



Plantwatch

PC Based Traceability & Control

www.plantwatch.com



MARK



READ



TRACK

Where Plantwatch sits





- ▣ Plantwatch is server software that acts as the hub for everything on your plant floor for total system integration. No matter what brand, model, or platform, it talks to your plant-floor equipment just as naturally as it talks to SQL databases, seamlessly bridging the gap between production and IT.



Tracking and Production Management system.

Common applications :

Traceability,SQL Browser, labor/job tracking, cell control, machine control, data collection, error proofing, inventory control, process management, operator interface and many more.

PlantWatch Users



- MTD
- Sealed Air
- TSM
- Cummins Fuel
- Cummins Engine
- Cummins JEP
- Ancor
- Gebbers
- Classy Closets
- Magneti Marrelli
- Magna Cosma
- Crown Group
- MSPrecision
- GM Toledo
- American Battery



What is PlantWatch ?

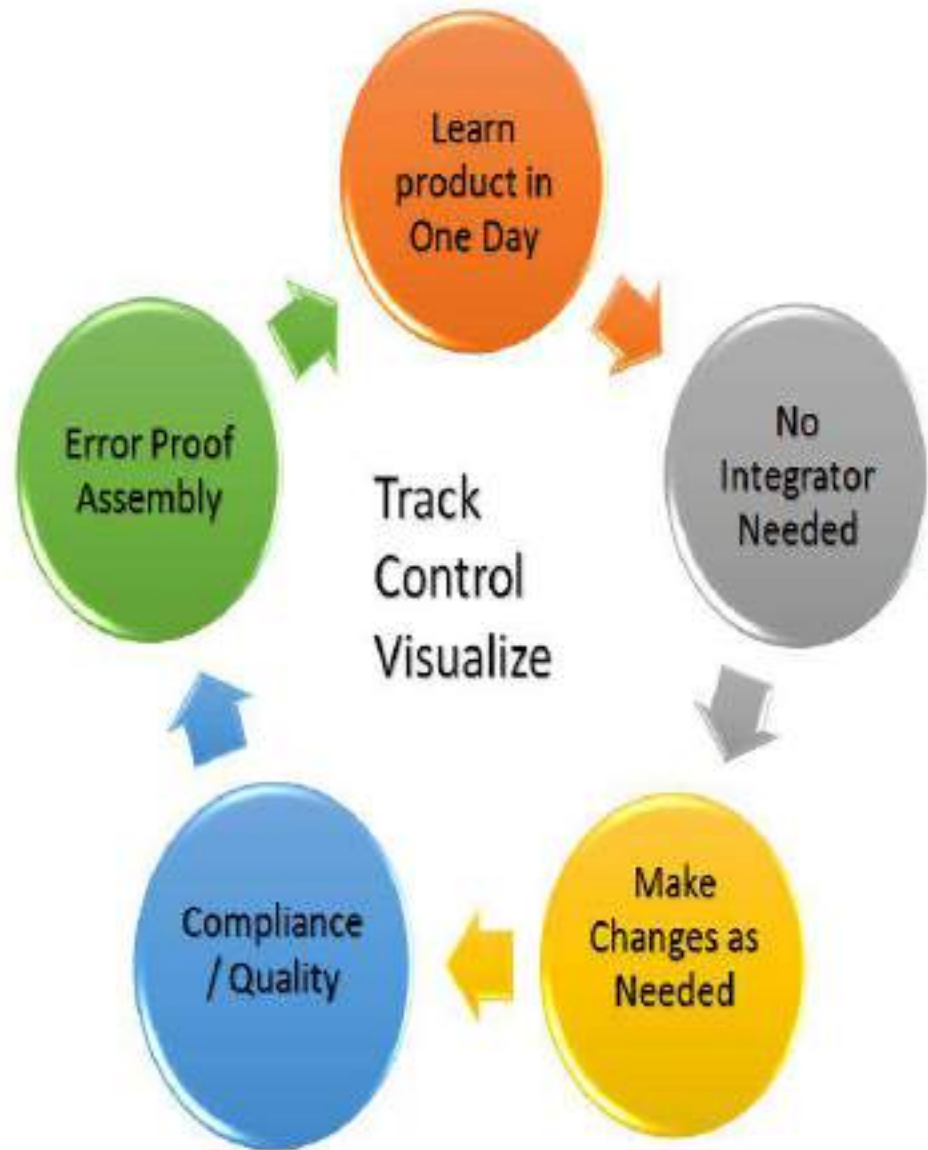
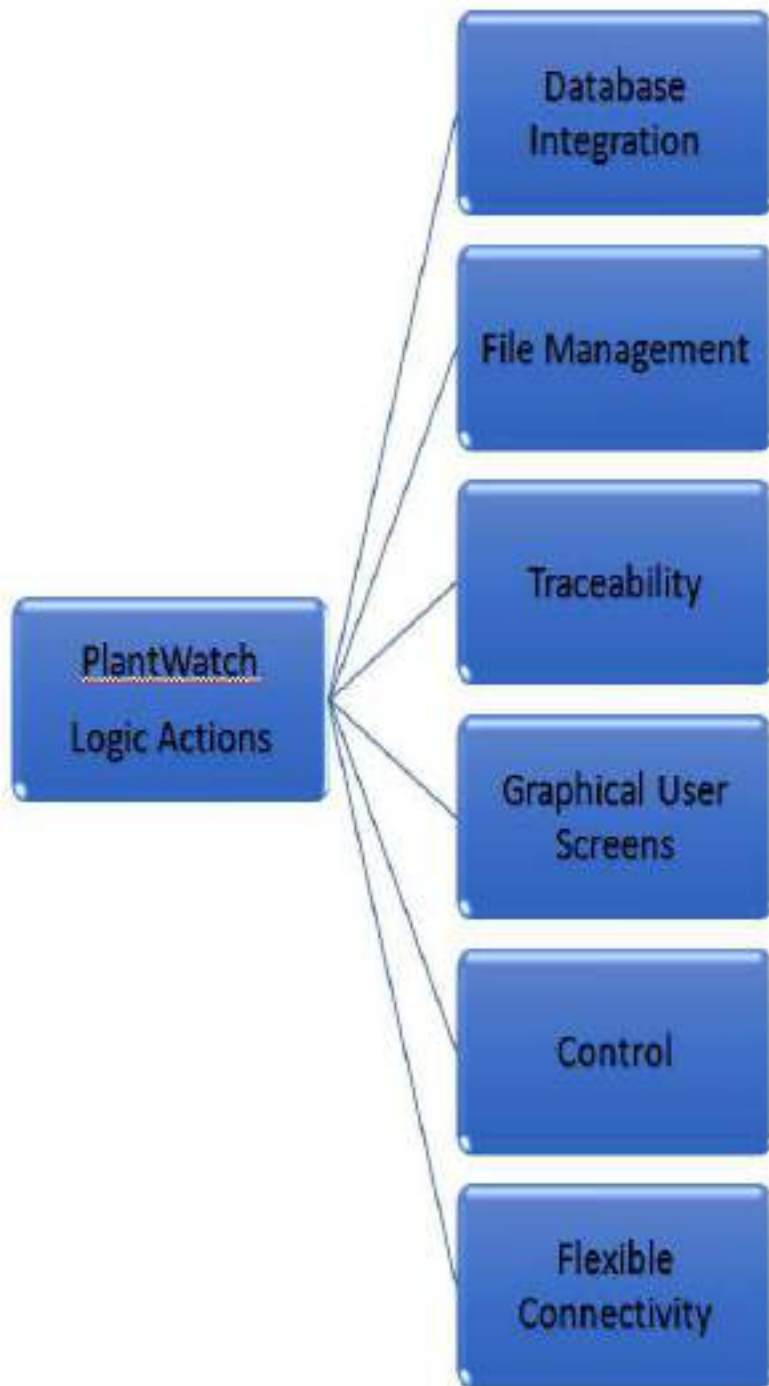
*Plantwatch® is a **simple** to use PC based software that is configured to create MES Track and Control systems.*

Plantwatch applications are deployed by Machine OEMS, System Integrators and end users as stand alone systems or to fill gaps in existing systems

Plantwatch applications are configured with a simple interface that allows for quick deployment and expansion without outside support services.

- . Control the simplest station or do plant wide traceability with **one day of training!***
- Connect, communicate & control your process with simple radio button configuration*
- Create in hours what usually takes weeks*

“So easy even an end user can do it”



Where Does It Fit

- *Control*

- *Manufacturing cell control and data collection*
- *Communicate to control devices*

PLC, Test cells, Robots, Conveyors, Sensors, Light Curtains, Motors and Drives, RF ID, Motion

- *Track*

- *Data Collection, geneology- Serialized or Lot,*
- *Database browser SQL, ODBC*
- *Bi-directional comm to higher level systems: MES/ERP*

Not just a data collector !!

Makes decisions and performs actions.

Whos buying it

OEMs/integrators

- ▣ Baumfolder
- ▣ CW Castle
- ▣ OAM
- ▣ Canon

Distributors

- ▣ Diskcomp
- ▣ Industrial Controls
- ▣ Smart Label Solutions

New End Users

- ▣ American Battery
- ▣ TSM 3
- ▣ Ancor
- ▣ Classy Closets
- ▣ Doxim
- ▣ Morris Dickson



Easily configured, learn it in one day!

Plantwatch® systems are so understandable that you can learn everything you need to know in one day!

ERP Workorder #6643892

QTY: 100 LOT No: 486 PART No: 44451 Gear Assembly

Operation	Required File	Recipe	Result
Mark	2000000		✓
Verify	MarkVerify		✓
Fitpin	2000000-1.011.000		✓
Asy Gear	Gear Assembly 44451.rml	Required Tools	✓
Asy Bushing		Required Tools	✓
Test	Bushing Measurement.rml	0.499in	✓
Label	200000000		✓
Pack			✓

Your Company
Workorder



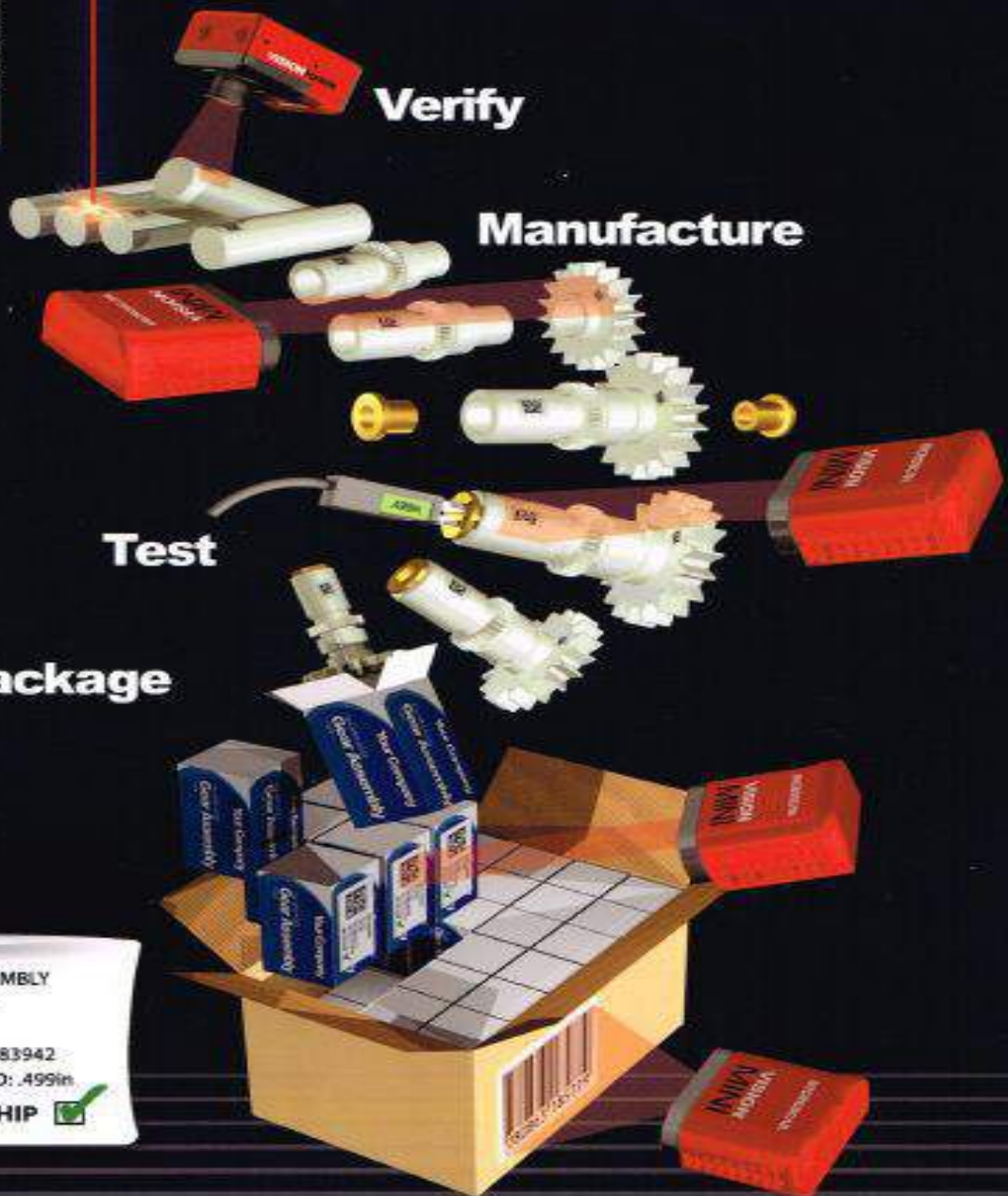

Mark

Verify

Manufacture

Test

Package




GEAR ASSEMBLY
 PN: 44451
 LOT: 486
 UID: INN5383942
 BUSHING ID: .499in
 OK TO SHIP 

Network client



Plantwatch Is Different

In Plantwatch...

It's easy to do complex things!

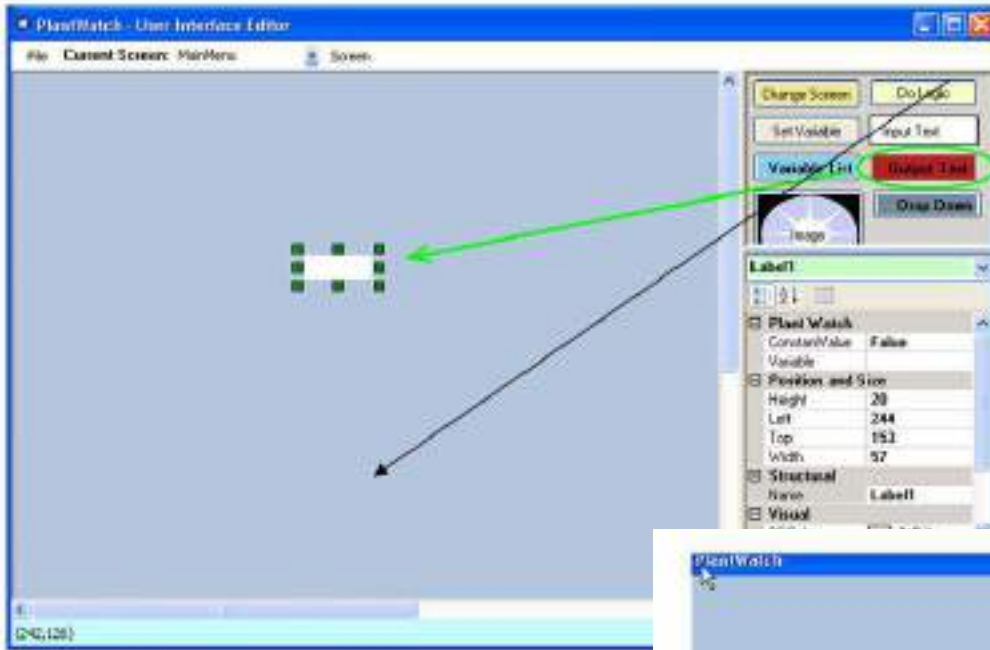
- ▣ Easy
 - No programming Live Monitor
 - One day training Cross reference tool
- ▣ Powerful
 - Logic engine is unique
 - Remote .exe
- ▣ Interacts with other PC based systems
 - Send/Receive to ERP
 - Multi-User

Powerful


- ▣ Connects to everything, easily!
 - ✓ OPC for PLC's etc
 - ✓ Com Ports
 - ✓ TCPIP Sockets
 - ✓ Files from other software applications
 - ✓ Databases
 - ✓ I/O
 - ✓ Network Clients
 - ✓ Remote .EXE

Graphic Designer

Input text, output text, animated buttons, selection boxes,



Graphics



VB

File Server Connection


Cycle Complete

Status Message **Error - Data bad and not processed**

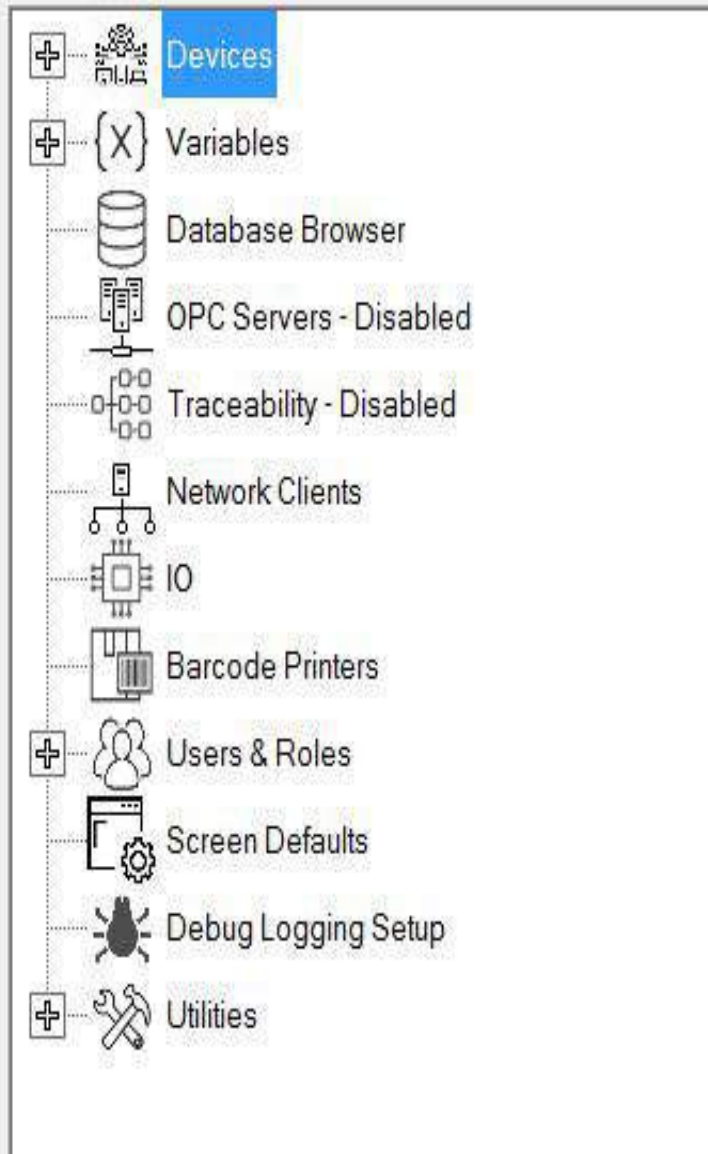
Engine Serial Number

Injector Part Number

Engine Type Select Red Black Red



Process #1	<input checked="" type="checkbox"/>	1	<input type="text" value="4985001-090205045-glyx2md_1"/>	Injector SN is not unique
Process #2	<input checked="" type="checkbox"/>	2	<input type="text" value="4985001-090205045-glyx2md_1"/>	Injector SN is not unique
Process #3	<input checked="" type="checkbox"/>	3	<input type="text" value="4985001-090205045-glyx2md_1"/>	Injector SN is not unique
Process #4	<input checked="" type="checkbox"/>	4	<input type="text" value="4985001-090205045-glyx2md_1"/>	Injector SN is not unique
Process #5	<input checked="" type="checkbox"/>	5	<input type="text" value="4985001-090205045-glyx2md_1"/>	Injector SN is not unique
Process #6	<input checked="" type="checkbox"/>	6	<input type="text" value="4985001-090205045-glyx2md_1"/>	Injector SN is not unique



Editor

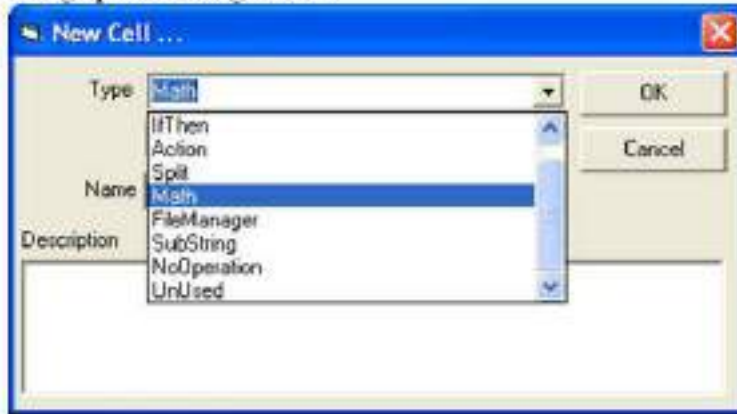
Tree View

Tree View allows you to add or delete components from you application such as:

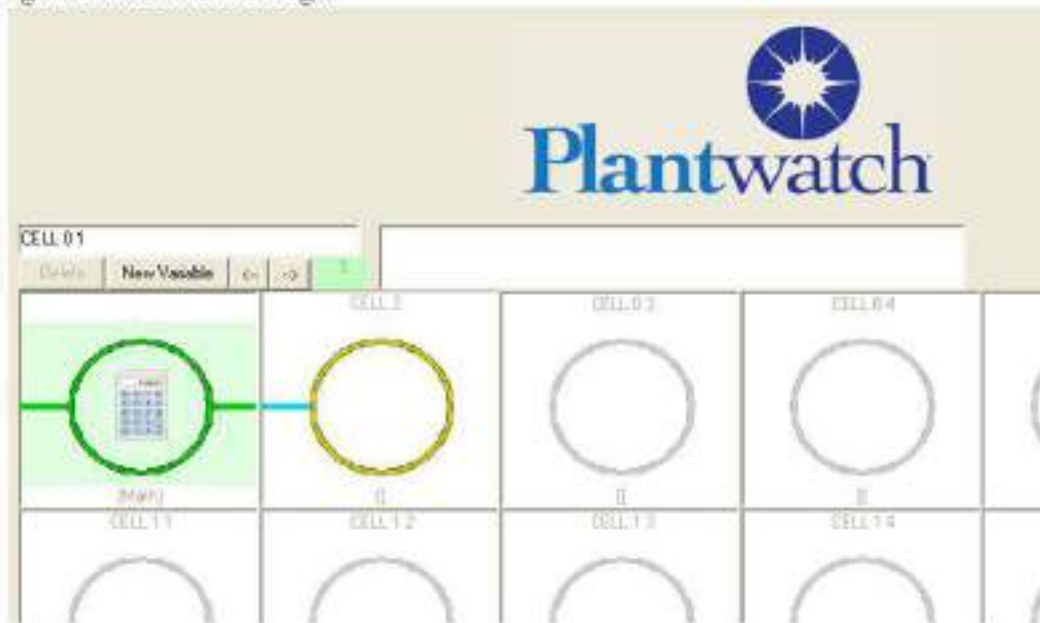
- Devices to talk to, for example a camera, bar code reader or PLC
- Local variables to store values
- Logic Charts to perform logic and cause real world actions
- SQL Databases to connect to for data storage
- Bar Code printers
- Digital I/O 24 vdc

Logic Engine

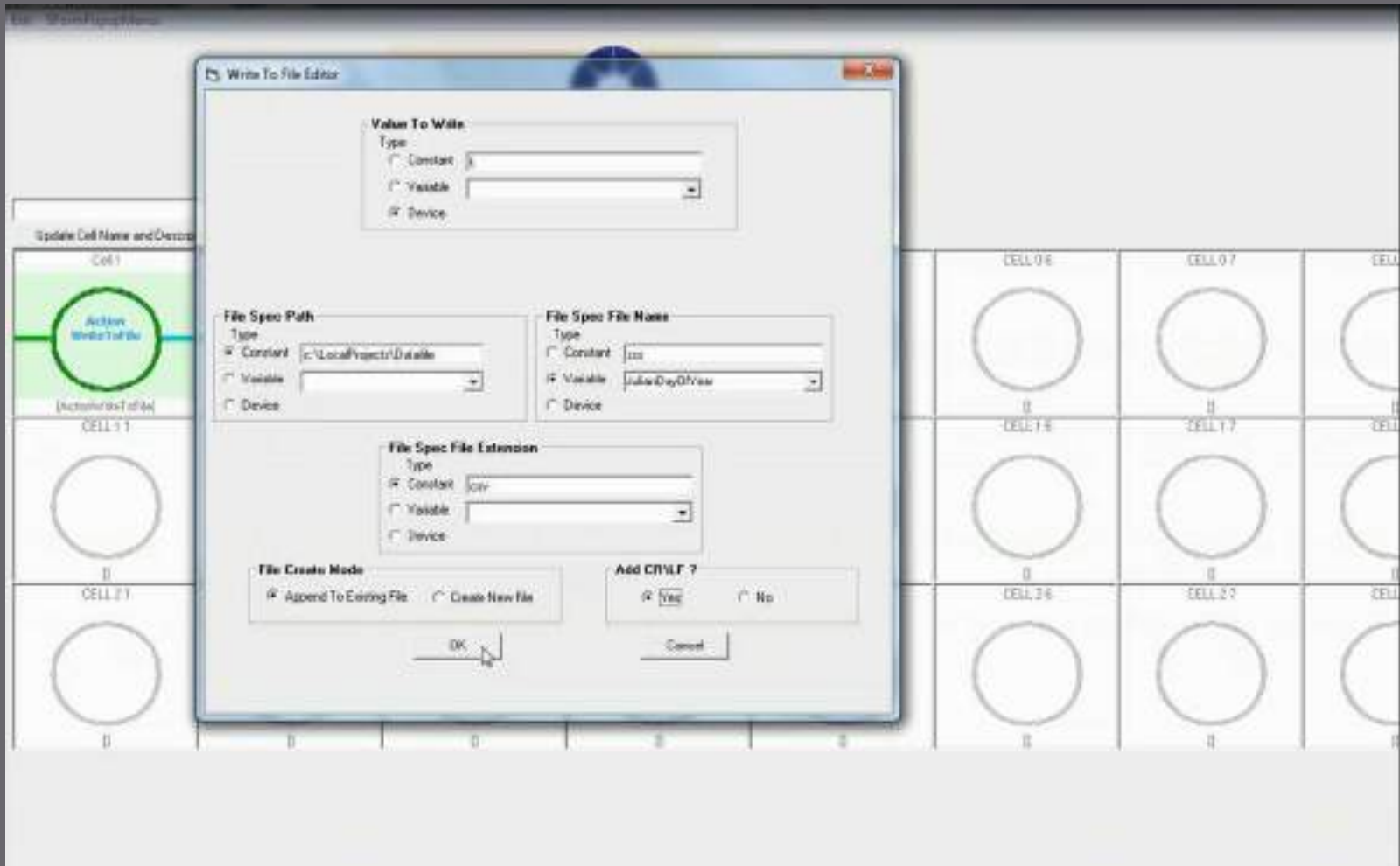
Setting up a math logic chart



Logic flows from left to right



Development



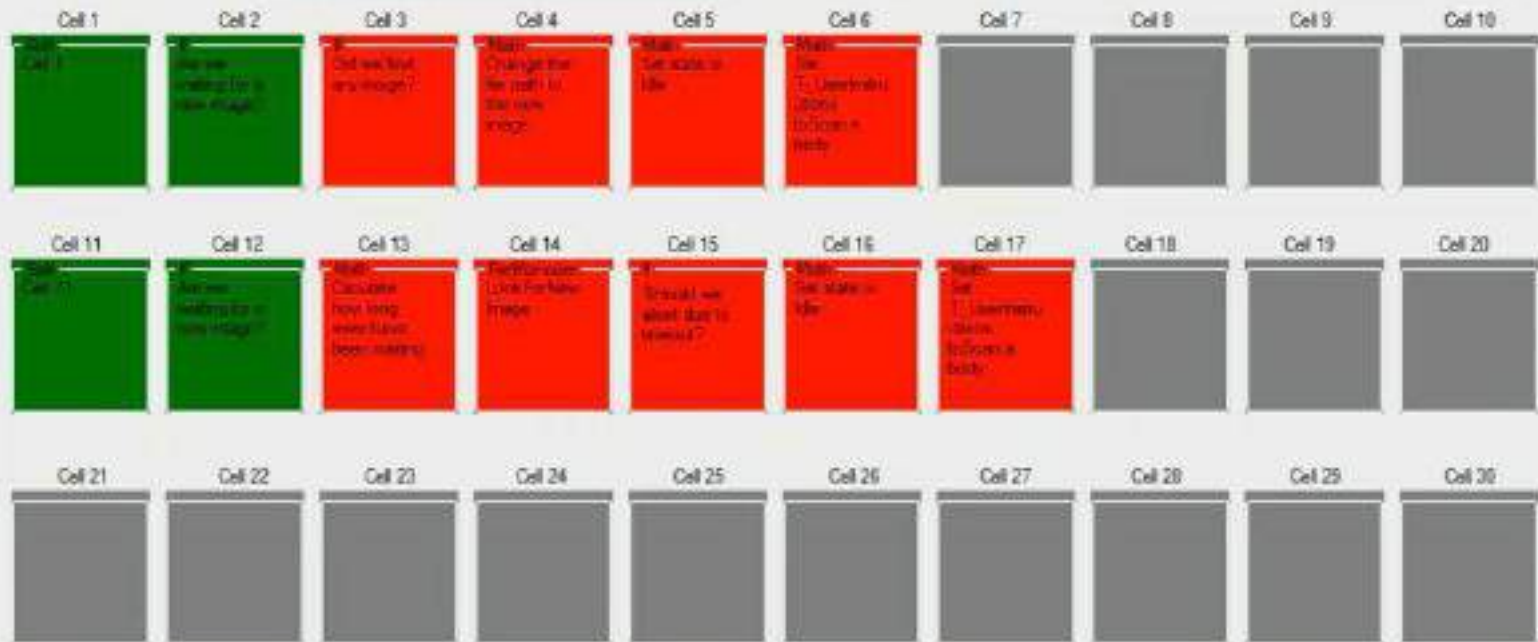
Device to Show Charts From: IntervalOneSecond

Select Chart to Monitor: **Waiting for a new image?**

Sort: Alphabetically

Chart Execution Count: 226

[Reset Chart Execution Count](#)



Cell Number to Watch:

Cell Name: Are we waiting for a new image?

Cell Description:

Cell Type: if

Last Execution Start Time: 01-15-09-08:52

Last Execution Start Time:

Execution Count: 226

[Reset Cell Execution Count](#)

[Exit Live Monitor](#)

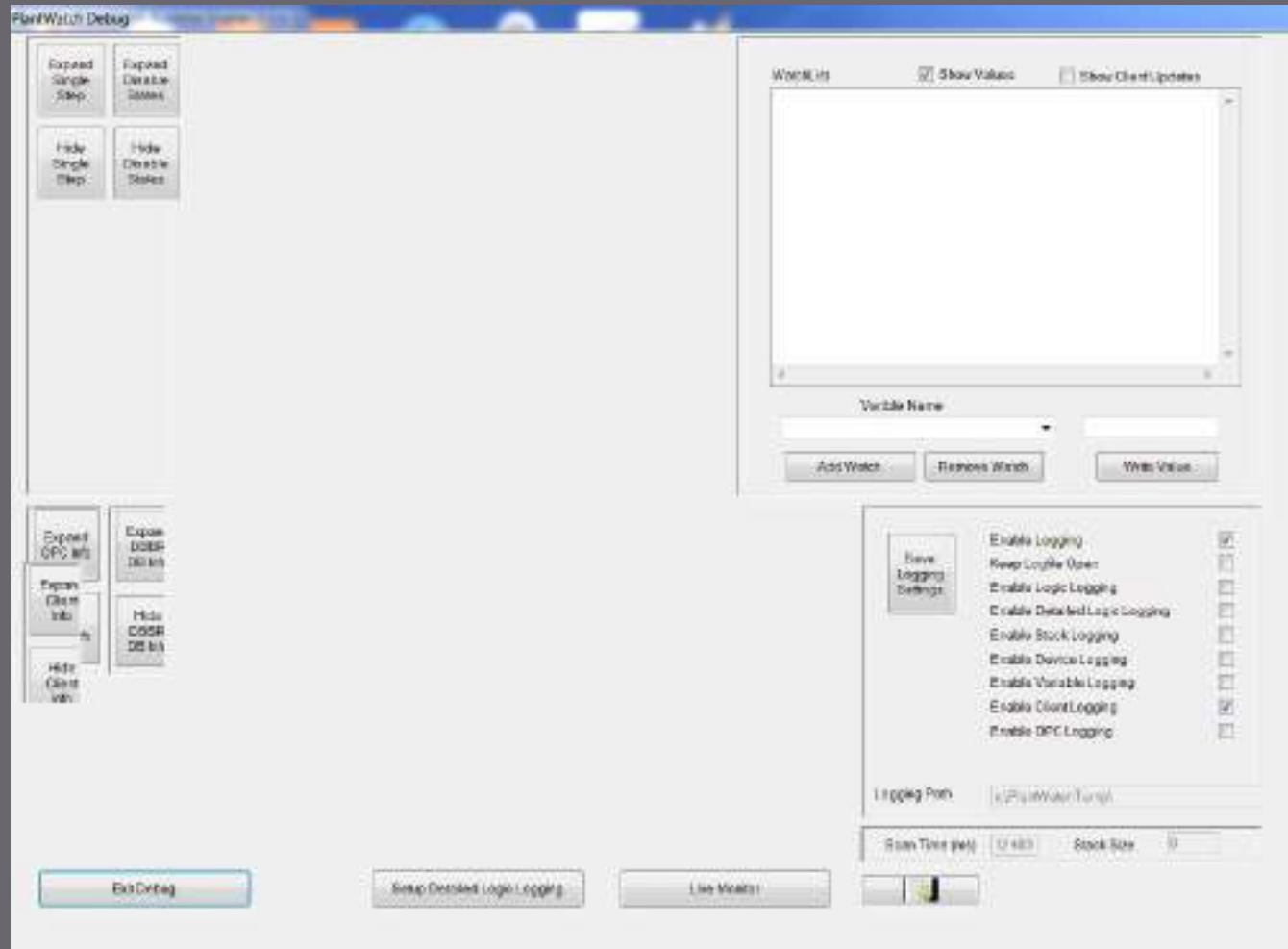
Last Reported Result

```

Source 1: Idle
Source 2: WaitingForImage
Operator: &
Result: False

```

Live Debugging



Example – File Manager

Cummins needed to take data from 6 barcode readers and generate formatted Text files for an Engine Control Module Programmer.

PlantWatch was able to extract the data from the barcodes and from it generate the required text files as well as create the subdirectories needed to place the files in.



Example – OPC

An integrator needed to gather information from several addresses within a PLC and from it create Xcel report files.

PlantWatch was able to get the data out of the Siemens PLC, organize it and create the report files. Additionally, the data is present on the screen.



Example – Database Browser

A customer needed to record all of the components being added to a work order in a SQL Database based on barcode reader scans for 25 lines. This real time data is used to manage the flow of material to the 25 lines.

PlantWatch was able to connect and read the 25 barcode scanners and by using the Database Browser store all of the data into the customer's SQL database.



Example - IO

A customer wanted to improve the efficiency of its electro plating line by automatically adjusting the power being applied to the tank based on the type of part being processed.

PlantWatch was able to use it's IO subsystem to drive a 0 to 10 volt analog output to change the settings of the power being applied to the tank. It uses different recipes based on the part type identified by a Vision System

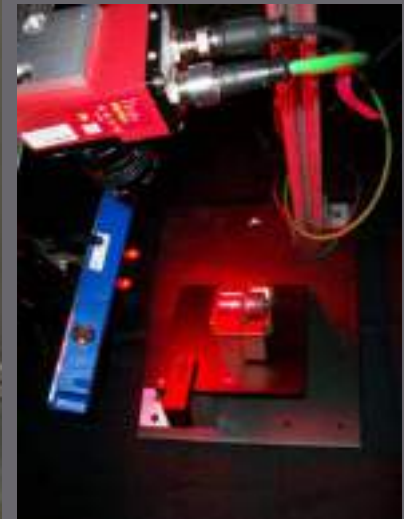
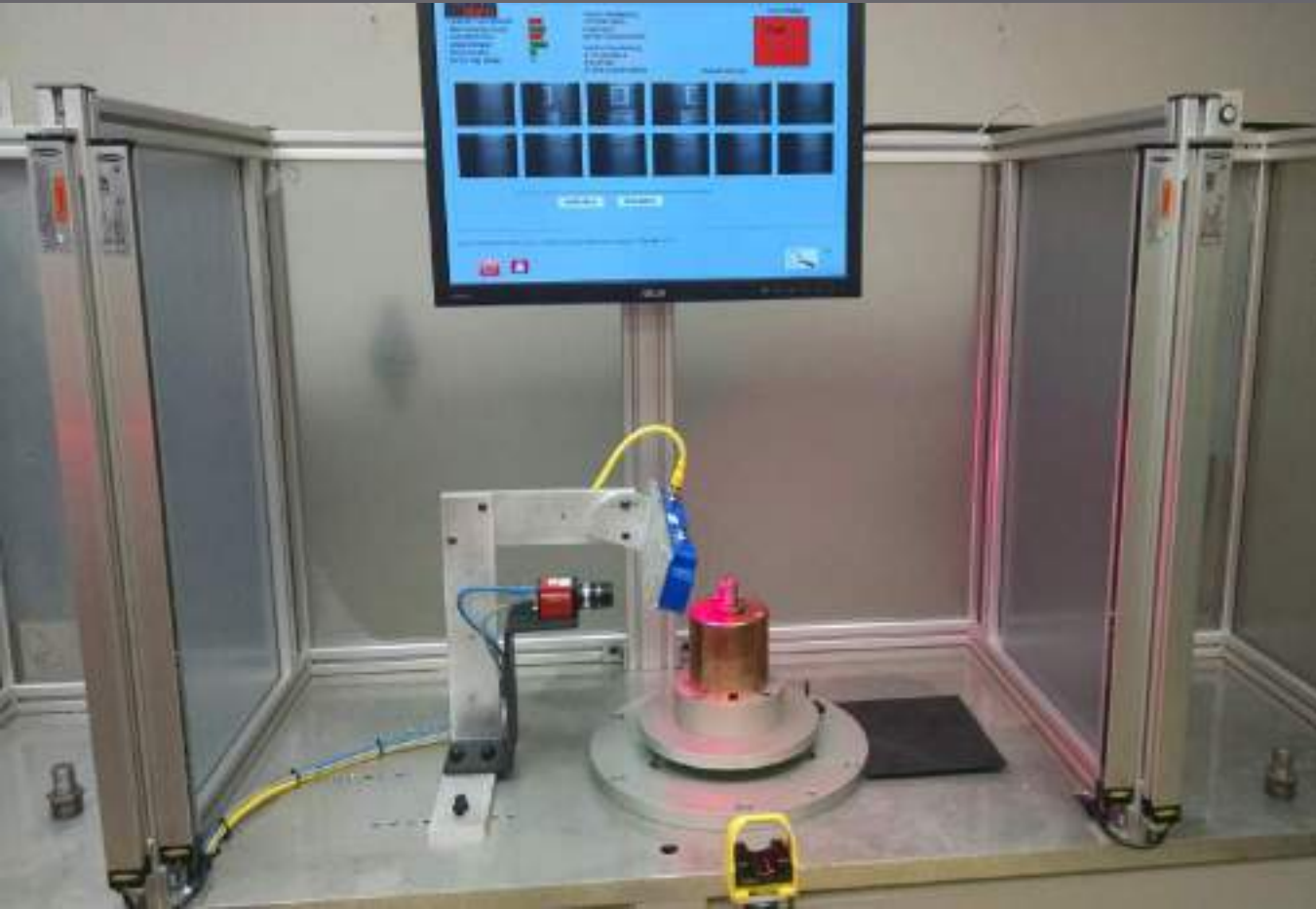




INJECTOR TRACEABILITY

Verify data matrix mark quality

- Communicate to laser marker for correct part type
- Control station: light curtains, rf id tags, turntable
- Control camera, trigger, save images
- Error proof part type





a doxim company

Missing

From:

To:

Inserts

Sign Off

Envelopes

Maintenance

Lamps Off

Repaired

Damaged

Main

Special Handling

Expected Count: 1150

Missing Pieces: 2

Damaged Pieces: 1

Good Pieces: 500

Total Count: 501

Close Job

SETUP COMPLETE

Job Name: 65444311100-jim

Piece Number: 1502

Current IMB: 656779953

Expected IMB: 656779953

Last 10 Pieces

1502

1501

1500

1499

1498

1497

1496

1495

1494

1493



TSM Tow Hook

Plantwatch based Aim code quality verification system.

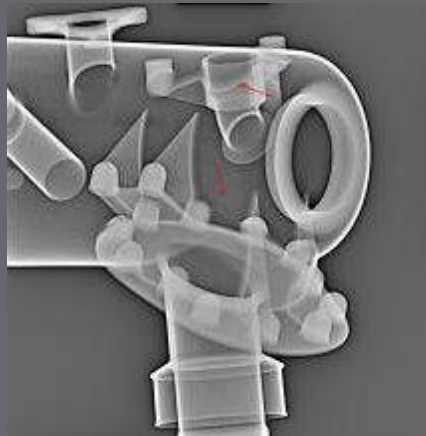
Controls camera / Triggers / error proofs operator / User Interface

Logs results /



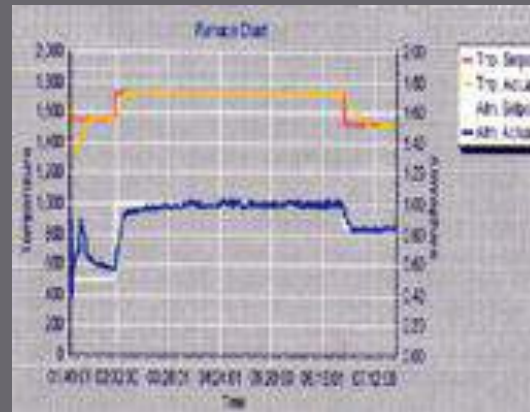
PLANT WIDE TRACEABILITY

- Part genealogy birth to ship
- Idra caster, X ray , Furnace , PLC, Cameras,
- Error Proofing



DATA COLLECTION

- Data matrix verification DPM/logging
- Batch of serialized parts married to furnace data





ASSEMBLY REPLENISHMENT SYSTEM

We are currently using the Plant Watch product from HTE.

Our deployment takes data from over twenty scanners, processes the data with a rules based engine and then writes the information to a SQL database that support key business processes.

Plant Watch provided an activity dashboard to assess system and scanner activity.

We have found the HTE team to provide excellent technical support, and solid product training.

We found the price point and richness of the tool to exceed our requirements.

Christopher Gribben

Process Development and C I Manager MTD

20+ Scanners consume components

PW monitors component levels on line

- Comm. to inventory system for replenishment



TRACEABILITY

- Communication to PLC
- Logging





ELECTROPLATING SYSTEM CONTROLLER

- Control the voltage within electroplating tank
- Set point is determined by using a Vision system to determine part type





DATA COLLECTION FILE MANAGEMENT

- Read data matrix on six injectors
- Relate injector to installed cylinder
- Create file with flow data parsed
- Send data for ECM programming

Inspection Results

1 2 3 4 5 6

System Status

Cycle Done Done

Rescue File Done

PS Headfeed

Coar Headfeed

Incoming Data From PLC

Engine Cool Fan On	75000 004
Injector Fuel Number	2070208
Head In Position	1
CTD Head to ICM	14
PS Head to CTE	7

Outgoing Data to PLC

Fuel Ratio	8
Fuel Level	8
Head to CTE	700
Release	1
Headfeed To Coar	14
Lapping On	8
Injector PS	2070208
Headfeed To CTE	7

Turn Light On Cycle Reset

System Shutdown Clear Error Message Debug Form

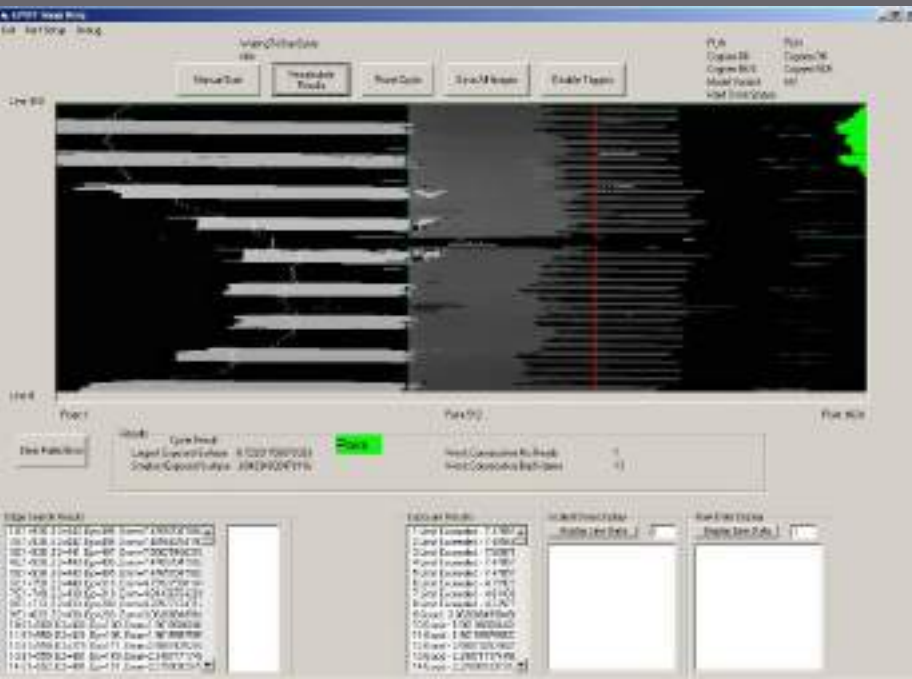




GMPT Toledo

General Motors Powertrain

- Plantwatch Used to interface HTE Snap ring system to GM Siemens PLC

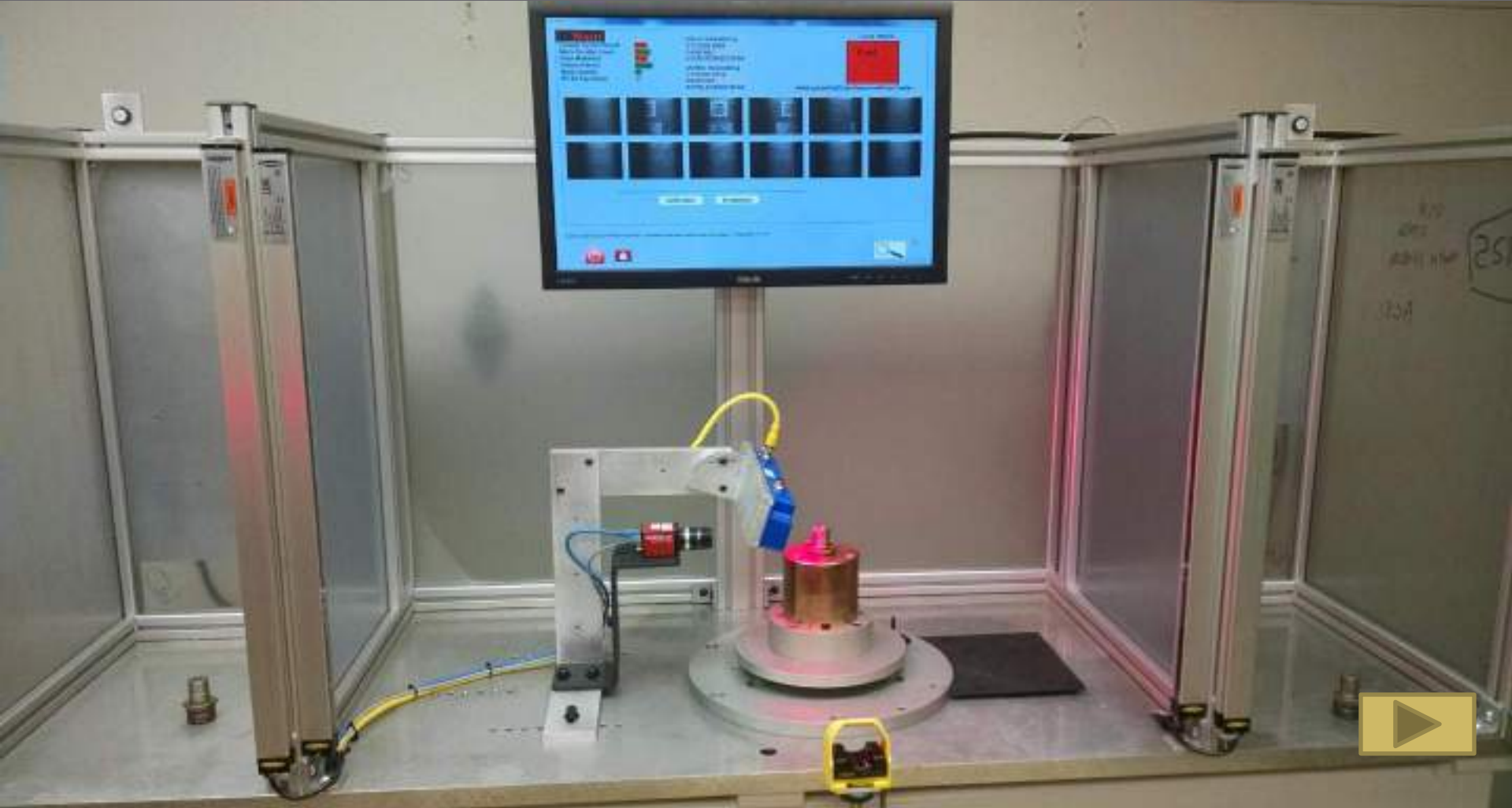


Cummins Fuel

The image displays four panels related to Cummins fuel system monitoring:

- Top Left:** A software interface titled "Matrix Monitor" with a Cummins logo. It shows engine parameters such as "Fuel", "Air", "Water", "Fuel", "Water", "Fuel", "Air", "Water", "Fuel", "Air", "Water". A green box labeled "Pass" is visible in the "Cycle Status" section. A grid of 12 small monitors is shown below.
- Top Right:** A software interface titled "Fuel System" showing a grid of 12 small monitors. Below the grid is a table with columns "Fuel", "Air", "Water", "Fuel", "Air", "Water".
- Bottom Left:** A photograph of a physical hardware unit with a monitor displaying the software interface, mounted on a metal frame.
- Bottom Right:** A photograph of a physical hardware unit with a monitor displaying the software interface, mounted on a metal frame.

B station camera inspects for only one data matrix and compares to A station to confirm verified to “C” grade or better . Confirms unique serial #. Controls light curtains and indicator lights to direct operator motions. Left side is good parts, right side are bad. Stops station until light curtains are broken in correct sequence. Data stored with time date stamp as CSV and to SQL



A FULL-SERVICE MANUFACTURER

TSM is a full-service manufacturer of custom components for automotive powertrain, driveline, and chassis applications.

Plantwatch provides GM required traceability from Tier 1

Plantwatch keeps a collection of data for each part from the moment it is marked.

Before a part is worked on a camera reads it's unique ID to the PLC who then asks Plantwatch if this is a good part that should be worked on at this cell.

Plantwatch checks its data and tells the PLC if it is OK to proceed with that part.

Plantwatch then collects all of the data from the PLC as it processes the part.

One Plantwatch manages 11 PLCs with a total of 14 cells

System

TSM machines and assembles primarily automotive parts, in this case aluminum castings. Once machined they begin the assembly process by having a 2D bar code, Data Matrix etched into the part. The marking machine was supplied by HTE and marks 5 different parts.

Marking Machine



TSM 2

Laser marker

Verification
camera

Plantwatch

12 downstream
camera PW
stations

reports

TSM 3

- ▣ Laser marker births the part
- ▣ Downstream readers id the part and attach the process variables.
- ▣ Plantwatch confirms previous process steps

TSM 2



After the parts are marked they are checked for good mark quality and decode content. Each part is uniquely identified and the data is associated with the part is logged to Plantwatch. Later this data will be used to verify that the mark quality was good before any work is done with the part.

The marked parts are then taken to the assembly area where they are processed in one of 4 lines, each line has 3 to 6 cells.

One PC based Plantwatch system error proofs and collects data from the 4 lines during the assembly process.

Data

Cameras - There are about 18 cameras spread out in the 11 cells. Some read the marked castings while others read barcodes on parts being added to the assembly. The cameras communicate over Ethernet IP to the PLC.

Data Points - There are about 250 data points collected thru the cells.

Leak test

Final Pressure

Torque

Total degrees

Peak Torque

Final Torque

Press

Peak Pressure

Final Pressure



Assembly line

CW castle IDS postal system

Plantwatch based camera and data collection / control system

OMB Barcode / Data Matrix/ OCR

High speed insertion/tracking/reporting

Image logging



Mail system application example:

LINEWATCH is totally configurable to perform many other functions not included in this mailing system.

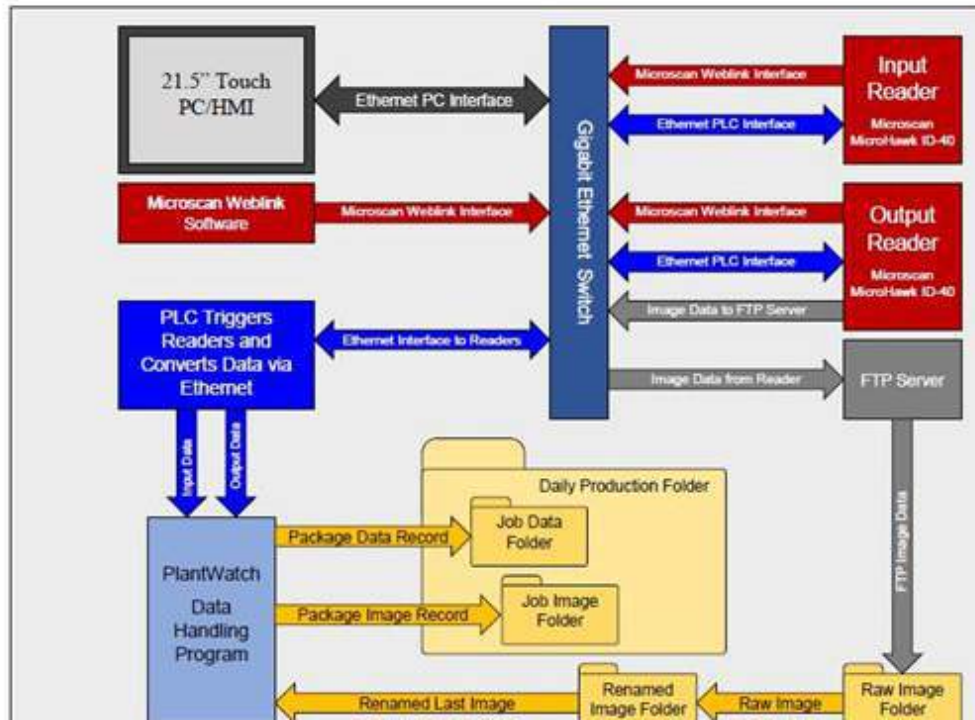
This system is started by the operator entering a job name and index of the first expected package to come through the machine.

When the job is done, a report is generated which shows each package/document processed and any missing product with an image of each package successfully processed.

As the system runs it reads the postal or 2DBarcode thru the window each envelope to verify the sequence number of the document set inside.

If the index number does not match sequentially, an error is created, the machine is stopped and a record is placed into an error report.

For each mail piece that is processed a record is placed into the main section of the report and an image is captured and renamed to associate it with the mail piece that it came from.



Set Up Job

Operator Number: 111

Job Number: 222

Starting OCR: 1

Ending OCR: 10000

Starting IMB:

Run Screen

Trigger Camera

Train Camera



SETUP COMPLETE

Main

Trigger Reader

Assistance



Machine Number: 10

Operator Number: 111

Job Number: 222

Expected Count: 10000

Piece Count: 0

Current OCR:

Current IMB:

IMB Sequence: 0

ERROR RESET