



Troubleshooting & Problem Solving for  
increased margins and happier customers

## **Why Monitor and Control**



## HOW DO YOU BENEFIT?

- **Differentiate yourself** in today's competitive environment.
- **Improve quality, efficiency and competitiveness.**
- **Make better decisions, better parts, and better margins.**



**Why should you monitor?**

**MY CUSTOMER TOLD  
ME I HAD TO.**



# Proactive Quality Control

**Visi-Trak**<sup>®</sup>  
SENSE, MONITOR, CONTROL

## 15 Years Ago

- 3% scrap tolerated
- Visual inspection of casting quality
- Samples on a scheduled basis to evaluate for porosity levels

## Today

- Scrap of 25 PPM or less
- Proactive data gathering to prove shots are within accepted standards
- Advanced shot control to create low porosity structurally sound parts



## What is 25 PPM to an automotive supplier?

- If you ship 10,000,000 castings/year
- 25 PPM = 250 defective castings per year..... period!
- That's the equivalent of **1 bad casting per day for the plant**. Not per person, per machine, or per shift – 1 per day!

Less than **1** defect per day.



“Our quality assurance philosophy is based on **defect prevention, not detection**... Our process monitoring system is the cornerstone of this quality control efforts.”

**JOE COMSTOCK**

*Process Control Manager  
PHB Die Casting, Fairview, Pa.*



## Is this possible? Yes!

- The die casting process demands a combination of:
  - Well designed and maintained tooling
  - Proper machinery and support equipment
  - A well trained work-force.
  - **A champion for the implementation of process control**
- Cooperation among customer designers, purchasing, assembly plant and tooling suppliers.

## A Proactive Approach to Process Control

- **Monitor key variables**
  - Shot-end Hydraulic characteristics
    - Position, Velocity, Pressure, Vacuum
  - Derive key process parameters like:
    - Biscuit length, intensification pressure, intensification squeeze
  - Furnace and die temperatures.
  - Tie-bar stress
  - Cycle times.
- **Casting characteristics are calculated and reported on by monitoring equipment.**



# Two Monitoring Methods

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## Portable Monitoring

- Regularly check variables using portable process monitors
  - Labor intensive and prone to error.
  - Too infrequent to catch sporadic events.

## Plant Wide Continuous Monitoring

- Full time monitoring identifies each time a key parameter is out of specification.
  - Alarms alert operator as specifications are not met with immediate analysis.
  - System monitors **24/7**



## **Plant Wide Continuous Monitoring** (continued)

- Sporadic machine problems can be identified and solutions developed from real data.
- Automatically segregate suspect and “start up” castings. Greatly reducing the incidence of “cold shots” reaching the customers.
- Permanent installation means cabling and sensors can be shielded from the environment for longer life and lower maintenance.