

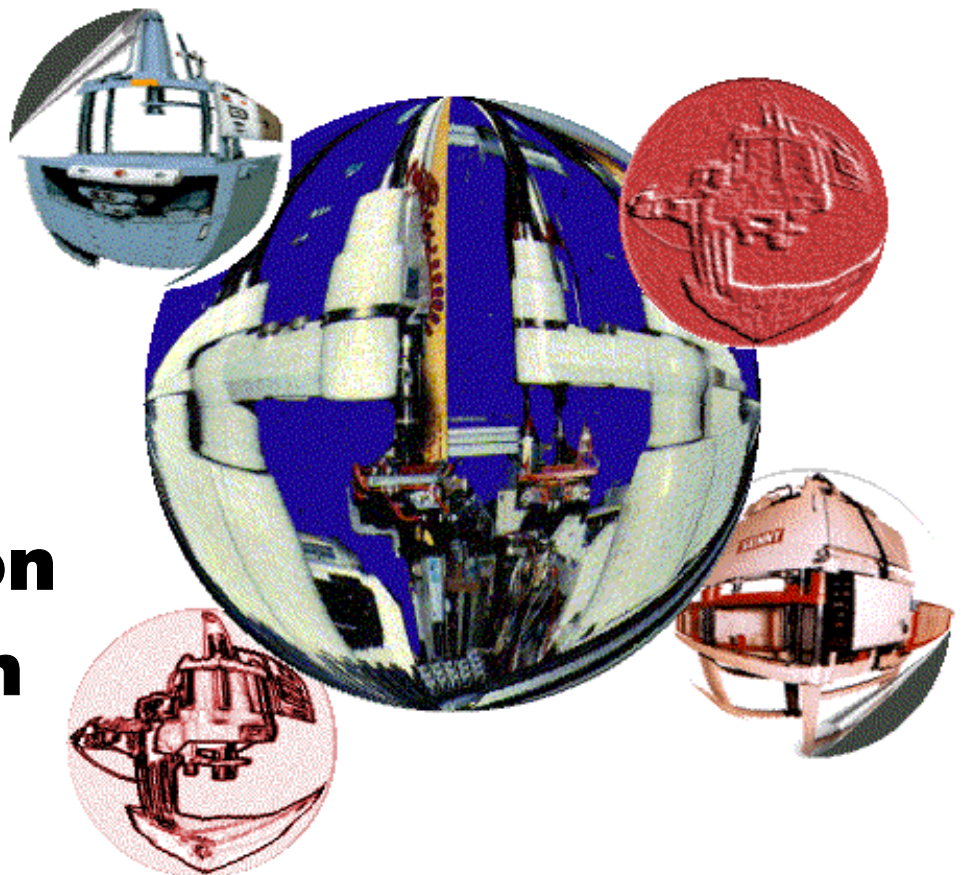
**Press Verification**

**Staking Inspection**

**Assembly Quality**



**100% In-Process  
Inspection of  
Pressing and  
Assembly  
Operations**

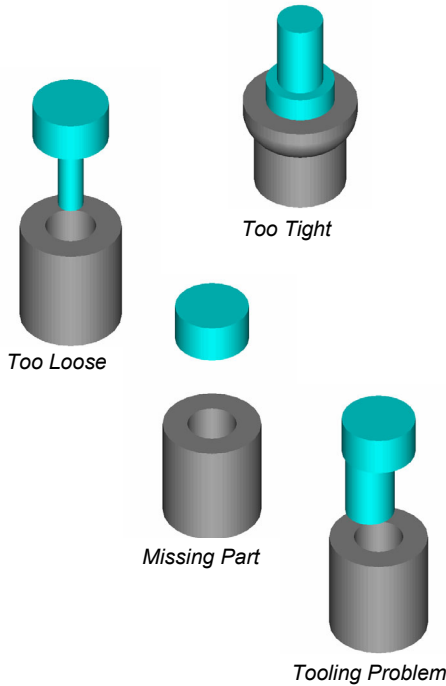


**Press  
Inspection  
System**

***AIA Automation  
AIA Innovation, Inc.***

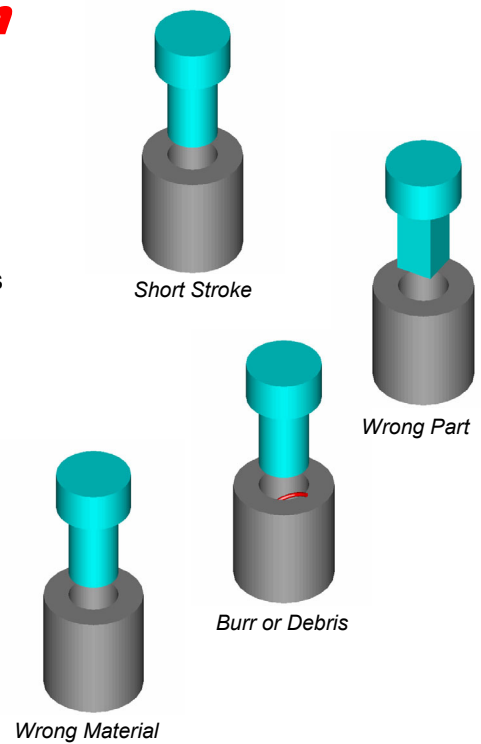
***Providing Process Monitoring Automation to Achieve Zero-Defects***

# The Problem



## Features Inspected

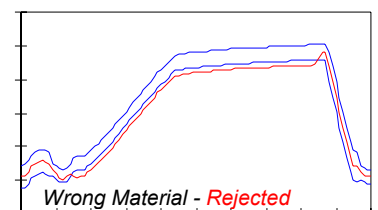
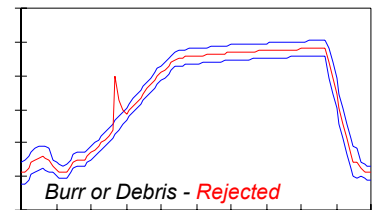
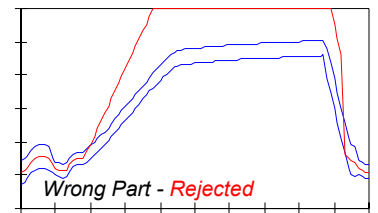
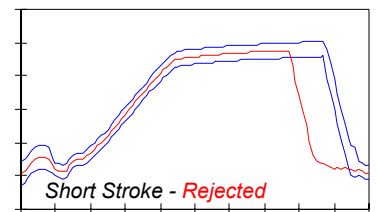
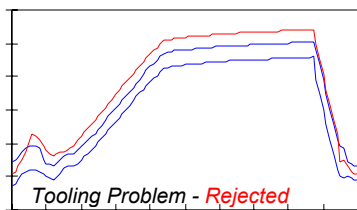
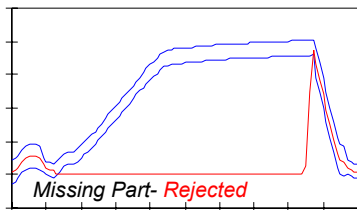
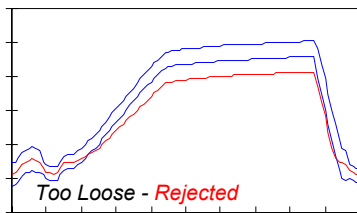
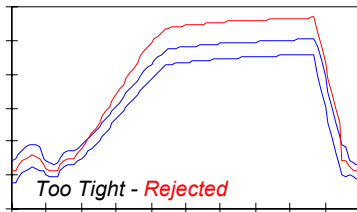
- Out-of-tolerance parts
- Short stroke operations
- Broken tooling and dies
- Improperly positioned parts
- Jammed parts
- Wrong parts
- Missing parts
- Multiple parts
- Tooling and die wear
- Burrs, chips and debris
- Material changes
- Excessive insertion forces



# The Solution

## Benefits

- 100% inspection for Zero-Defects (reduce your PPM's to less than ONE PART PER MILLION)
- Monitors the entire press or assembly cycle (no "one shot" peak detection here)
- Greater detail than peak-to-peak load detectors (defects can occur over the entire cycle not just at the peaks)
- Greater coverage than single point load detectors (monitoring the entire cycle gives you greater confidence in detecting problems)
- Statistical based boundary construction (uniform boundaries do not take into account the affects of process variation)
- Use it to improve your process (always know what your process is doing)
- Adaptable to all types of assembly, press fit, staking, stamping and metal or plastic deforming operations
- Extremely Fast (<10 milliseconds analysis time)
- Windows 95 based user friendly/menu driven software for setup, teaching and running
- Retrofit to existing machines or lines
- System electronics adaptable to non-Automation Innovation sensors
- Economical components, manual stations, robotic and turnkey solutions available



# The Method

## What makes Automation Innovation different?

Existing press inspection systems take a single reading during the inspection therefore measuring only the peak force. They provide little information concerning the overall quality of the press cycle.

**Automation Innovation** monitors the entire inspection cycle - from the contact of the tooling to the seating of the pressing - for total in-process quality inspection.

**Automation Innovation** uses statistical methods to perform 100% part and process verification. No simple set uniform boundaries here! Boundaries for each point along the inspection cycle are calculated based upon that point's process variation - large process variations produce wider boundaries than more repeatable process points.

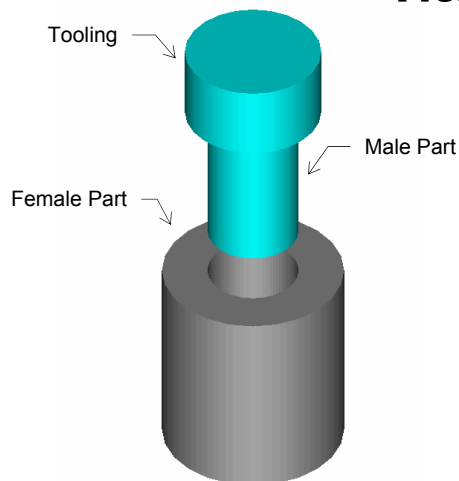
**Automation Innovation** has engineered simple integrated solutions to meet your press monitoring needs. By adding a load cell or pressure transducer to

your process, you can quickly be monitoring your application. Processing of those signals is handled by sophisticated and advanced signature analysis software which utilizes either time or position normalization to remove the variance in your application cycle so each cycle is compared "apples-to-apples."

**Automation Innovation** has developed a system that can operate 8 different sensors synchronously or asynchronously. That means you can use one system to inspect 8 operations in one machine (same cycle) or an operation in 8 separate parts on different machines (different cycles).

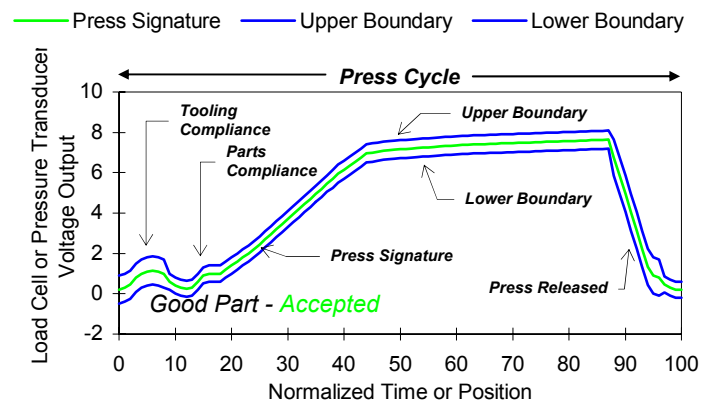
**Automation Innovation** offers a **FREE part evaluation program** to its customers. Send in your good and bad parts and receive back color graphs showing how well your defects are distinguished from good quality parts.

## Press Inspection Strategy



The **Automation Innovation** Press Monitoring System consists of a Windows 95 industrial IBM-PC compatible based electronic unit which monitors the signals from either a load cell or a pressure transducer and position sensor mounted on the parts fabrication or parts handling machinery.

The load cell or pressure transducer gives a detailed inspection of the press cycle. The sensor's voltage output creates a quality "signature" of the force profile. This signature is statistically compared to a previously taught set of boundary limits (upper and lower



boundaries). If any part of the inspected press signature goes outside the taught boundary limits the part is rejected.

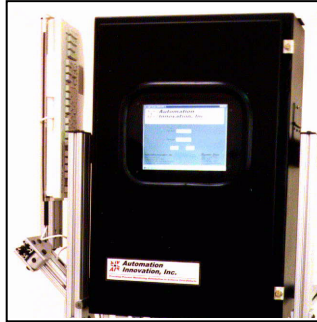
Each "Reject" or "Accept" is indicated through the graphical user's interface and optically isolated I/O signals are provided for machine interfacing. In addition, the system can be interfaced to factory networks to relay the inspection data to the company's quality information system.

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# The Product

## General

- 8 to 128 channels of sensor input (synchronous or asynchronous)
- IBM-PC compatible upgradeable Pentium processor
- Windows 95 based analysis software
- 3-1/2" 1.44 Mbytes floppy
- Hard disk drive
- Color TFT LCD display upgradeable
- User Windows 95 based viewing and analysis software
- Optional network support
- Optional SPC package
- Optional Robotic Assembly Package (get more out of your robotic applications than simple threshold or force limit monitoring - utilize advanced signature analysis algorithms to monitor and analysis the entire assembly to insure good assemblies)



## Communications

- 24 lines of digital optically-isolated I/O
- RS-232C serial
- IBM-PC compatible printer port

## Data Processing

- up to 2,000 kHz (2 MHz) sampling rate
- 16-bits of analog resolution
- less than 10 millisecond analysis time

## Electrical/Hardware

- 115/230 VAC ( $\pm 15\%$ )
- 50/60 Hz, 150 W
- NEMA 12 enclosure 30.0"x20.0"x11.5", weight 30 lbs
- Operating temperatures: 32°F to 105°F
- Relative humidity: 10-80%, non-condensing

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# The Company

**Automation Innovation** provides a proven and versatile line of complete sensing systems for your in-process applications. With over 65 years of combined process monitoring automation experience, we have designed, build, installed and supported systems that include components, manual stations, semi-automatic, turnkey and robotic systems.

**Automation Innovation** has a world-wide presence in the designing and marketing of its products.

**Automation Innovation** insures the quality of its products by relying upon in-house design and manufacturing of sensors, controllers and software, which also allows for application flexibility to meet your ever changing needs.

**Automation Innovation's** objective is to provide complete process monitoring automation solutions that allow our customer to achieve zero-defect operations.

**Automation Innovation** is dedicated to support and service which is reflected in our **FREE part evaluation program** and **Money-Back Guarantee** (call for details).

**Automation Innovation** has a full line of products that can aid you in your process monitoring needs. We also have a broad range of sensing technologies at our disposal. **Call our Application Engineers now to discuss your in-process monitoring application needs.**

 **Automation  
Innovation, Inc.**

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Since product improvement is a continuing effort, we reserve the right to make changes in specifications without notice.  
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