



Executing Inspection Plans in Closed-Loop Manufacturing

Hexagon Manufacturing Intelligence

6 June, 2017



Agenda

1. What Is Closed-Loop Manufacturing vs. Other Manufacturing
2. How The Execution Role Is Different For Closed-Loop Manufacturing
3. Software Tools For Execution
 - a) Common Practices
 - b) Improvements Made To Reduce Human Intervention

Speaker Information



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Technology Expert
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What Is Closed-Loop Manufacturing vs. Other Manufacturing?

Closed-Loop vs. Other Manufacturing

Closed-Loop Manufacturing

- Controlled repetitive manufacturing process
- Products made serially
- The ideal manufacturing environment
 - Continuous
 - Maintenance free



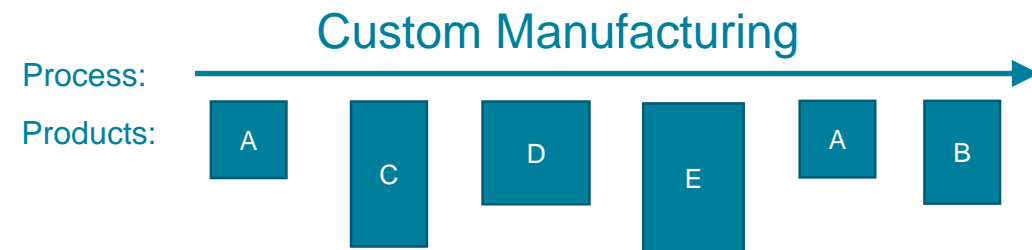
Closed-Loop vs. Other Manufacturing

Closed-Loop Manufacturing:

- Controlled repetitive manufacturing process
- Products made serially
- The ideal manufacturing environment:
 - Continuous
 - Maintenance free

Other Modes of Manufacturing

- Random or batch processes
- High product customization
- Impractical for automation
- The ideal manufacturing environment
 - Adaptive
 - Intuitive



Execution Role for Closed-Loop Manufacturing

Key Requirements:

- Planning or programming of routines eliminated
- Facilitate start-up and easy loading of existing routines
- Remote monitoring to allow operator supervision of multiple systems



Planning/Programming

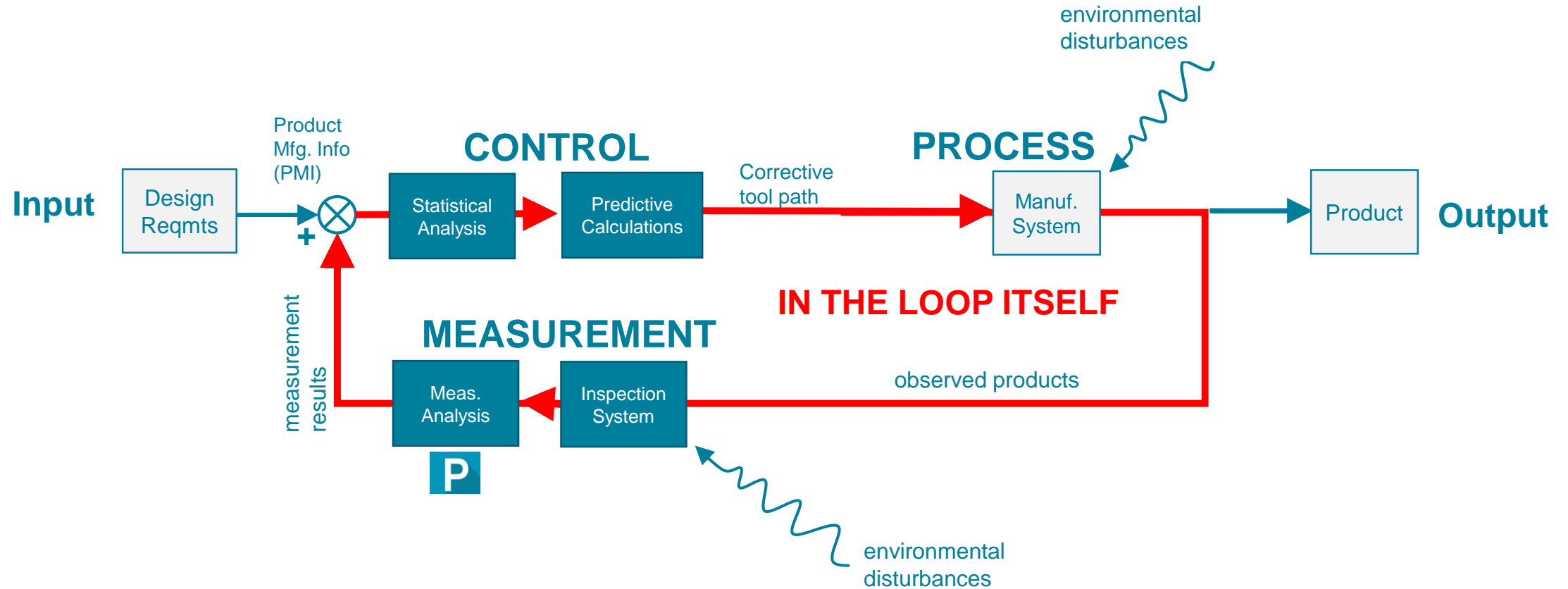


Startup & Run

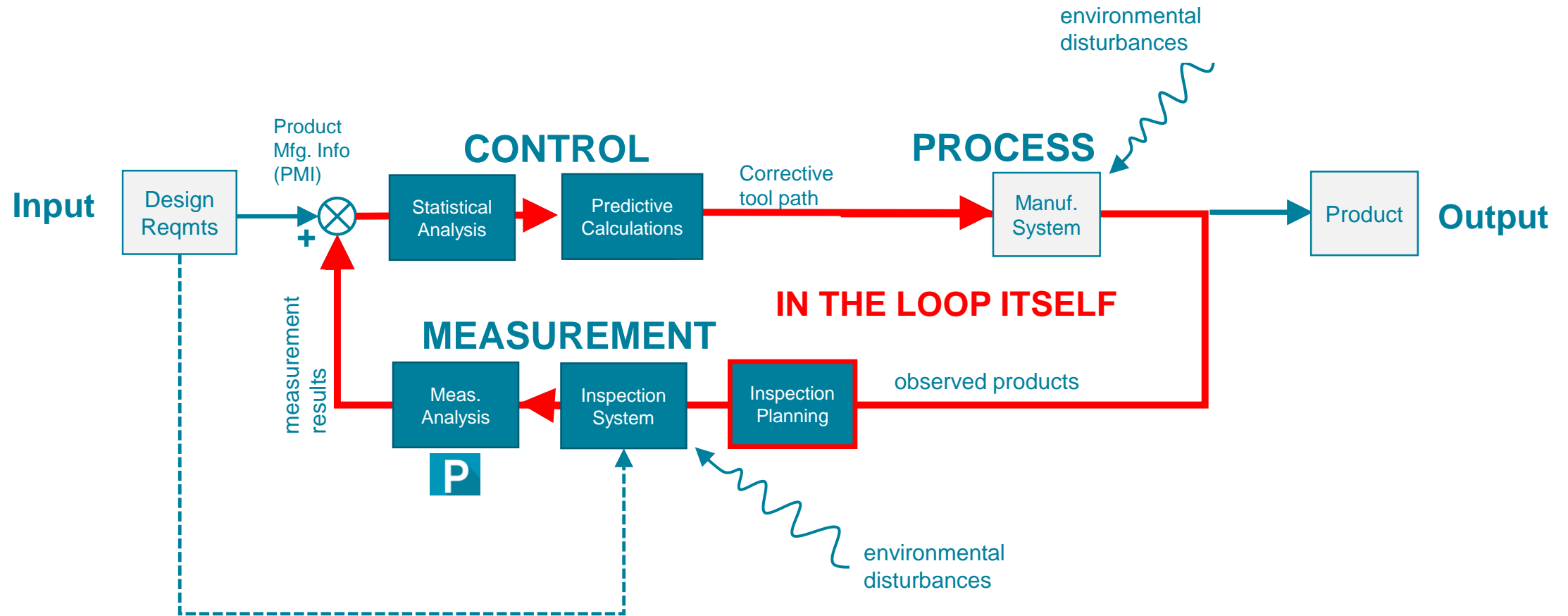


Monitoring

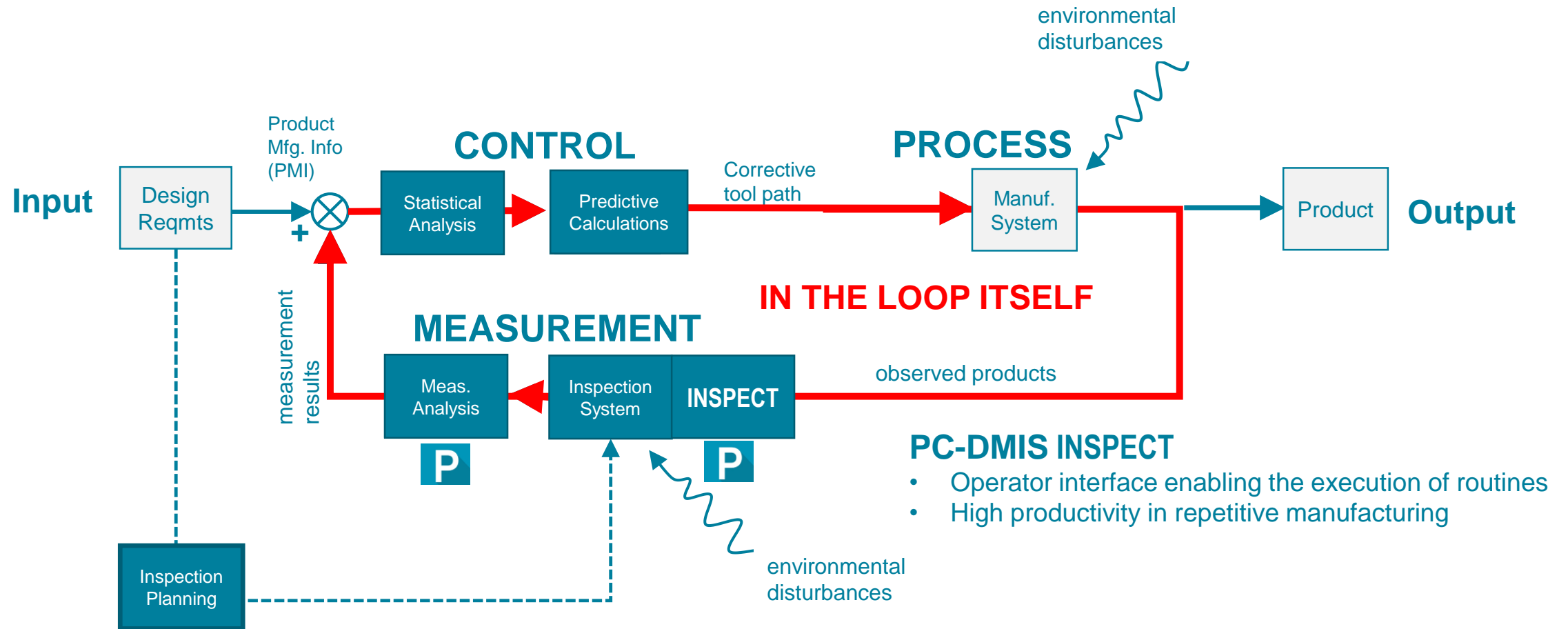
Where Does Execution Happen in the Closed-Loop?



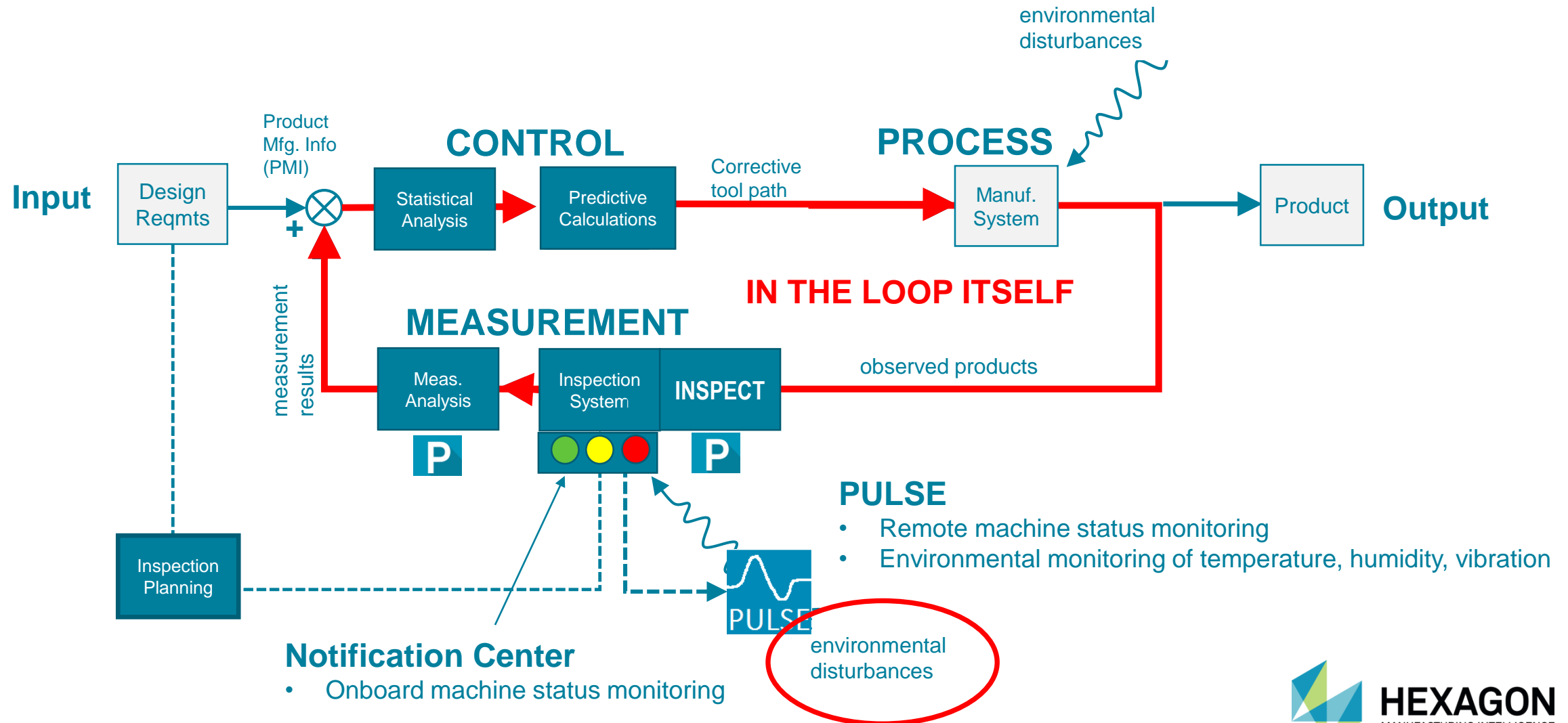
Better Execution Requires Removing Planning From The Loop



Only A Simple Interface At The Inspection System Is Required



Better Execution Also Requires Monitoring The Inspection Process

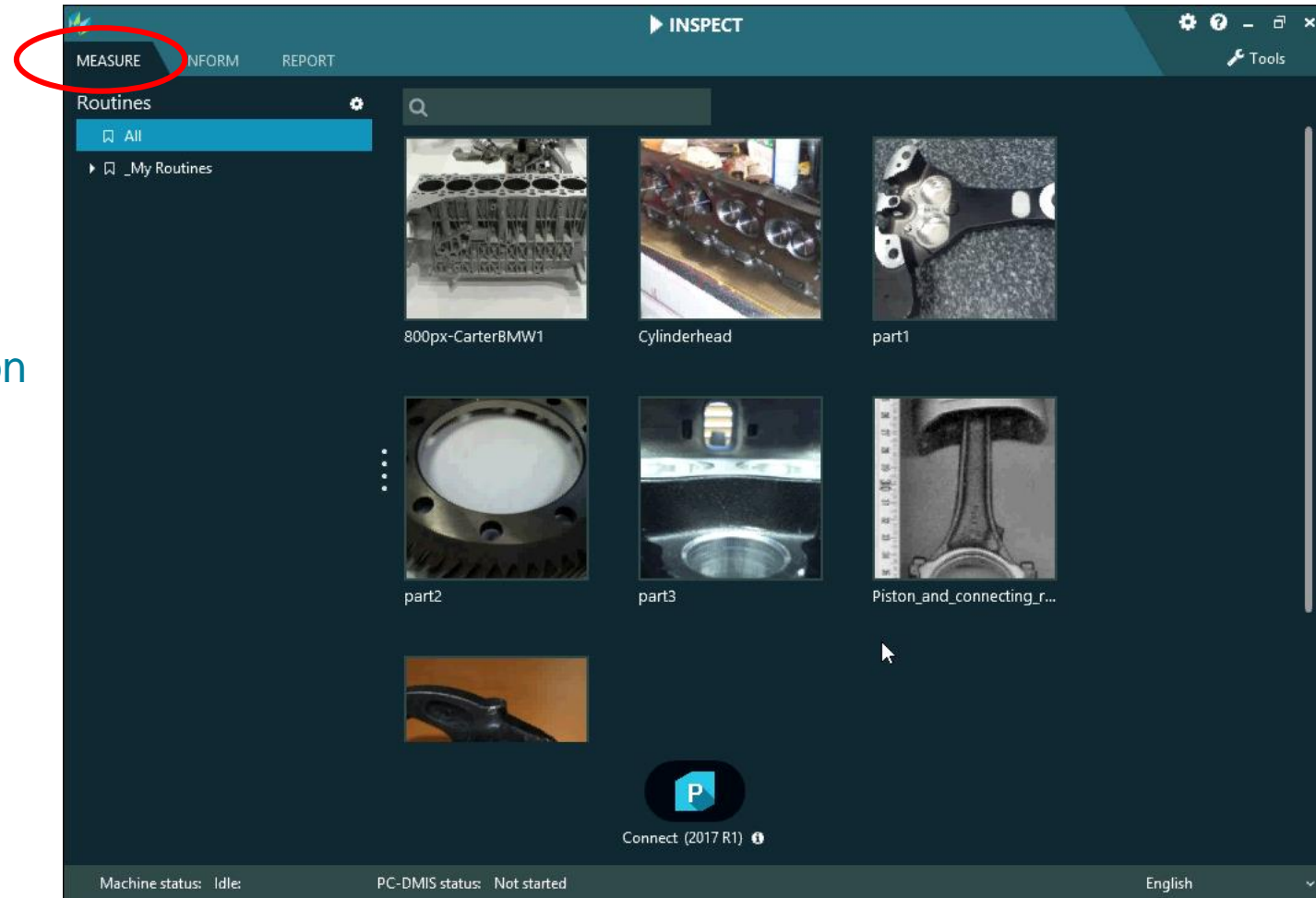


Software Tools for Better Execution

INSPECT Key features

MEASURE Tab

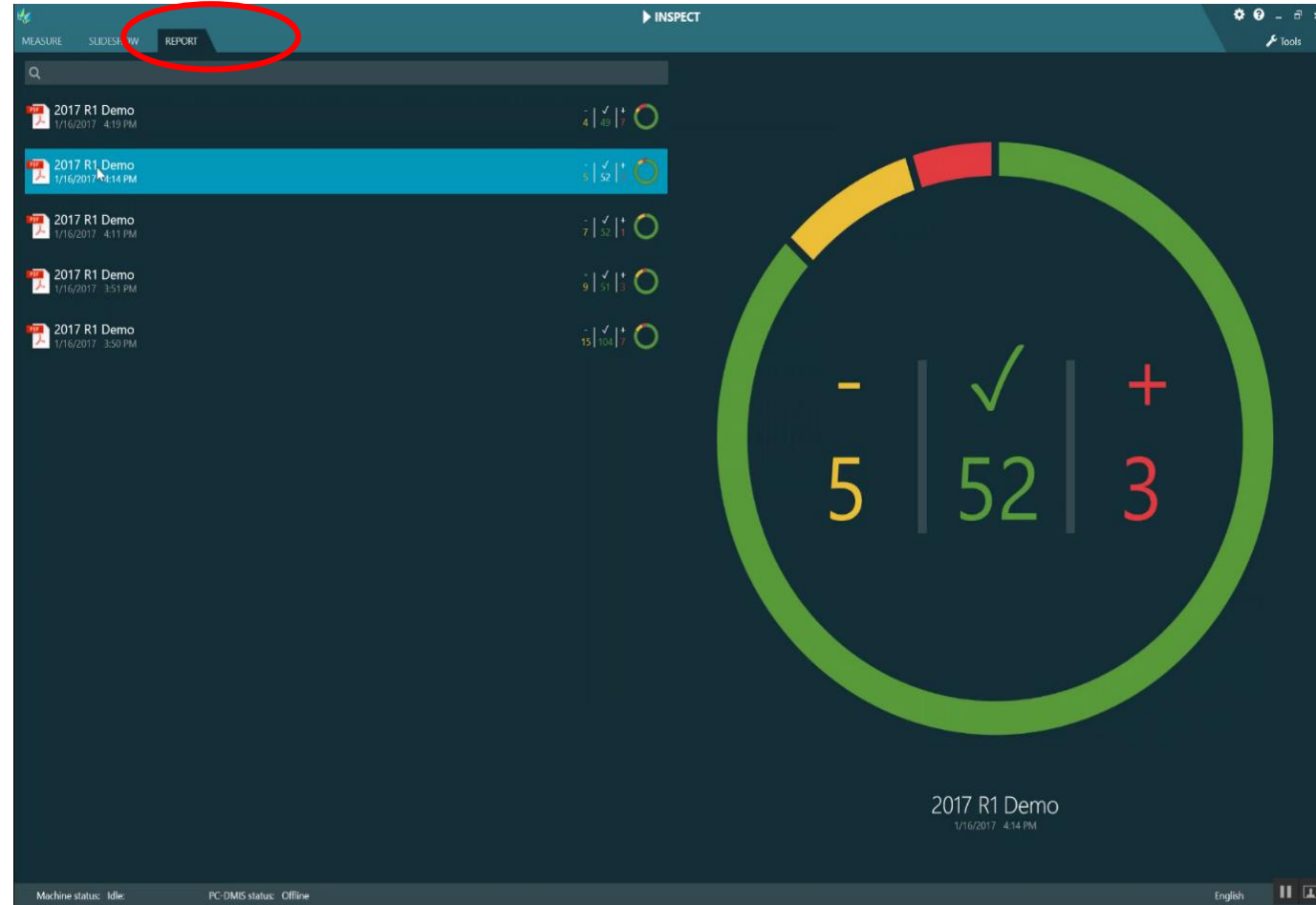
- Single touch screen interface
- Large thumbnail images for easy identification of routines
- Selection of routine sets for batch execution



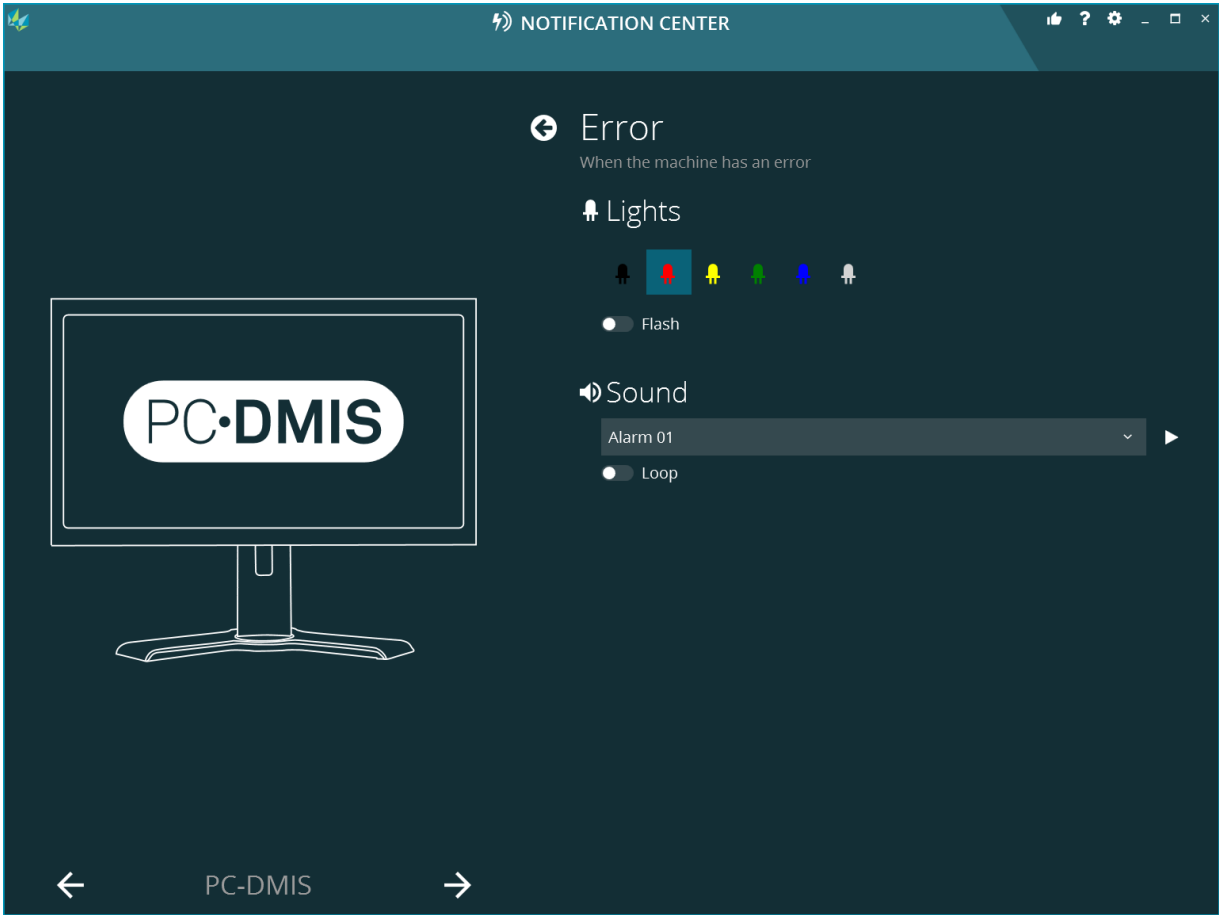
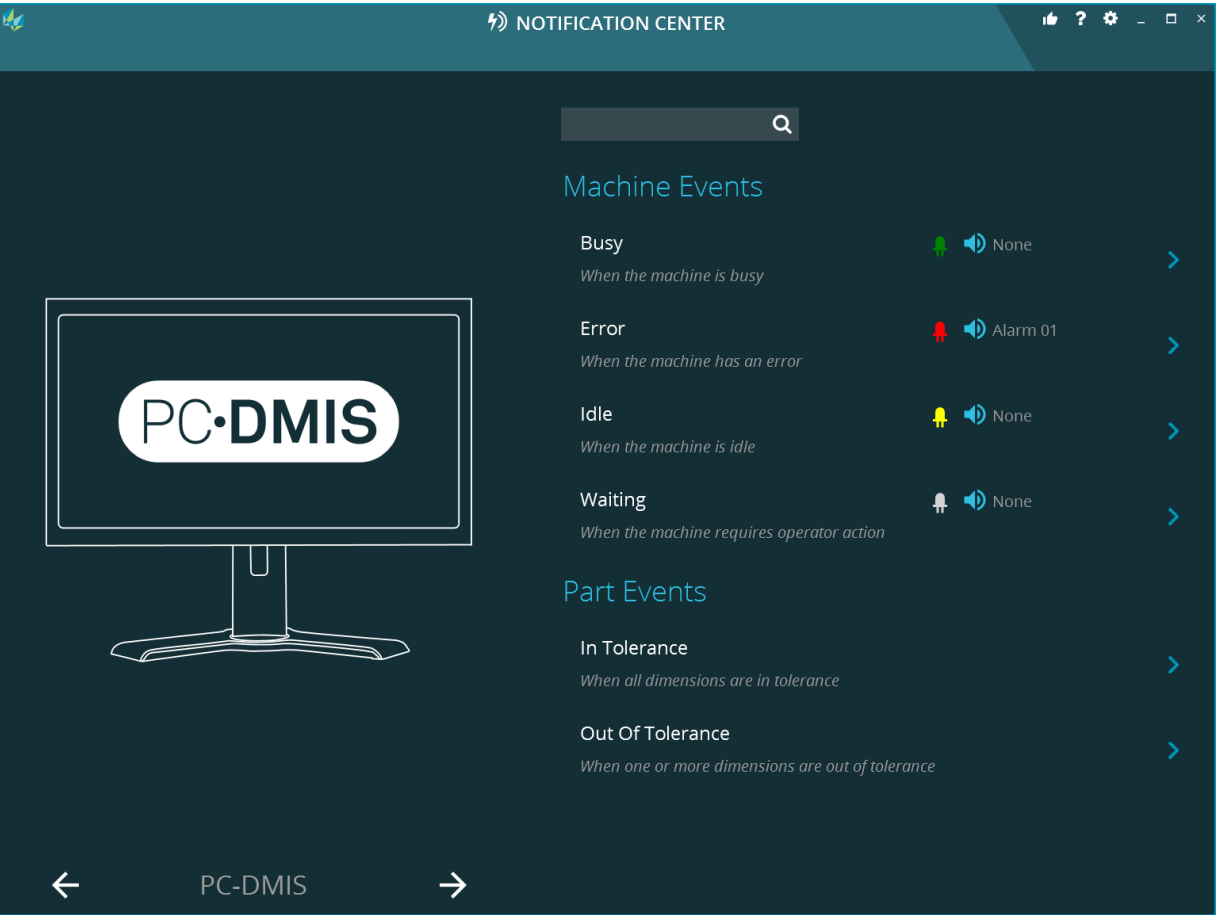
INSPECT Key features

REPORT Tab

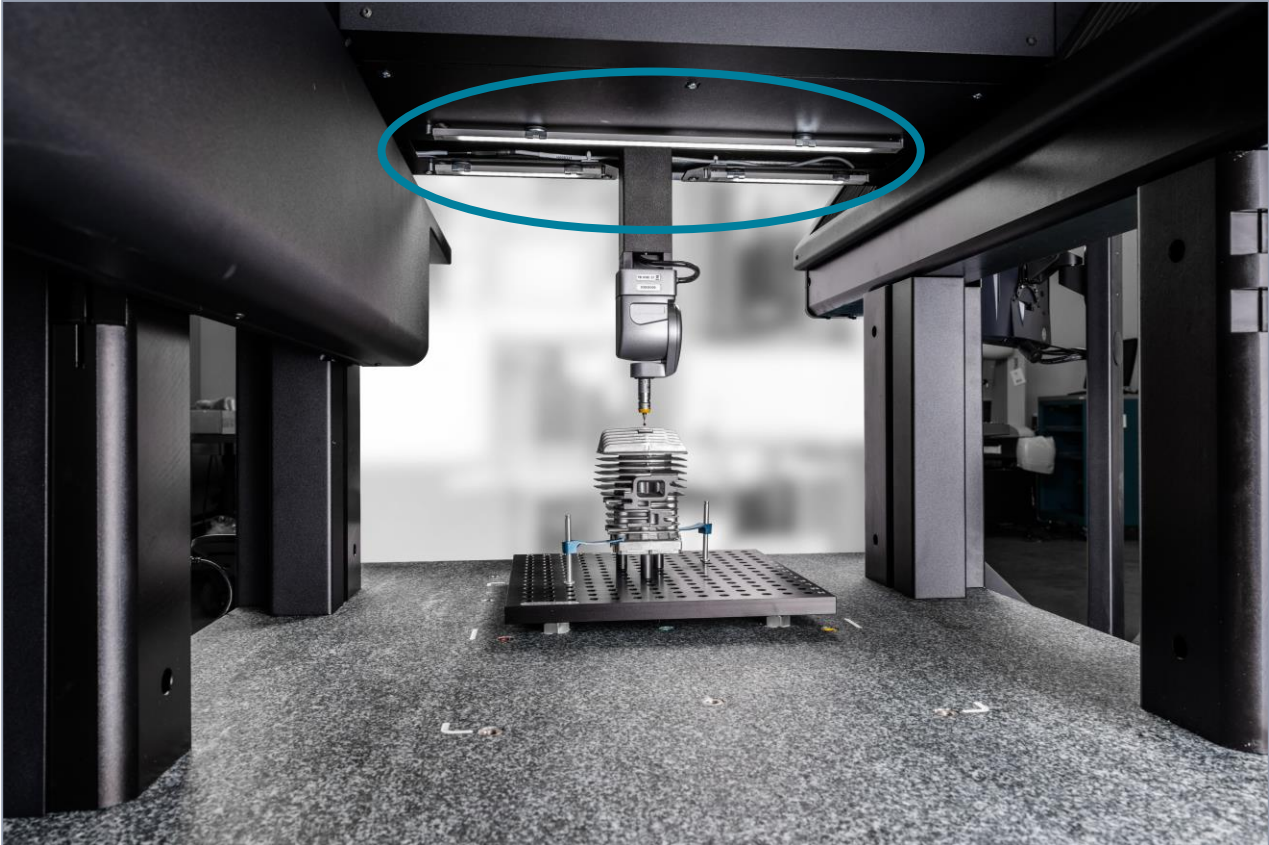
- Single touch screen interface
- Infographic reporting as circular bar graph
- List of full reports for each run



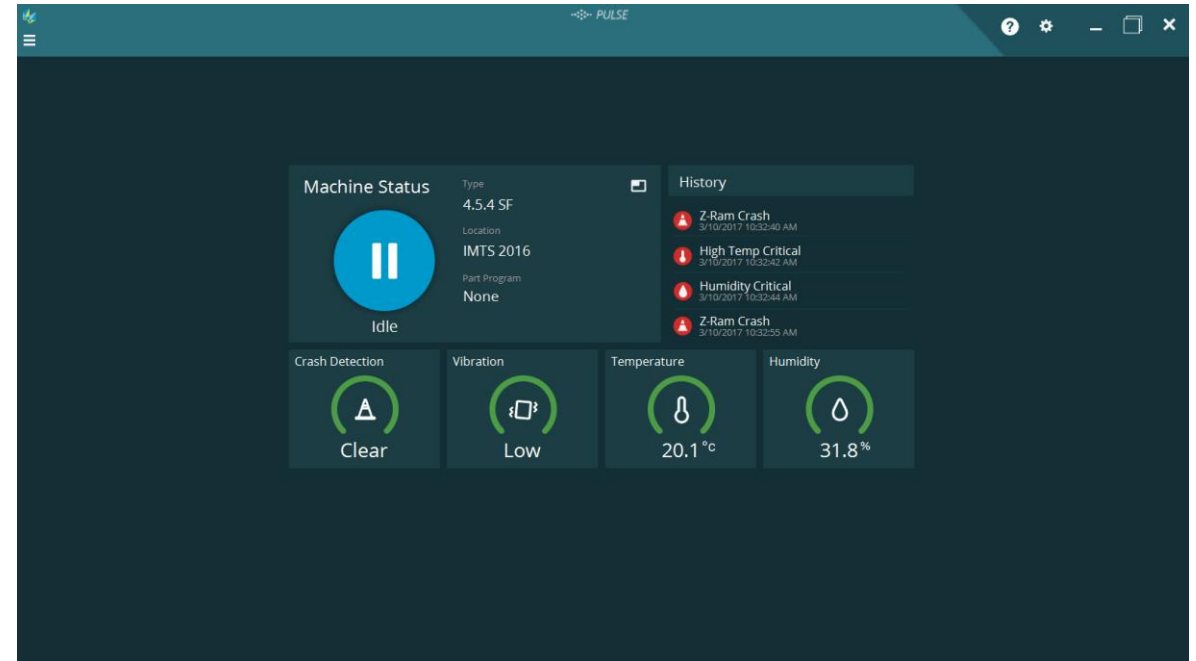
Notification Center. Configurable notifications for Inspection Processes.



Status/Workspace Lighting



PULSE - Performance Monitoring Software



PULSE - Benefits

- Better visibility of assets to reduce downtime during operation
 - SMS & email alerts
- More flexibility for human resources
- Improved measurement statistics through associated operational data
- Support of back office software such as ServiceMax and Salesforce

GLOBAL PC-DMIS USERS' FORUM *AT HxGN LIVE 2017*



USER GROUP SESSIONS:

- Reporting – a tips and tricks session to help users unleash the full power of PC-DMIS reporting
- Motion – getting the best from clear planes, clear cubes, auto path, path from feature and other PC-DMIS motion tools

TECHNICAL SESSIONS:

- PC-DMIS Application Improvements and Measurement Routine Optimization
 - Shop Floor – PC-DMIS Optimization Workshop
- Live User Echo Session – user ideas that influence PC-DMIS development
 - PC-DMIS Power Users

METROLOGY LOUNGE WALK-IN SESSIONS:

- Drop-in clinic
- Speak one-on-one with a PC-DMIS expert
 - Ask us anything!



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Questions?