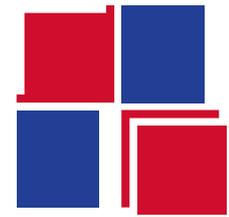


AVALON



VISION SOLUTIONS

Your Business, Our Vision



**Complete
Vision
Solutions**

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MOLDWATCHER

With each cycle, mold presses run a high risk of experiencing extreme damage due to molded parts or slides sticking. Standard mold protection options only detect the problem as it occurs. Avalon's patented MoldWatcher system will alert operators and stop the press before any hazardous force can be put on the mold. This prevents severe mold damage in addition to any related down-time, which can often be more expensive and troubling than the mold damage itself.



MoldWatcher can be installed on horizontal and vertical shuttle or rotary injection molding machines.

In the case of a **horizontal press**, MoldWatcher automatically inspects for inserts or quality of the part while in the mold and the empty cavity, cores and slides after the part is ejected. This insures that no stray parts are left behind to damage the mold during the next cycles.

Horizontal and Vertical Press Solutions



While on a **vertical press**, it ensures that all inserts are properly placed prior to permitting the table to index and the mold to close. The system will also detect miscellaneous items that may have been left in the lower mold half. After ejection, the system checks to ensure all parts have left the upper mold half.

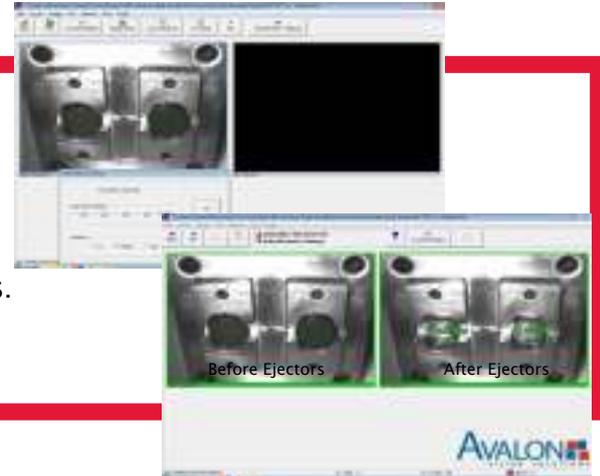
- Setup on new molds easily.
- Customizable toolbar in user interface.
- Archives setup for easy job retrieval.
- Touchscreen for easy operator interface.
- Single touch "Teach" updates the system.
- Two inspections per cycle ensure protection.
- Communicates with all injection machines.
- SPI/Euromap module eliminates wiring.
- Delivers a rapid ROI.
- Protects expensive tooling.
- Patented Near Infrared lighting eliminates lighting issues.
- The industries only complete hardware and software solution.



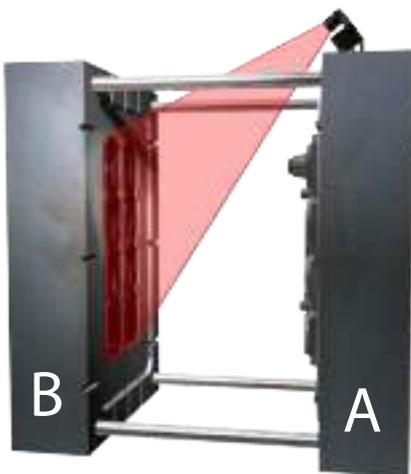
Setting up for a new mold or running an existing setup is very straight-forward. A new mold setup can be implemented in just minutes and if a change is made to an existing job, the "Teach" function captures and updates the reference image with the touch of a button. Once a setup has been completed, it can be saved to a disk and the job can be run by executing a single "Teach" cycle.

Now Featuring AutoWindows!

MoldWatchers newest feature - AutoWindows - considerably reduces the setup time on new molds. Operators can now simply identify critical areas of the mold to be monitored by placing an inspection window over each cavity in one image and then specify how precise the monitoring will need to be with global settings. This feature will reduce the setup time from approximately 20 minutes to less than 5 minutes when performing setups on a new mold.



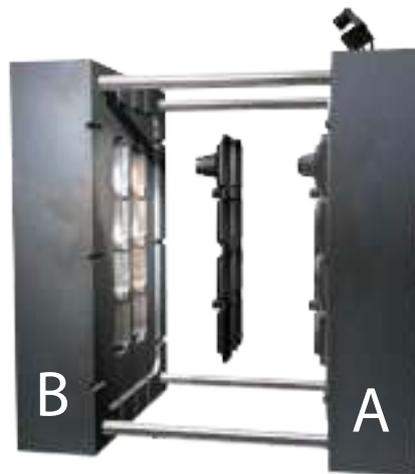
Avalon's patented Near Infrared (NIR) camera/light technology solves potential problems that can occur due to visible ambient plant lighting. Unlike incandescent lighting, DarkLight-IR is not affected by press vibration. The 5.0 megapixel camera is a multi-mode design with resolution up to 2560 x 1920 for high-resolution inspection of part and mold details.



1. The Mold Opens

Before Ejector Image Is Taken.

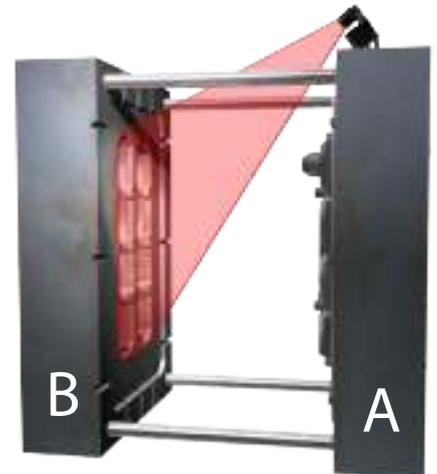
Presence of all parts on "B" side (moving) verifies the absence of parts from "A" side. Part quality and insert placement can also be verified. If good, ejectors are permitted to proceed.



2. Ejection Is Enabled

Ejection Is Enabled

If all parts are not present, the press is stopped. If bad parts are detected, the response is programmable by stopping the press or re-routing the bad product by reversing the conveyor, etc. If all parts are present and good, ejection is allowed.



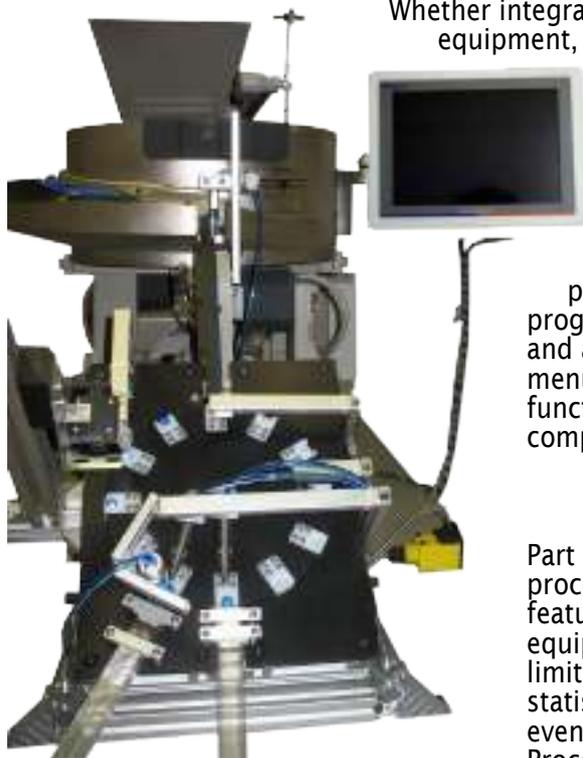
3. Ejection Is Complete

After Ejector Image Is Taken

Absence of all parts on "B" is verified. This can also verify slides, ejector pins, cores, etc. If good, the mold is permitted to close for the next cycle. If problems are detected, the press is stopped.

Whenever a bad part is shipped to a customer there is a whole series of events that cost money, down time, and customer dissatisfaction. What is peace of mind worth? Knowing that your customer has just received parts that were 100% inspected builds confidence in you as a supplier.

QualityStation is a general purpose vision system with a vast array of high-end inspection tools. Event driven, with the adaptability to incorporate multiple cameras, makes QualityStation the preferred vision system for most any inspection application.



QSExaminer

Whether integrated with existing material handling equipment, for in-process inspections, or used manually for statistical sampling, QualityStation will streamline the manufacturing process.

QualityStation is based on the reliable Windows Embedded platform. There is no special programming language to implement and all attributes are configurable in the menus of the system. Sensor and control functions are handled in the industrial computer.

Part counting, failure tracking, and process limit controls are adjustable features of the QualityStation. Up stream equipment can be signaled when failure limits are reached. Job tracking, statistical reports, failure images and event logs are accessed through the ProcessRx documentation and reporting database and can be accessed remotely via LAN.

QualityStation

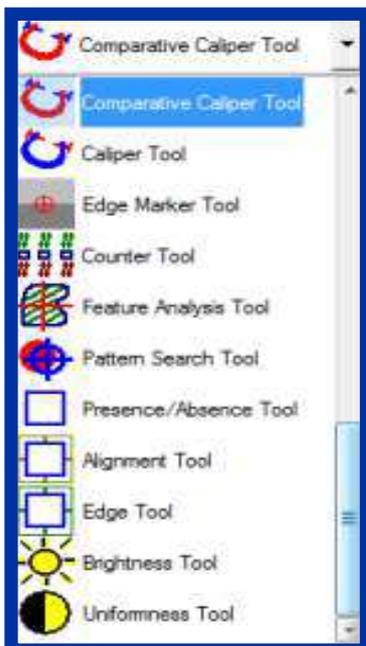
- Multi-Camera Capability
- Inspect Large Items
- Advanced Imaging Tools
- 100% Traceability

QSInspector

- High Resolution Detection (0.005")
- Precision Lighting
- Positive Verification Markings
- Document and Report Quality Data

QSExaminer

- 1-4 High Resolution Cameras
- High Speed, High Volume Verification
- Automatically Sort Parts

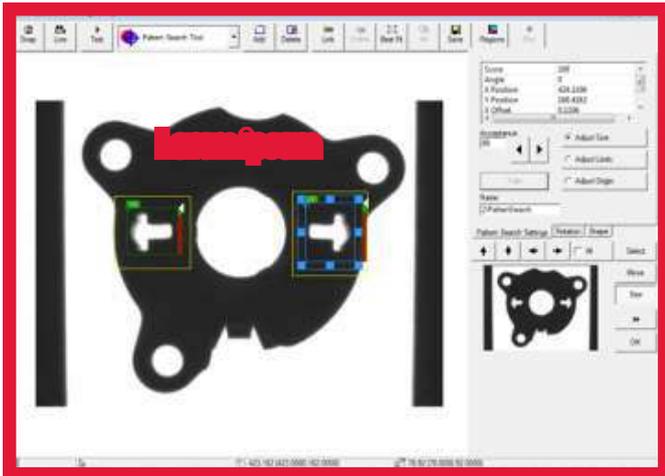


Advanced Vision Tools for any Application

- Make measurements with the Caliper and Comparative Caliper Tools
- Locate Edges and make measurements with the Edge Tool
- Blob analysis and feature counting using the Counter Tool
- Measure multiple feature parameters with the Feature Analysis Tool
- Locate and identify features and parts utilizing the Pattern Tool



QSInspector



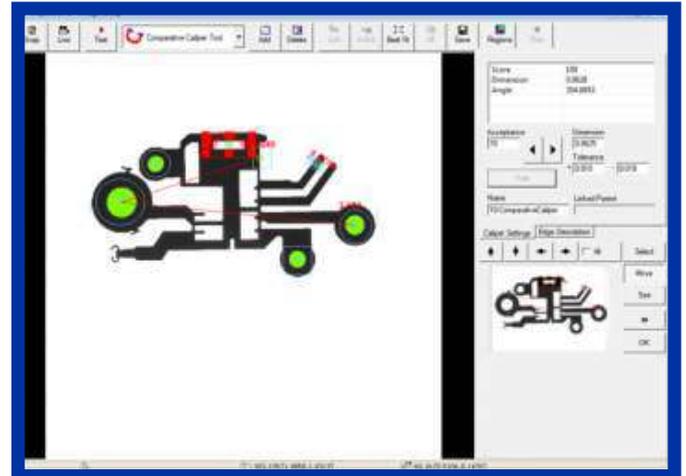
Pattern Search Tool

Locate an object or feature that changes in its vertical, horizontal, and/or rotational position from one inspection to another, within a defined area.

Provide tracking/positioning by linking to other vision tools, made necessary by changing positions of object or features (within the image) that are to be inspected.

Measure the physical distance between two objects.

Determine the coincidence of quality between a reference pattern and production inspection image patterns.

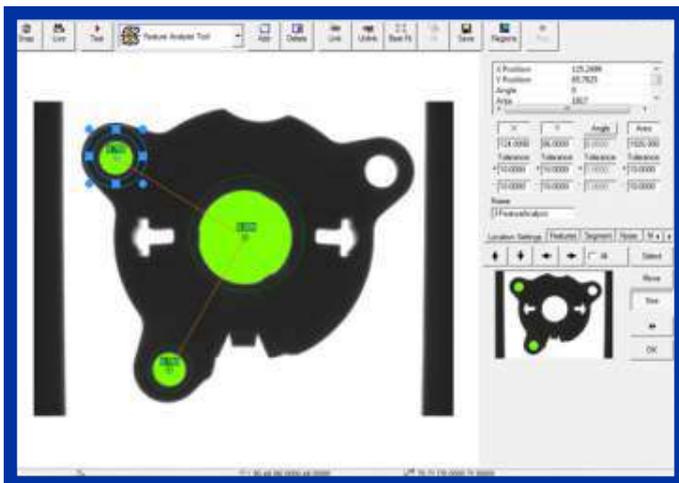


Measuring & Gauging Tool

Measure the distance between objects, features, points, or edges within an inspection image.

Straight line distance or component (x,y) distances can be measured.

Threshold distance between features or centerline variation.

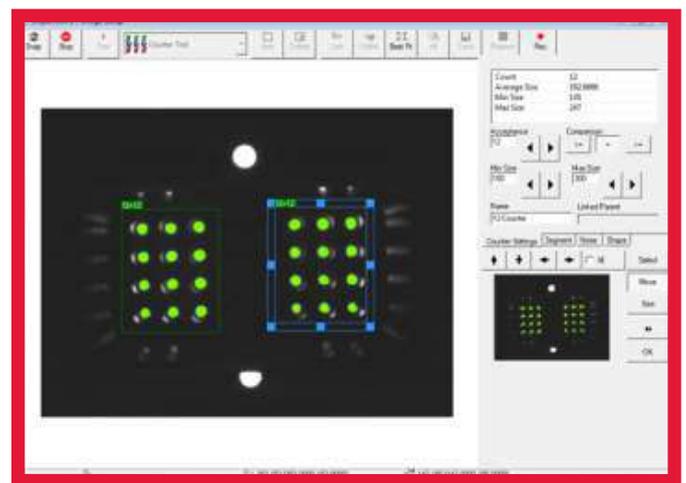


Feature Analysis Tool

Locates the centroid of an object or feature and can measure the distance between the centers of multiple objects/features.

Can measure the inner, outer, major, & minor diameters, perimeter, elongation, ID-OD, & roughness of elliptical features.

Measure the location (x,y) of an object/feature and the size.



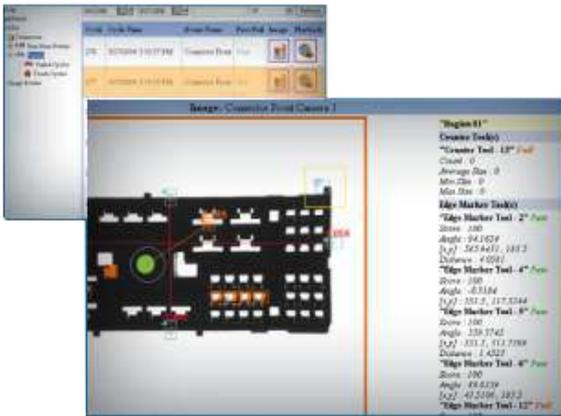
Counter Tool

Identifies areas/features such as orifices, defects, bosses, ears, and grooves based on grayscale and size (blob analysis).

Multiple features within a size range can be identified and the system can verify the correct number of features are present (feature counting).

Histogram feature to verify colors and shading.

Avalon's ProcessRx process documentation module with image database, event logging and statistical reports is the answer for your analysis needs. It is the most advanced and easy to use process documentation system available. The Internet Explorer WEB browser permits remote access using the LAN, however most problems are exposed when the user can see an actual image of the inspection. ProcessRx can be configured to save all of the failed images, all of the passed images, or both. The powerful configuration technique allows the user to define what data they need to capture.



Event log captures Usage, Run State, and Image Events that occur during the operation of the vision system. This data assists the engineer or technician to determine exactly what, when, and where a failure occurred in the process. Up to nine previous images and the current image can be combined in sequence to create an animation Playback of the process prior to the inspection event. This is a powerful analysis tool.

Failed Image Data:

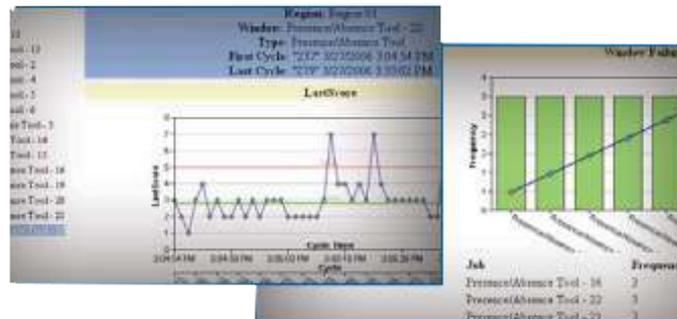
- Actual Image
- Inspection
- Measurement results

*Integrated into
MoldWatcher
and QualityStation*

Report viewer - Reports are the hard copy confirmation of your process inspection results. They can be accessed via intranet, transferable PDF file, or attached printer. Configuring reports is easy via the Job Tree tool and are context sensitive at the Job, Inspection Event, Camera(s), Inspection Region, and Inspection Tool level.

Report Output Options:

- Bar Graphs
- Scatter Graph
- X Y Plot
- UCL & LCL, Averages
- Frequency of Attributes
- Saving of PDF files
- Prints with a Click of the Button



Context Sensitive Display:

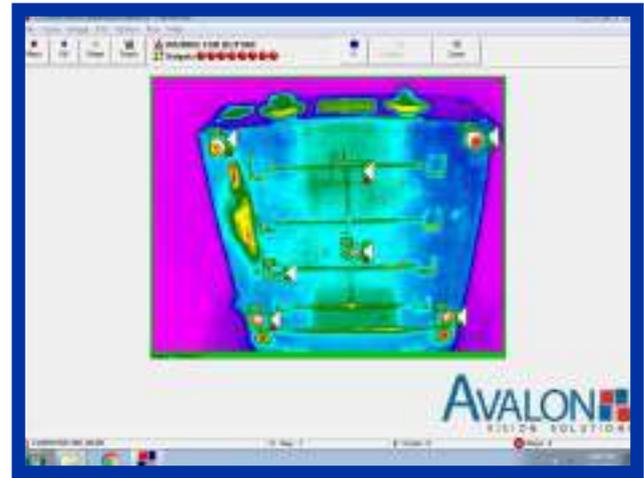
- Each inspection tool has context sensitive statistical reports
- Presence Absence Tool reports example plots Cycle Number against Last Score
- Typical Charts have Upper Control Limits (UCL), Lower Control Limits (LCL) and averages
- Enlightens you if the process is drifting out of control

Application Examples:

Injection Molders use Image Event data to determine exactly which cavity has problems with parts or slides sticking in the mold half or with non-filled material. When the mold comes out for repair they know exactly where the problem occurs and can repair the proper area of the mold. Engineers of molding companies know exactly when the MoldWatcher system is being used and under what conditions. This is a time saving fetature to determine the root causes of problems.

A medium sized Tier II supplier to one of the big three US automotive companies was able to stop Charge Backs and Corrective Action Requests by implementing ProcessRx into their QualityStation inspection stations performing Sequencing. Inspection stations with ProcessRx kept track of each final assumbly by serial number and were able to print PDF reports showing the product had left their plant fully assembled with no further damage. The actual PDF image reports of the final product were reviewed by the customer and all disputes were immediately settled. This was an incredible cost savings.

ThermalWatch technology can be used to monitor and control temperatures in many manufacturing processes.



When infrared imaging technology is integrated with MoldWatcher, injection molding and die casting presses can be monitored for changes in temperature of the mold or die.

Temperature change detection during production allow detection of issues otherwise unmeasurable by the human eye. In addition to taking corrective action, engineers can utilize temperature monitoring to enhance their production.

Temperature Changes:

- Blocked water flow
- Hot or cold spots in the mold
- Heat imbalance of nozzle tips
- Scale build up in cooling channels
- Many other issues

Process Improvements:

- Optimize cycle time
- Thermal mapping of processes
- Part to part profile analysis
- Large part surface warpage
- Complex valve gate tool analysis
- Verification of cavity temperature consistency

When infrared technology is integrated with QualityStation, a broader range of applications requiring process temperature monitoring can be controlled. With QualityStation, almost any process can be monitored and if temperatures vary outside the set control limits a digital signal can be sent to notify manufacturing personnel that the process is out of control.

*Harsh
Environment
Solution*



*Standard
Solution*

The key difference that ThermalWatch brings to manufacturing is the consistent feedback and control of the process with thermal images, digital signals and alarms that automatically activate when a control parameter is out of set limits. ThermalWatch when integrated in either MoldWatcher or QualityStation comes with a complete solution of infrared camera, vision computer, I/O device and easy to navigate touch screen interfaces. This means that ThermalWatch can be quickly implemented into your manufacturing process.

PRODUCT SOLUTIONS

Cameras and Lights:



5mp
2560x1920 pixels



Harsh
Environment



Thermal



Near-IR Lighting



Ultra High Intensity
Near-IR Lighting

Vision Controllers:



12 inch
(1-2 Cameras)



15 inch
(1-4 Cameras)

Software:

- MoldWatcher
- MoldWatcher Advanced
- QualityStation
- ThermalWatch
- ProcessRx

Interface Modules:



E-Net I/O



EuroMap 12



EuroMap 67



Power Supply

Mounts & Accessories:



Magnetic
Flex Mount



Bolt On
Flex Mount



Swing Arm



Mobile Stand



Alarm Tower