step 3
If the transducer value fluctuates rapidly this will cause your calibrated value to also fluctuate which could make your mounting charts look 'noisy'. You can adjust a software filter to try and smooth out the transducer signal.

Adjust the Filter value between 0 and 50 % and then click Update to see the affect.

Filter value: 1 % [Update] ← Enter a filter value and then select the Update Button

Calibrated value: 9.01

Once you have adjusted the signal to reduce the fluctuations in the calibrated value, click Next.

Note - for systems with encoder distance transducers this value should always be "1". The higher the value applies more filtering of the signal value.

Step 4
Verify your calibration by extending or retracting the hydraulic cylinder and compare the measured amount of cable extending from the base of the transducer with the value below.

Transducer value: 1605
Calibrated value: 9.01

When you are done reviewing your calibration, click Finished to save and exit or Start Over to restart the calibration wizard.

Force Calibration

Step 1
Isolate the master gauge and pressure transducer by closing the shut-off valve.

Step 2
Connect a hand pump or portable hydraulic unit that will be used to pressurize the transducer and Master Gauge for calibration and testing.

Step 3

Apply hydraulic pressure until the master gauge reaches the first or second divisional mark (typically 10 or 20 Tons).

Using the "dead zone" area near zero is not recommended because most gauges are not accurate in this range.

Enter the value that appears on your Master Gauge and click "Read"

| 0 | Read |

Current transducer value : 7640.0

Enter a low-end force value and then select the Read Button

Step 4

Increase the hydraulic pressure until the master gauge reaches a divisional mark near the maximum force you typically press.

For example, if the average mounting force of your wheels is 150 Tons, you should use 160 or 180 Tons as your second value.

Enter the value that appears on your Master Gauge and click "Read"

| 180 | Read |

Current transducer value : 13568.0

Enter a high-end force value and then select the Read Button

Step 5

If the transducer value fluctuates rapidly this will cause your calibrated value to also fluctuate which could make your mounting charts look 'noisy'. You can adjust a software filter to try and smooth out the transducer signal.

Adjust the Filter value between 0 and 50 % and then click Update to see the affect.

Filter value: 5 % Update

Enter a filter value and then select the Update Button

Calibrated value: 176.52

Once you have adjusted the signal to reduce the fluctuations in the calibrated value, click Next.

Step 6
Verify your calibration by increasing or decreasing the hydraulic pressure and compare the value shown on your master gauge with the value below.

Some hydraulic gauges are mechanically dampened to prevent rapid changes from damaging the gauge. The electronic transducer however, may respond much more quickly. Make sure you maintain a constant pressure for several seconds to allow the Master Gauge time to settle out before comparing it to the recorder's value below.

Transducer value:13448 Calibrated value:175.22

When you are done reviewing your calibration, click Finished to save and exit or Start Over to restart the calibration wizard.

Machine Inspections

Machine Inspections are like our Component Inspections except they apply to the machines in your shop. Once you choose to inspect a machine you will see the data entry screen. From here you can enter any information used to document maintenance to the AAR and QA rules. You will also enter inspection data such as measurements, visual inspection indications, or confirmation of steps performed. The data that is collected is customized for each station and may vary based on the type of machine being inspected. Each station can also have multiple inspections (i.e., monthly and weekly maintenance). Product changeover check list and QA data requirements (calibration readings and inspection requirements).

There are multiple reports for the Machine Inspections to assist in verity that inspection was completed and when.

For more information about creating or modifying data collection screens please contact us.

Mandatory Inspection of Magnetic Particle Testing Equipment Rule 1.7.2

1.- Date of preparation of bath solution, bath container cleaned, agitation, and circulation system flushed and filtering screens cleaned: Select a date

2.- Suspensoid amount: [   ]   Powder in bath solution: [   ]

3.- Concentration and contamination of bath solution

Amount of magnetic powder: [   ] mL   Amount of contamination-dirt, chip, or other foreign matter and magnetic powder: [   ] mL

4.- Test for ultraviolet light

Light meeter having a 75-footcandle scale with 10x multiplying disc or equivalent: [   ] mW/cm2   Direct reading meter: [   ] mW/cm2

Gauge No: [   ]   Expiration Date: Select a date

Inspector: [   ]

Inspection History

To review the inspections performed at the current station for the day you can click on the "Today" section and it will take you to the History tab. You can specify any filters for operator, shift or a different date, and then click 'Get History'. The current date is selected by default.

Machine Inspections

Machine

MPI Rule 1.7.2   Today: 0   → Today History Results
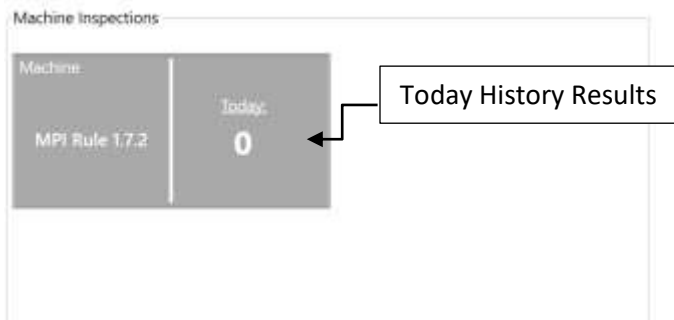
MPI Rule 1.7.2

History

Date	From	To	Operator	Shift
Today	8/5/2021	8/5/2021	All Users	All

Result(s) From: 8/5/2021 12:00 AM To: 8/6/2021 12:00 AM

Components: 1

#	Shop Code	Machine #	Name	Application Type
1	WRXI	41	Demount Press	Component Demount

+ New Inspection   **✏ Edit Selected**

Demount Press - MPI Rule 1.7.2

Inspected by: AIC Shift 1

Inspection date: 8/5/2021 2:18 PM Status Good

Inspection Elements

Get History will return a list of all inspections on the specified date that match the filters for operator and shift. You can use the predefine options do a date or select a custom date range. You must click the "Refresh" button to see the results.

A summary of the inspection totals will appear at the top of the list, with the total number unique inspections.

You can select a result by clicking on a row from the results list. The details for that inspection will appear at the right side. It will show who performed the inspection, shift, date and status.

New Assembly

Create a new assembly record to record component data and mount information.
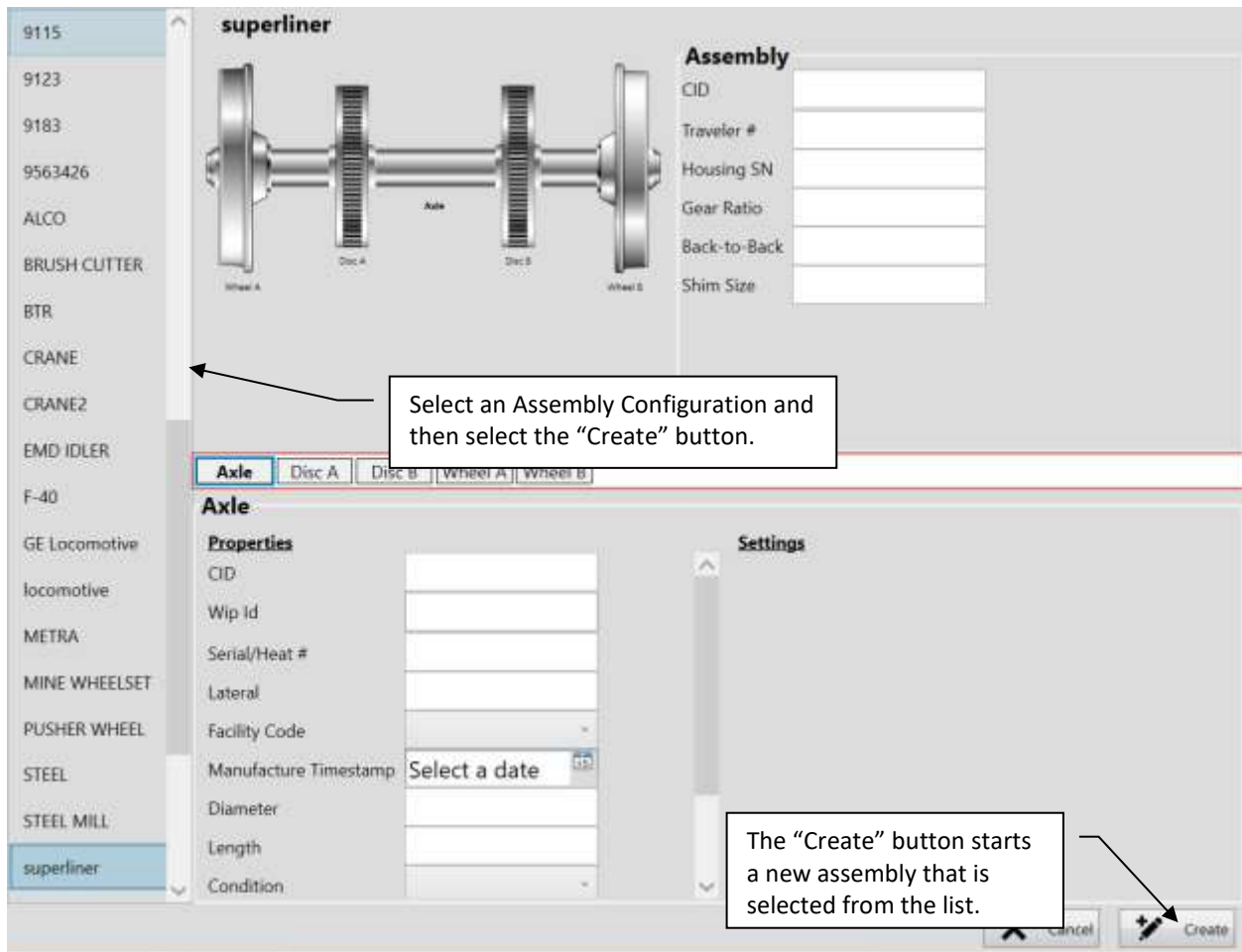
- Select an assembly configuration from the list on the left.
- Enter any data about the assembly in the top right corner.
- Select components by clicking on the image, or using the menu. Review the Settings and enter any component data like serial numbers and other manufacturing data.
- When you have finished entering data for this new assembly, click Create. The screen will automatically change to the Edit Assembly screen.

Search and History

The History tab will display a list of items completed at the current station for the specified day.

You can filter the history view further by using the parameters at the top of the screen. The Date field will let you select a specific date for which to search, and the arrow buttons on either side of the field will allow you to scroll forward or backward by one day at a time. The Operator button will toggle your results between showing history items for all users or only for you, based on your current login credentials. The Shift dropdown will filter the results to the specific shift selected or allow you to see work done for all shifts on the selected date. The refresh button will rerun the current history search; this is most useful when looking at data for the current day, as older data is unlikely to be changing in real time. Finally, the Print button will allow you to print a report based on the selected history item; to print, a report must be set up in the application settings (see individual application guides for instructions on setting up a report to print).

The Search tab allows you to search for assemblies by Cid, WIP ID, or component serial number.

Once you have selected a search method, type all or part of the relevant field into the search box and click "Search". For example, if you are using our Inbound application, items will receive WIP IDs prefixed with the load number followed by a dash and an indexer. On the search screen, typing in that load

number for a WIP ID search would return all the items from that load; typing in the load number with the dash and indexer would only return that one component.

Once your search is complete, the results will be displayed in the area below the search bar. The fields displayed in the results list can be configured in the settings menu (instructions for selecting search result fields can be found in the user guides for individual applications).

After selecting one of the search results, the details for your item will appear in the right-hand pane.

The Details tab will include any data fields recorded for the component or assembly. In the case of an assembly, similar data will be shown below the assembly information for each of its subcomponents. If an attempt to register has been made, clicking on the Registration Status will bring up a prompt with details of the attempt and any errors that were returned.

The Inspection History tab will list any inspections performed on the component, assembly, and/or the assembly's subcomponents. Expanding the inspection name will display the inspection elements that are recorded and their corresponding values.

If you are reviewing an assembly with mount data, a Charts tab will be displayed. Here you can review the mounting charts and information for any subcomponents that were mounted using the WSMS.

Edit Assembly

After creating a New Assembly or loading an existing assembly from the Search and History or Recent Assemblies list, you can modify the component and assembly data, record new components, and demount existing components.
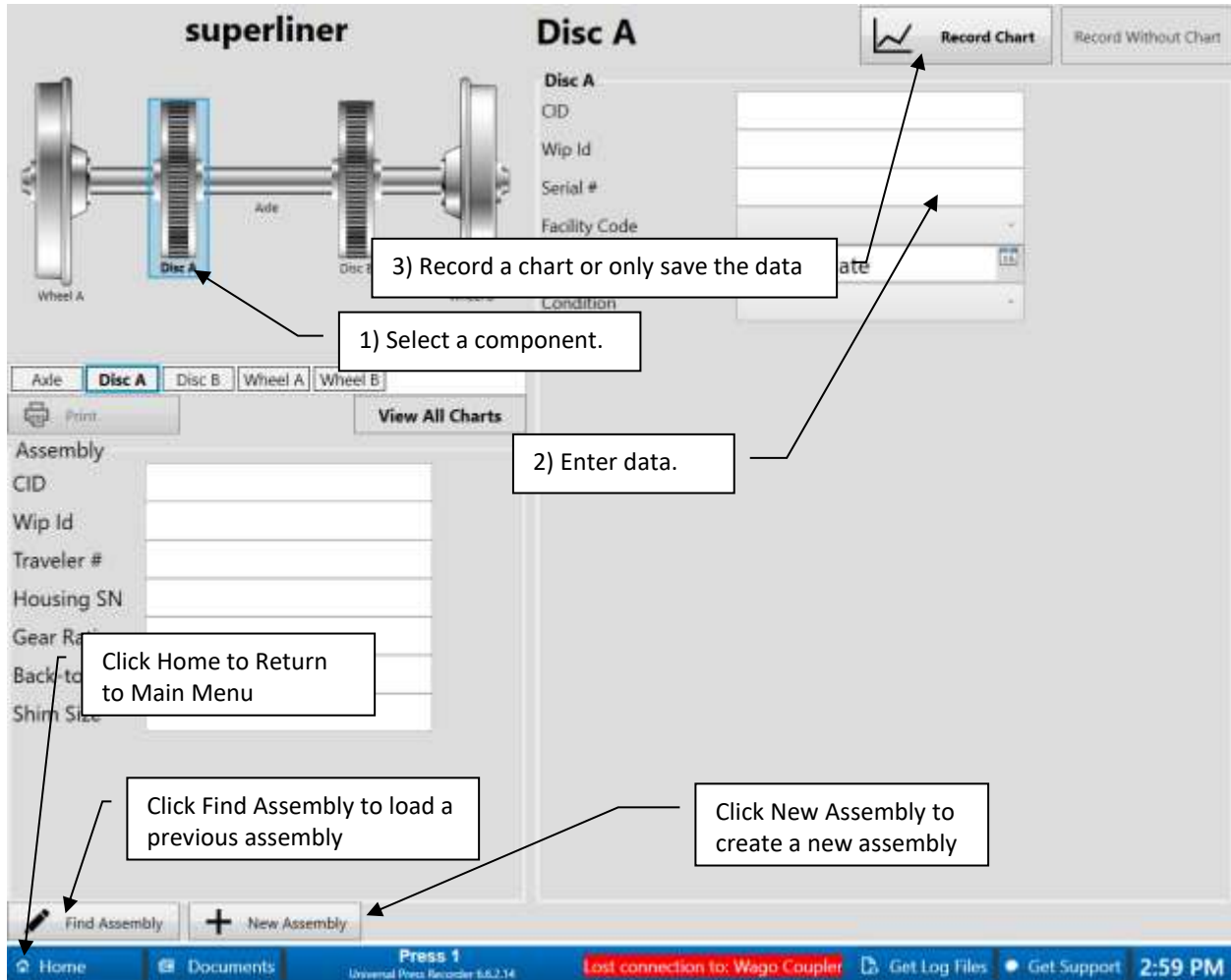
- The assembly image in the top left quadrant displays the status of each subcomponent
    - Components that have been mounted without a misfit will have a green checkmark overlayed.
    - Components that have been mounted with a misfit will have a red x overlayed.
    - Components without a red x or green checkmark have not yet been recorded.
- View and edit the assembly information in the bottom left quadrant of the Edit Assembly screen.
    - Use the Print button on the left to print an Assembly Report if it is configured.
    - Click View All Charts to see the mounting charts of all components that have been mounted on the assembly.
- Select a component by clicking on the image or using the menu below.

- o If the component has not been recorded, use the Record Chart button to navigate to the Record Chart screen for recording a mounting chart. If you associate the component to the assembly without a mounting chart, use the Record Without Chart button.
- o If the component has already been recorded, you can review the mount chart and information or click Demount to record that the component was removed from the assembly. If you have a Mounted Component report configured, you can use the Print button to print the report for the selected component.
- o If the component has been demounted, you can replace the component using the Record Chart or Record Without chart buttons. You can also undo the demount if the component was accidentally recorded as demounted.

Record Chart

Record a chart of the mounting force and distance for the selected component. This feature should only be used for components that are pressed on to an axle. If a component such as a grounding ring is applied without pressing, or at a force to low to record, you can use the Record Without Chart feature to capture the date and time the component was recorded without recording a chart.
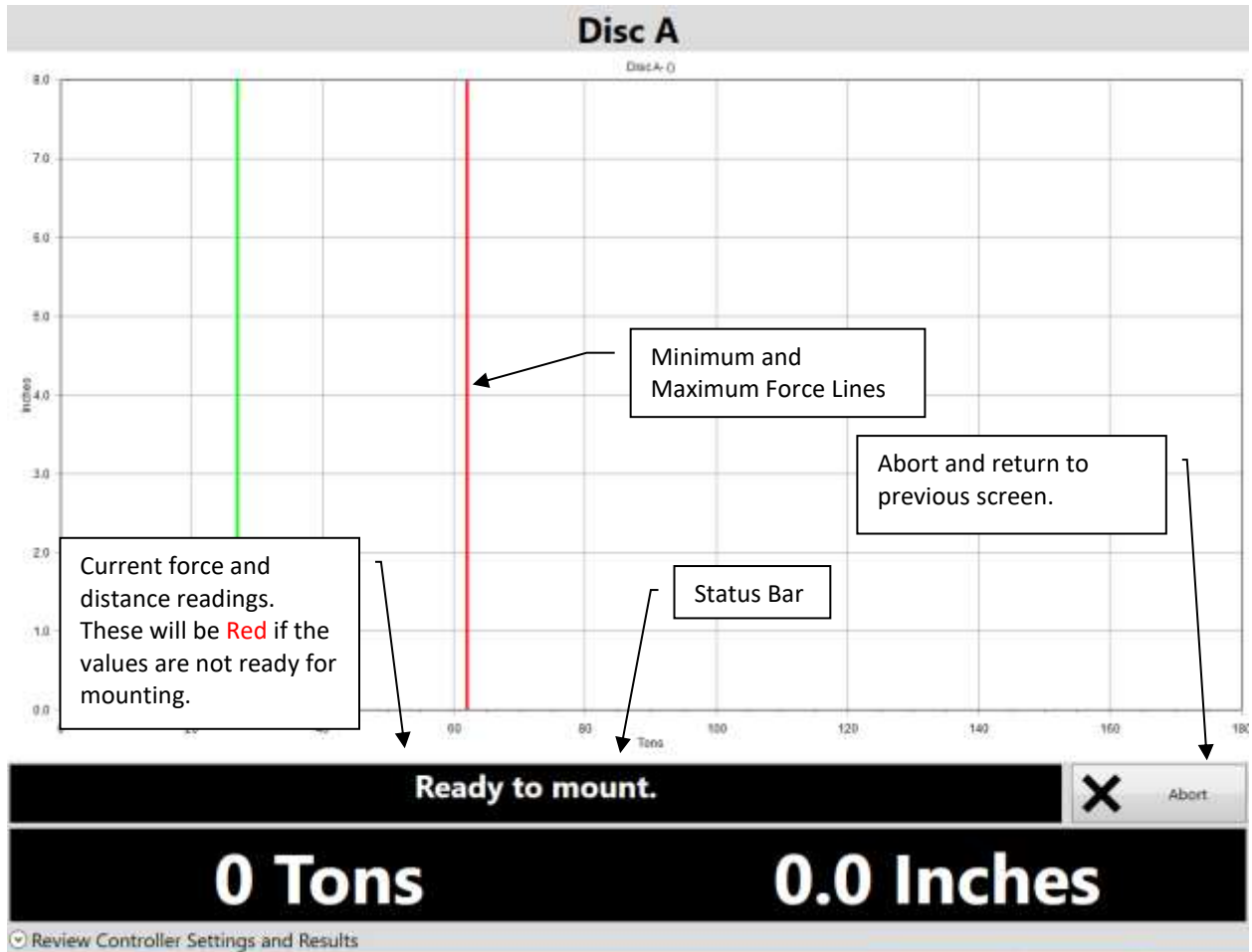
To abort the recording operation before the mounting has started, click the Abort button. The user will be returned to the Edit Assembly screen.

Mounting is performed according to a sequence of states that are defined below:

1. Offline – The application is not ready to record. All controller outputs are set to false.
2. Wait for Press Ready –If configured, the following controller outputs are set: RecorderReady = false. If configured, UPR will wait in this state until the Press Ready and Wheelset Present inputs are true. One or both inputs can be required. If neither input is required, UPR automatically advances to the next state.
3. Initializing – If configured, the following controller outputs are set: PressEnable = true, MisfitDetected = false, WheelMismatch = false, WheelsetRelease = false. UPR will wait for

the current force value to be less than or equal to the 'Starting Force' value. The Starting Force value is the amount of force that will trigger the chart recording to begin. **The force must be below this value before the recorder is ready to record.**

4. Ready – If configured, the following controller outputs are set: RecorderReady = true. UPR is ready to record the chart for the first wheel. UPR will wait for the force sensor value to be greater than the Starting Force setpoint and the distance to be greater than the 'Starting Distance' setpoint. Once both conditions are met, UPR will advance to the next state.

5. Recording – UPR is actively recording all force and distance points to the mounting chart. If the force value drops below the Starting Force setpoint before the distance has reached the False Start Distance setpoint, UPR will return to the Ready state and wait for the starting conditions again. Otherwise, UPR will continue recording until the force value drops below the peak force by more than Ending Force Drop amount. For example, if the force builds to 94 tons, and the Ending Force Drop settings is set at 20 tons, then recording will end when the force drops below 74 tons. UPR will advance to the next state at the end of the mount.

6. Done Recording - If configured, the following controller outputs are set: RecorderReady = false. UPR will check the chart for misfits, capture information about the mount (date/time, operator, etc) and then proceed to the next state.

7. Wait for Data – UPR will wait until all required data elements are entered and there are no validation or business rule violations. Once all required data has been entered it will automatically be saved to the database and UPR will advance to the next state.

8. Data Save Complete – If configured, the following controller outputs are set: WheelsetRelease = true, PressEnable = true. Once the assembly has been saved, the wheelset release output will be set to true (if configured) to indicate it is ok to release the wheelset.

Users can edit component data such as serial number and other manufacturer information before or after the chart is recorded.

Before mounting the user can review the settings that will be used to record the chart such as which force or distance sensor will be used (if more than one exists), as well as the spike control and spike detection settings.

After the chart is recorded the user can also review the results from the spike control device (typically a PLC) as well as the mounting force and distance detected.

Review Controller Settings and Results							
Controller Settings			**Controller Results**			**Recorder Results**	
Force Index	0	Spike Control Enabled False	Peak Force	0	Spike detected?	False	Mounting Force 0
Distance Index 0		Spike Start Force 0	Peak Distance 0.0		Spike started at:	0.0	Peak Distance 0
Ram Index	0	False Start Distance 0.0	Released Early? False		Target stopping force: 0.0		
		Desired Spike Height 0			Stopped at:	0.0	
		Coast 0					

- Controller Settings – used by the press controller (PLC)
    - Force Index – the index of the force sensor used to record the chart for the selected component.

- o Distance Index – the index of the distance sensor used to record the chart for the selected component.
- o Ram Index – the index of the cylinder that is pressing the component. This is only required if Spike Control is configured and enabled, and only if the pres controller requires it.
- o Spike Control Enabled – True if the press controller (PLC) should try to stop the press automatically to achieve the desired spike height. False if there is no spike expected or if the press will be manually stopped.
- o Spike Start Force (for spike control only)– The minimum force value where we start looking for a spike.
- o False Start Distance (for spike control only)– If the distance increases more than this amount from when the start of a spike is detected, it will no longer be considered a spike.
- o Desired Spike Height (for spike control only) – The desired amount of force for the mounting spike at the end of the chart. It is the average of the Minimum Spike Force and Maximum Spike Force settings.
- o Coast (for spike control only) – Adjusts the target spike force to account for the amount of force that continues to build after the controller signals the ram to stop and when it actually stops.
- Controller Results – the results recorded by the controller (PLC) after the press is complete.
  - o Peak Force – the maximum force value recorded by the controller for the current press.
  - o Peak Distance – the maximum distance value recorded by the controller for the current press.
  - o Released Early (for spike control only)– True if spike detection is enabled and the operator manually stops the press before the spike control algorithm is detects the end of the spike. Otherwise false.
  - o Spike Detected (for spike control only)– True if the controller detected the start of a spike at the end of the mount.
  - o Spike Started At (for spike control only)– The value of the mounting force when the controller detected the start of a spike.
  - o Target stopping force (for spike control only)– The value calculated by the controller as the target force for when to stop the ram in order to achieve the desired spike height. This is calculated by adding the Desired Spike Height to the Spike start force and subtracting the Coast value, if any.
  - o Stopped at (for spike control only)– The force value when the controller actually signaled the ram to stop. Because of the sampling time of the force signal, this will likely be higher than the Target stopping force.
- Recorder Results – the results recorded by UPR after the press is complete.
  - o Mounting Force – If a spike is detected, this is the force value where the spike started. Otherwise, it is the peak force value.
  - o Peak Distance – The maximum relative distance for the mount. This is the length of the chart based on where the recorder started recording and ended recording.

The user must click Finish to complete the recording process and return to the Edit Assembly screen.

Spike Control

Some components are expected to have a large increase in force at the end of the mount, often referred to as a spike. This spike is typically caused by the component pressing up against an immovable object such as a lip or 'seat' on the axle, or perhaps against another component. Often the amount of force desired for this spike must be within a certain range. In order to achieve this range the operator typically has to monitor the force gauge during the press and release a button in order to stop the press. This reliance on the operator intervention can lead to improper mounting that requires additional labor and expense to remove the component and mount it again.

Spike control is an optional feature that can be purchased to enable the press controller to automatically stop the press at the correct time to achieve the desired amount of spike force. AIC has developed a proprietary algorithm for detecting a force spike at the end of a mount in real time, and automatically stopping the press cylinder at the appropriate time, removing the human error in the process. In most cases this requires a programmable logic controller (PLC) provided by AIC, and installed by AIC. The PLC must be properly wired to the manual control system for the PLC, and is usually customized to each press. In some cases it is possible to accomplish this with your existing controller (PLC).

For more information, or to request a quote for adding Spike Control to your existing UPR, please contact our sales team.

Spike Detection

Like Spike Control, this feature (when enabled) detects the spike force at the end of the mount. However, Spike Detection is run after the chart has been recorded and does not control the mounting in any way. Instead, the chart data is analyzed after it has been recorded and determines the force where the spike started as well as the size of the force spike. It then compares this data to the specified minimum spike force and maximum spike force to determine if the chart is with the limits or if it should be flagged as a Misfit.

To enable spike detection, or to specify the minimum and maximum spike force values, you must modify the Assembly Configuration using Shop Manager. Each assembly type and each component must be configured separately. This makes it possible to enable spike detection for some components on an assembly without requiring it for others.

Appendix A: License

WHEEL SHOP MANGEMENT SUITE END USER LICENCSE AGREEMENT

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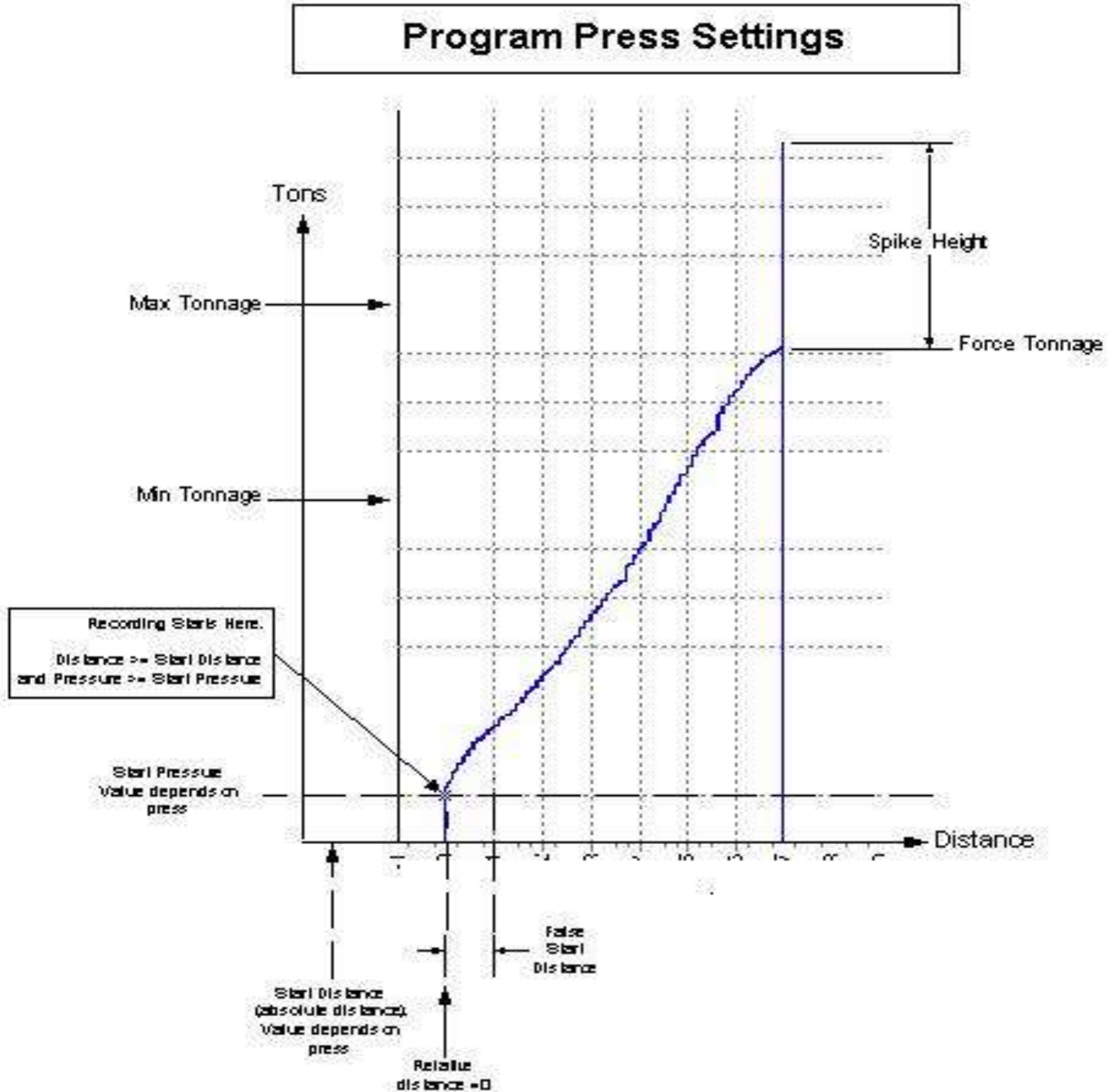
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Appendix B: Press Settings

Program Press Settings

Tons

Spike Height

Max Tonnage

Force Tonnage

Min Tonnage

Recording Starts Here.

Distance >= Start Distance
and Pressure >= Start Pressure

Start Pressure
Value depends on
press

Distance

False
Start
Distance

Start Distance
(absolute distance).
Value depends on
press

Relative
distance = 0

Notes:
1. Must meet start distance (absolute distance) and start pressure to begin recording.
2. Once recording begins, if pressure drops to below start pressure before false start distance is reached, the recording stops and distance resets to 0. This is to prevent recording 'bumping'.
3. Once the false start distance is exceeded then the chart is stored as is.

Appendix C: Contact Information

AIC Rail
6100 Getty Drive
Suite N
Sherwood, AR 72117

Online Support
Visit our website at www.aicRail.com/WSMS for 24/7 technical information and available downloads
Email us at support@aicRail.com

Phone Support (Existing support contract or credit card required)
Call 1-501-834-9540 or 1-877-834-9540 (toll free)