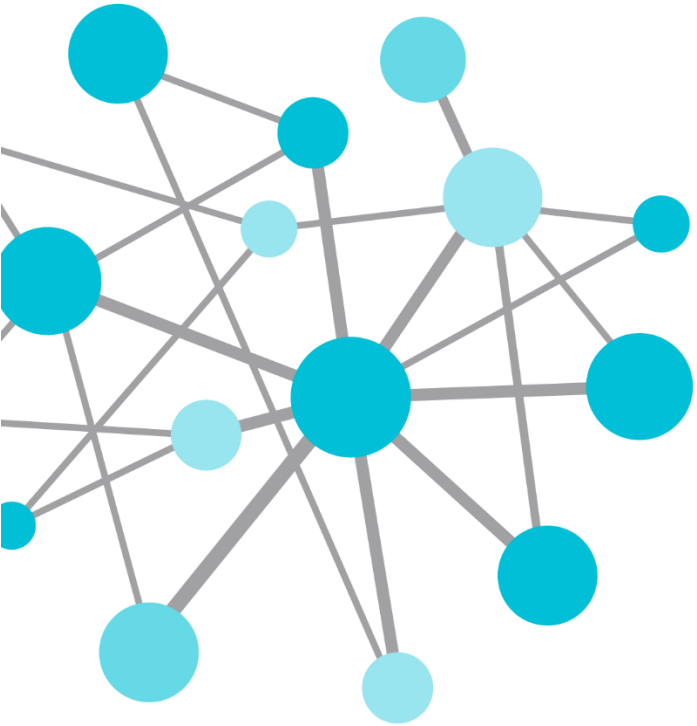


How Corning Kennebunk Uses PI System Tools to Make Better Use of Data

Presented by **Ryan Dube**
IT Analyst/PI Admin, Corning Life Sciences

CORNING

The Importance of Data

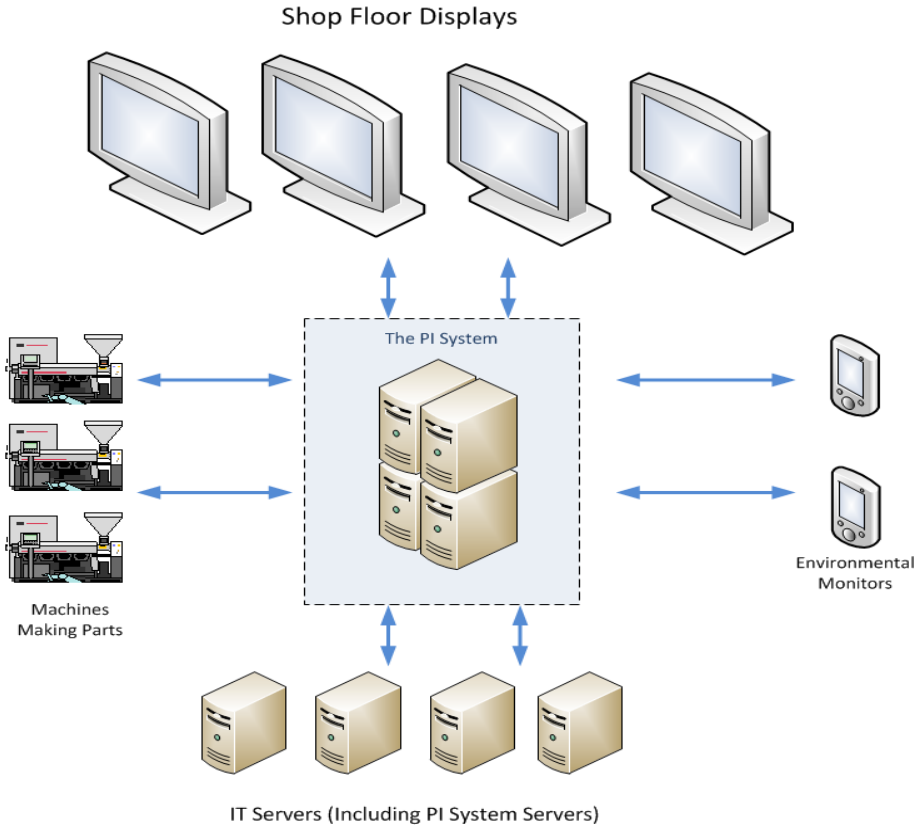
“It is a capital mistake to theorize before one has data.”

- Sherlock Holmes

- My Background
  - 13 Years in machine automation
  - Data visualization and HMI Displays (GE Proficy)
  - Career Change and Corning’s Use of OSIsoft PI System

Our PI System:

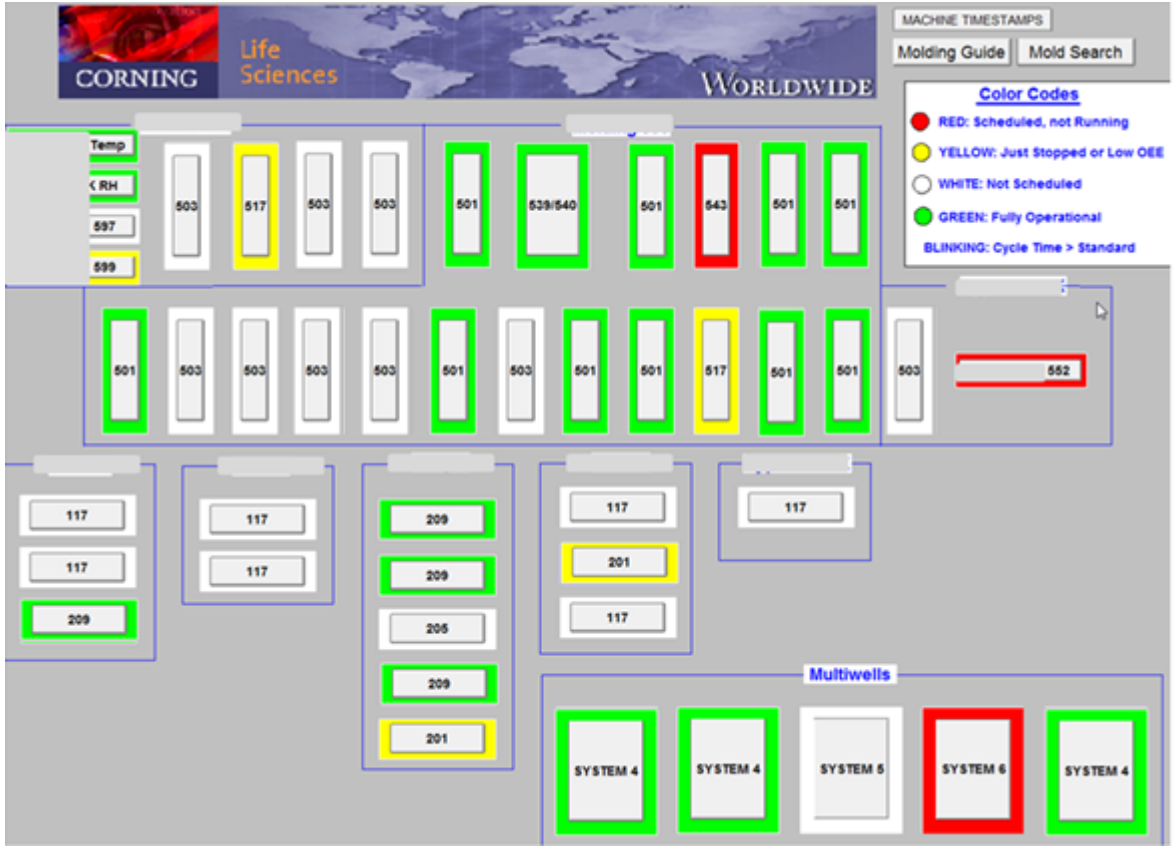
- Tracks machine production data
- Monitors OEE (Overall Equipment Effectiveness)
- Monitors Process (pressures, temperatures, etc…)
- Environmental monitoring
- Monitoring IT Systems



Tracking Machine Production

1. PI Tag of part counts made from the Molding machine
2. MES (Camstar) retrieves counts through PI ACE, for display and OEE calculations
3. MES System integrates this machine data with production data.

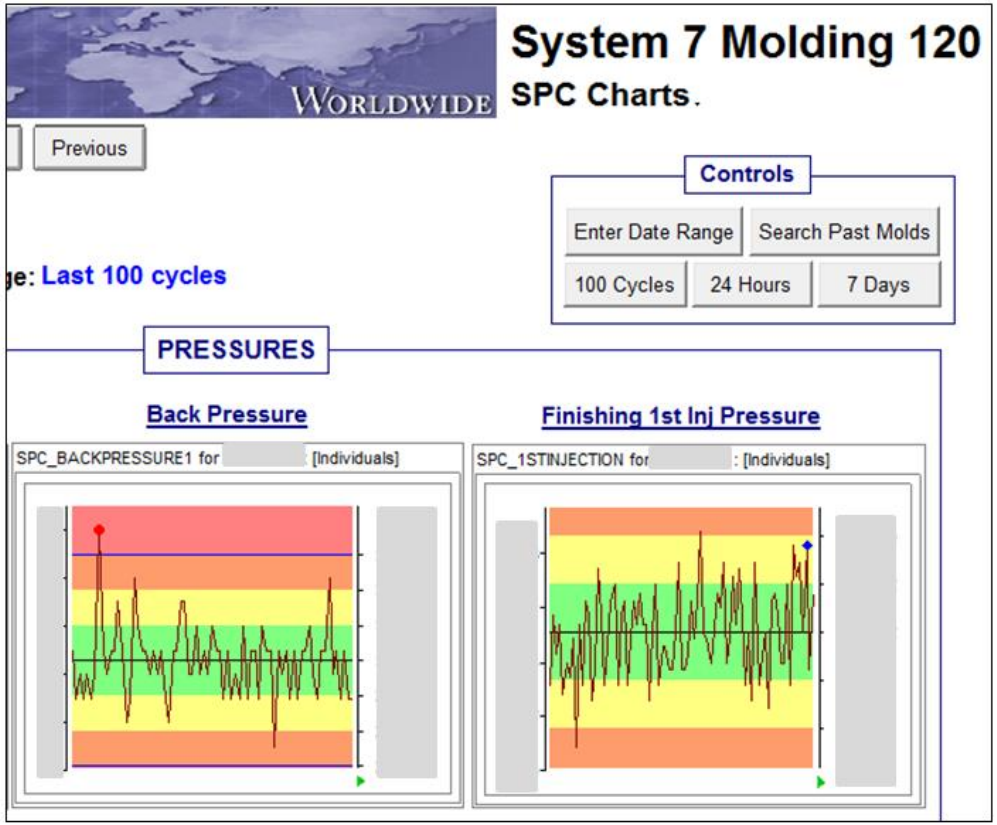
Monitoring Molding Machines



Machine Parameters: Molding Process

Control charts monitor temperatures, pressures, mold positions and molding times.

Charts are used in PI ProcessBook by technicians to troubleshoot machine issues.

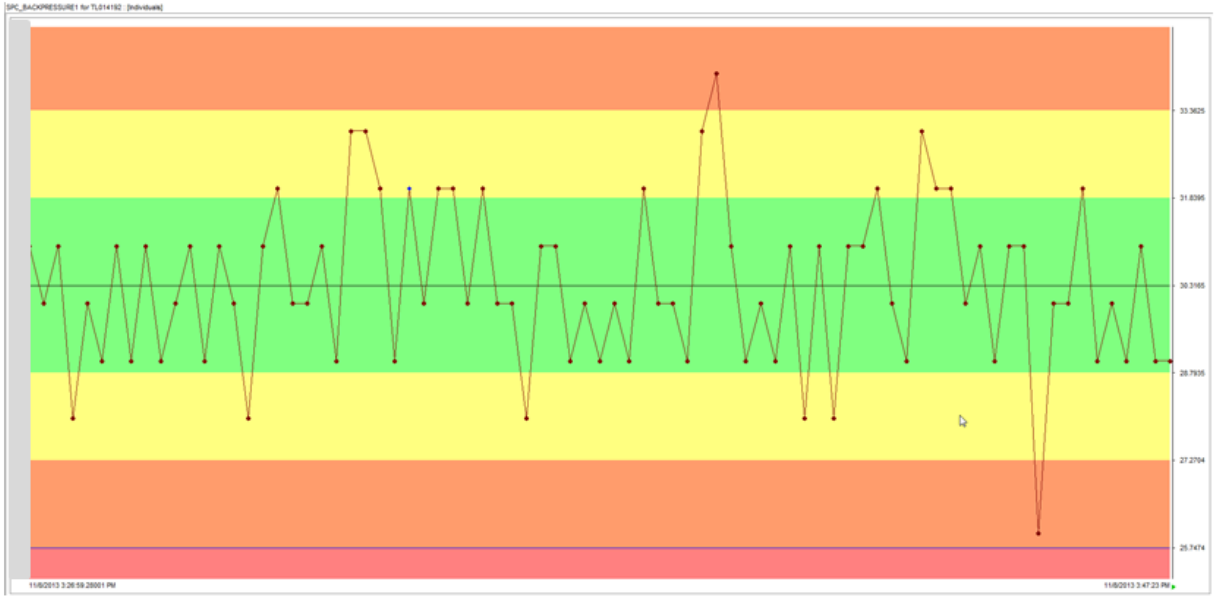


Monitoring OEE – SQC Charts

We are starting to use SQC Charts extensively at Kennebunk.

PI SQC tools provide us:

- Real-time monitoring
- Alarm Displays
- Email Notifications
- Predictive Analysis



Monitoring OEE for Machines

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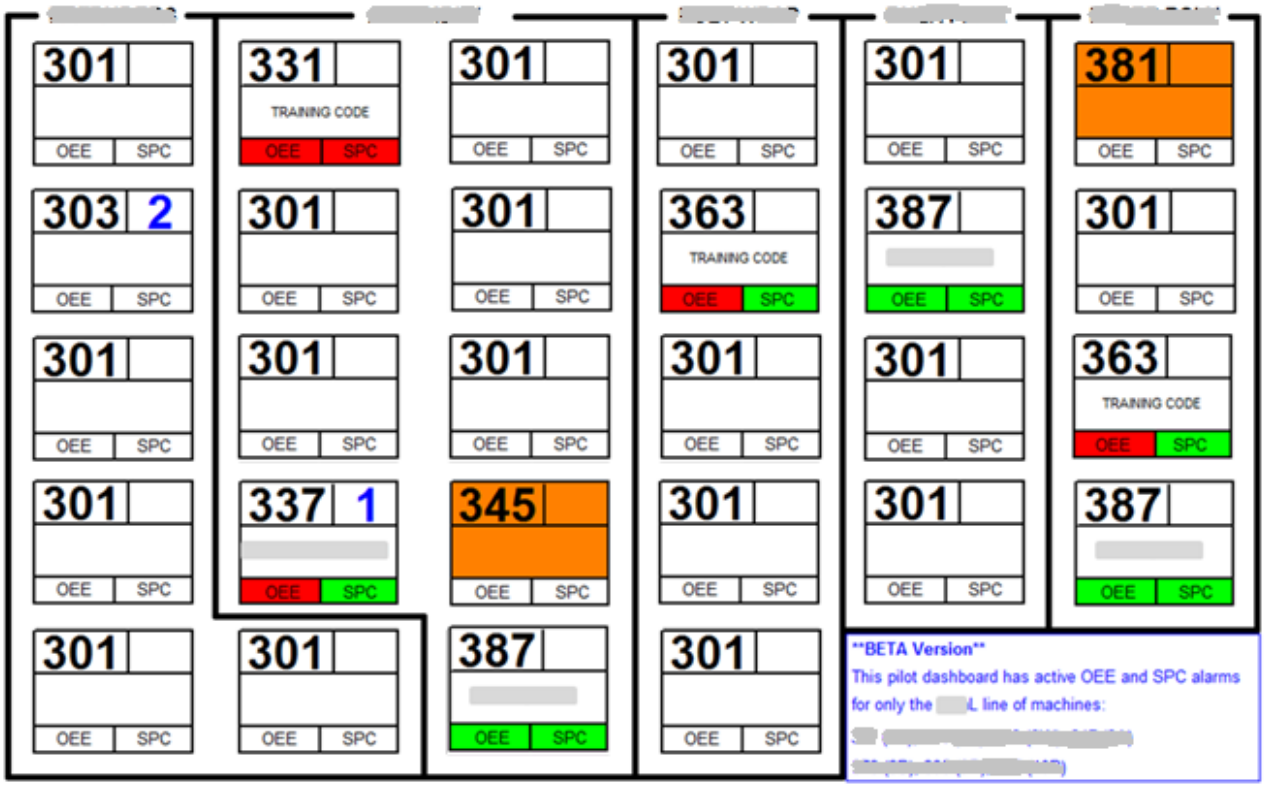
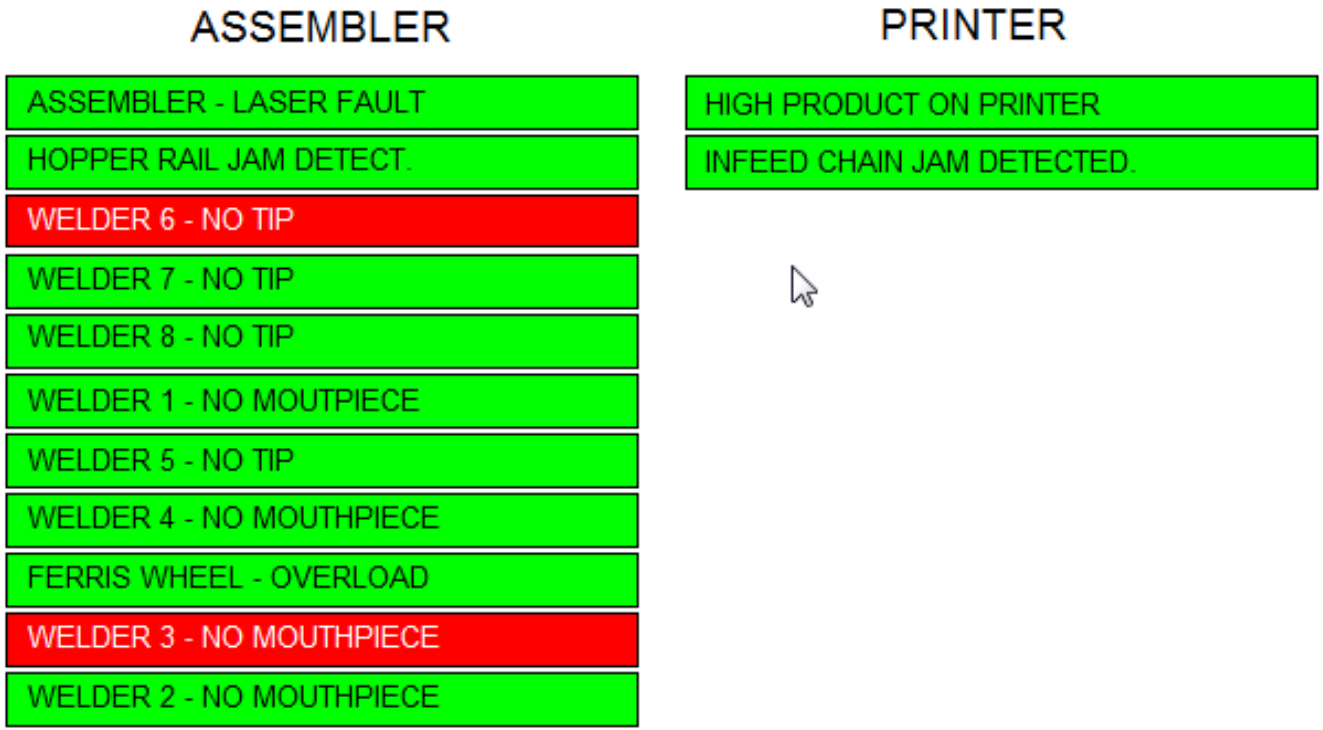


Machine Faults

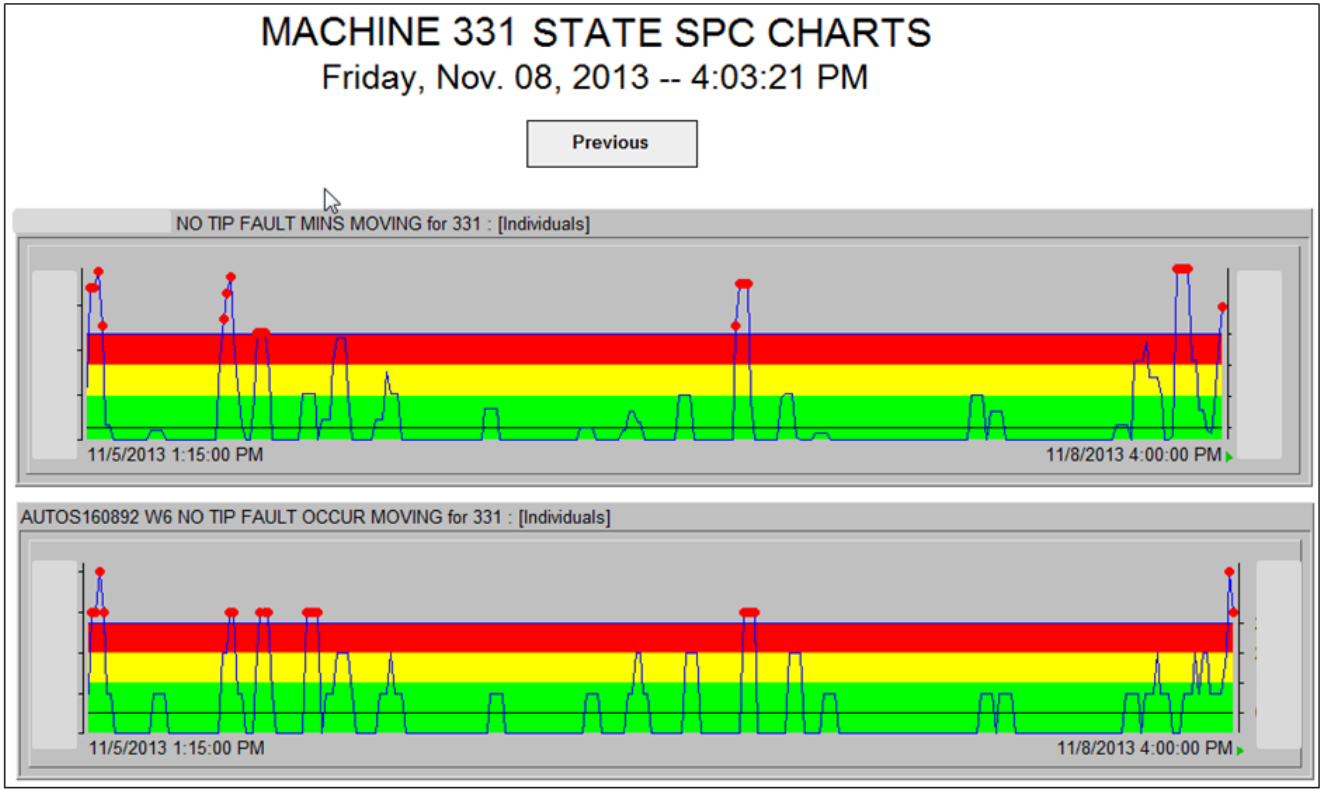
PLC on machines counts # of faults that occur on a part of the machine.

When counts within a time period rise far above normal, dashboard indicates there's a problem.



Machine Faults

Using PI ProcessBook, technicians can see a history of how many times the fault has occurred and how long the faults lasted.



Monitoring OEE – SQC Charts

Machine with Low Availability

MACHINE 363 OEE CHARTS

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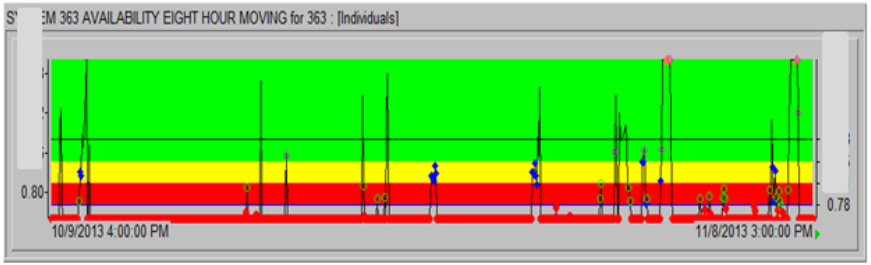
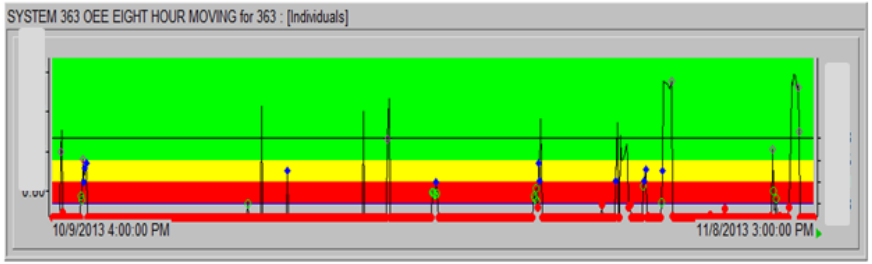
Previous





Machine with High Availability

MACHINE 373 OEE CHARTS

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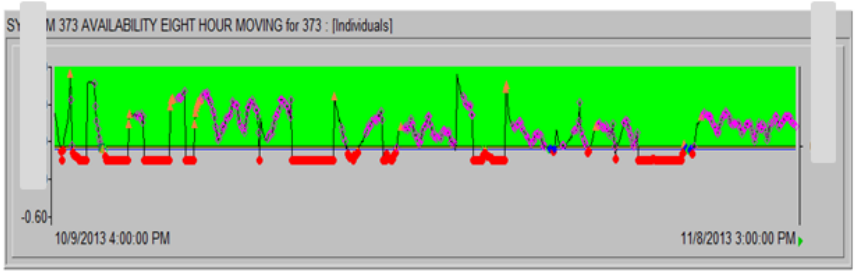
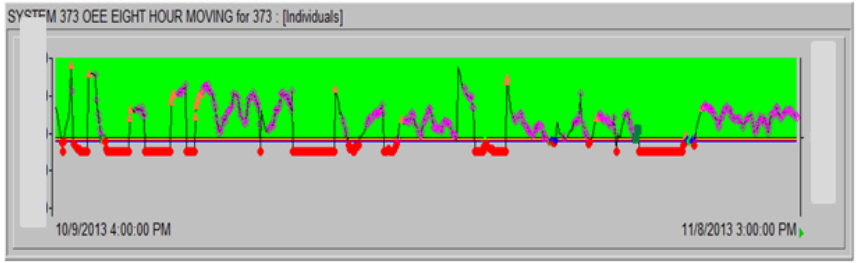
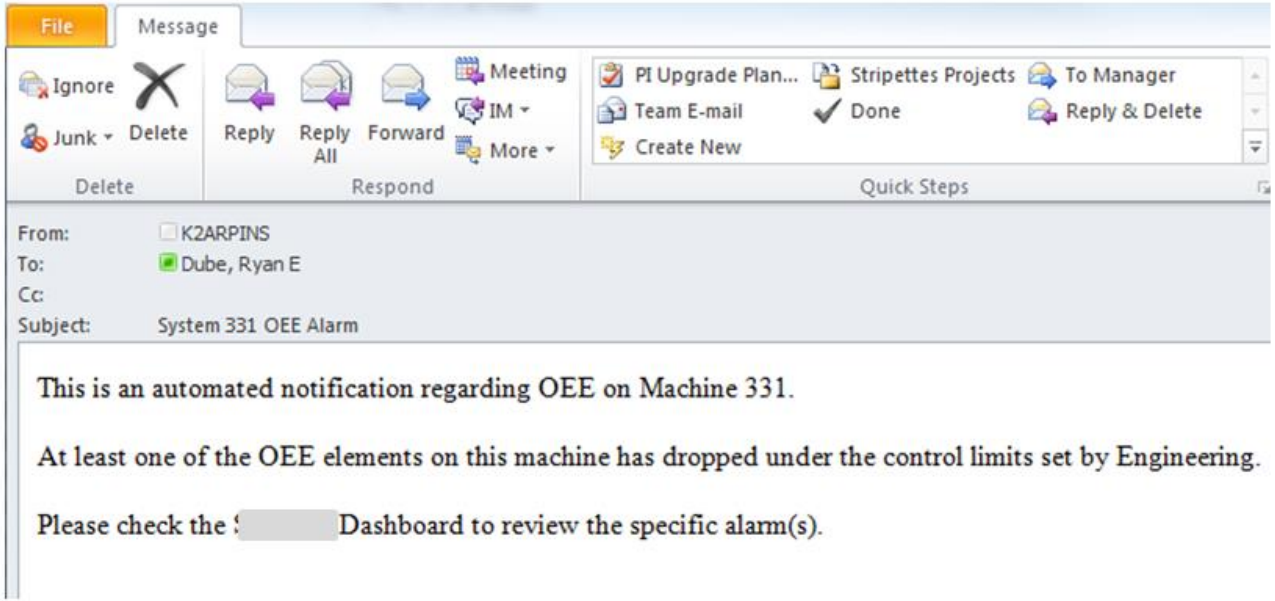




Monitoring OEE – SQC Alarms & PI Notifications

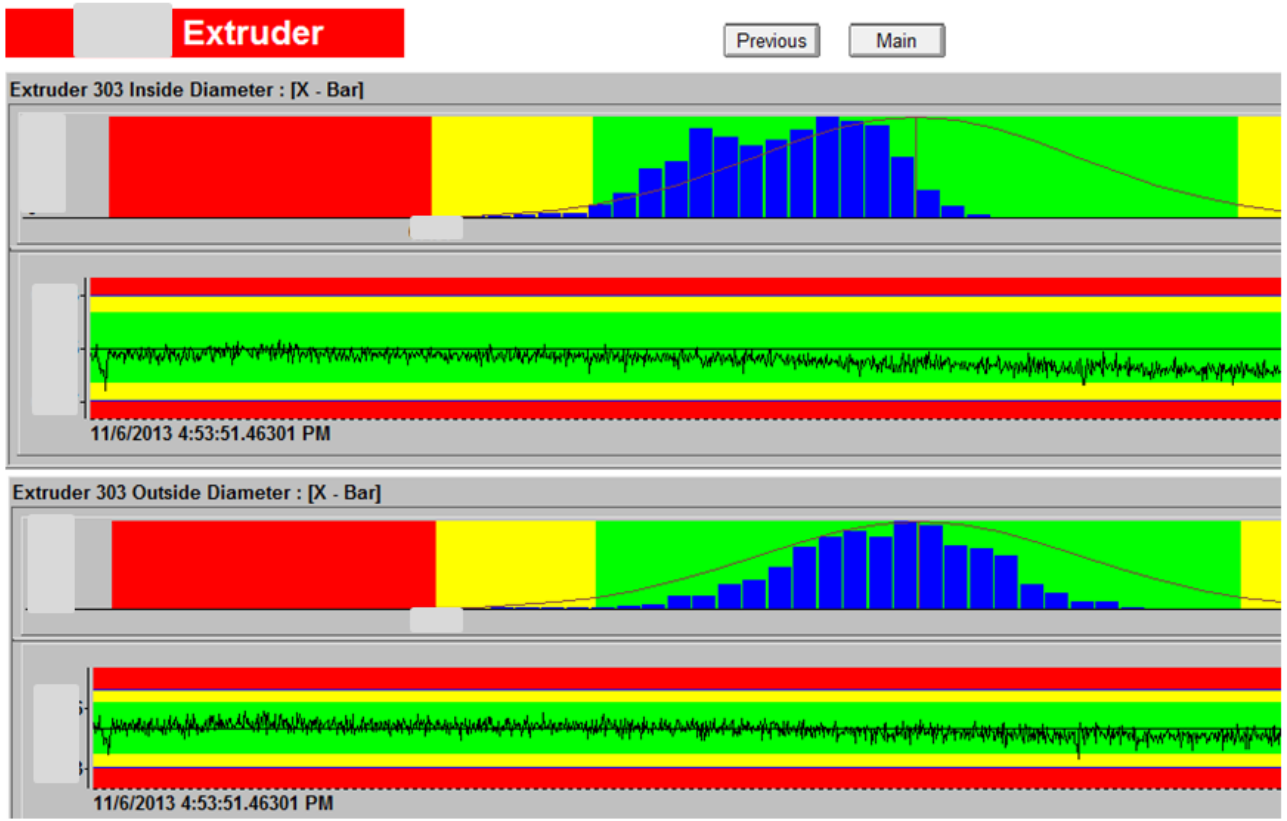
In this example, a PI SQC Alarm notifies Engineers, Technicians or Managers of a specific problem identified by low OEE for a machine.



Machine Parameters: Tube Extruder

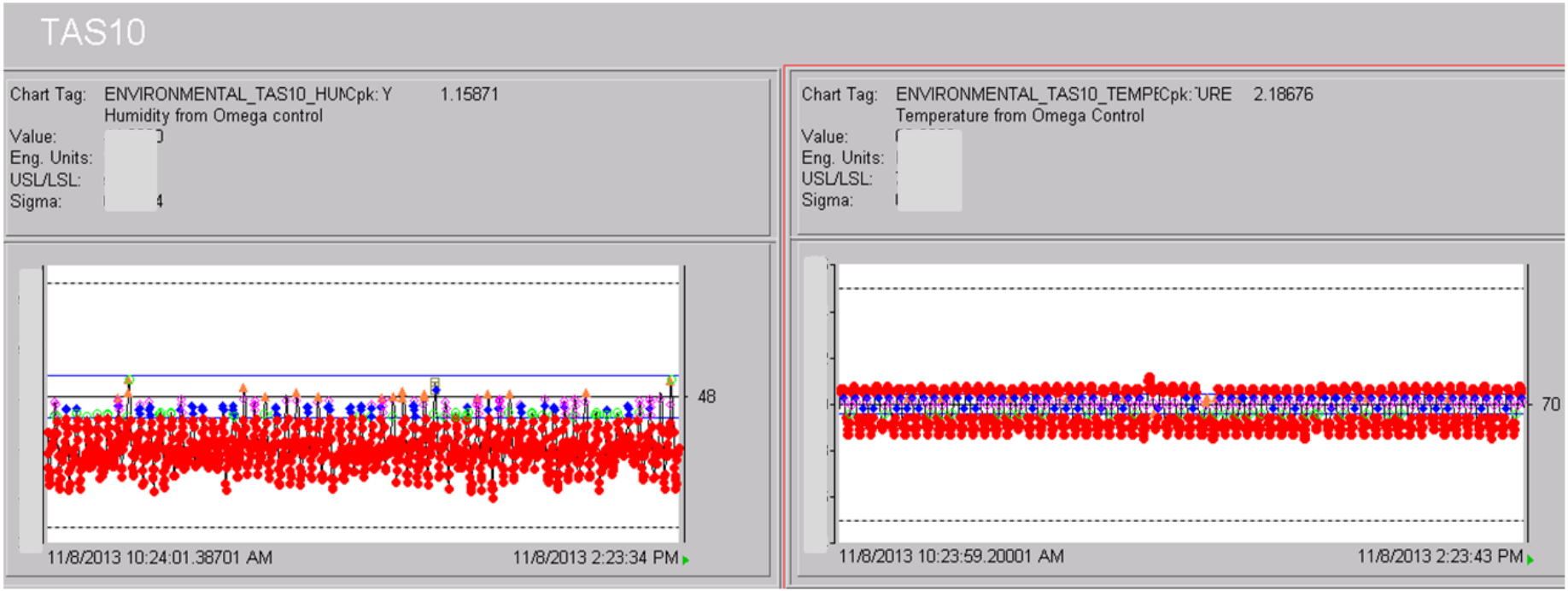
Control charts monitor inner diameter, outer diameter, and ovality of extruded tubes.

Charts are displayed on large screen TVs for technicians to monitor machine parameters.



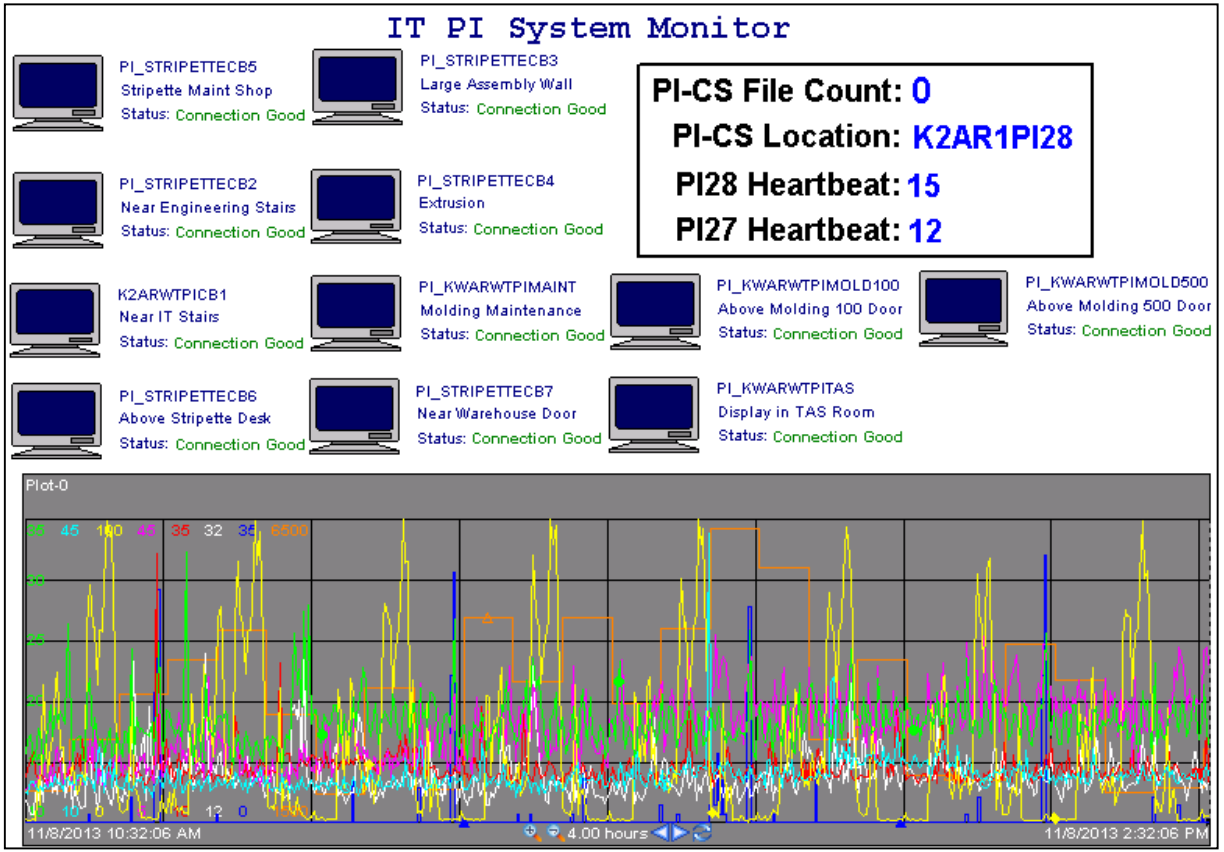
Environmental Monitoring

A network-enabled humidity/temp sensor inside of an enclosed filter assembly machine provides PI System with historical data. (Process is very sensitive to environment)

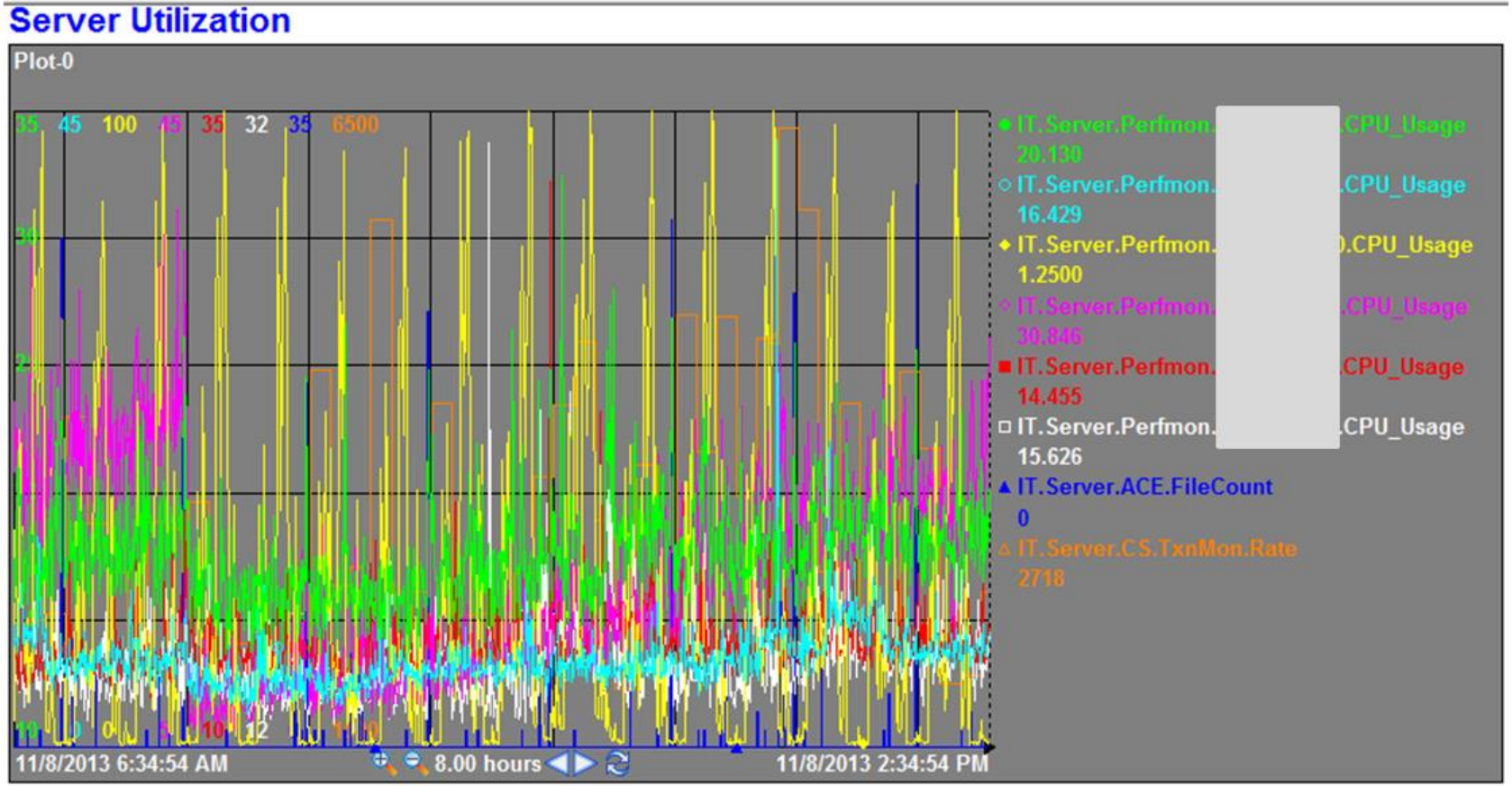


Ways that PI Monitors IT Systems

- PI Ping Interface allows us to monitor servers
- PI ACE counters monitor data transfers between PI and MES
- PI Ping Interface monitors PI System connections to molding machines.
- PI Performance Equations "handshake" with big shop floor displays to make sure they are "live".



Monitoring IT Systems – Server CPU Usage



Measurable Results From Using the PI System

- PI Notifications have allowed IT to respond faster to potential problems, reducing (or avoiding) production downtime.
- PI SQC Charts provide technicians with tools they need to find and fix problems faster, improving machine efficiency and reducing average machine downtime for process related issues by 10%.
- PI ProcessBook display screens in the factory have increased awareness of OEE, and made operators and technicians feel more accountable for machine performance – increasing in-process rejects by 5% (operators are noticing more problems).

The Future at Corning - Kennebunk, Maine

We have very aggressive and bold goals to utilize the PI System in innovative ways.

- Use PI SQC Alarms to predict problems before they occur.
- Use PI SQC and PI Notifications to deliver critical production data to Engineers in ‘real-time’.
- Use PI Coresight to make data more accessible to engineers and technicians.
- Use PI System to:
  - Collect and analyze factory power consumption data.
  - Better integrate Quality Controls with Production.
  - Use PI System data to make better business decisions based on production capacity history and predictions.
  - Use PI System to identify and resolve production bottlenecks.

Ryan Dube

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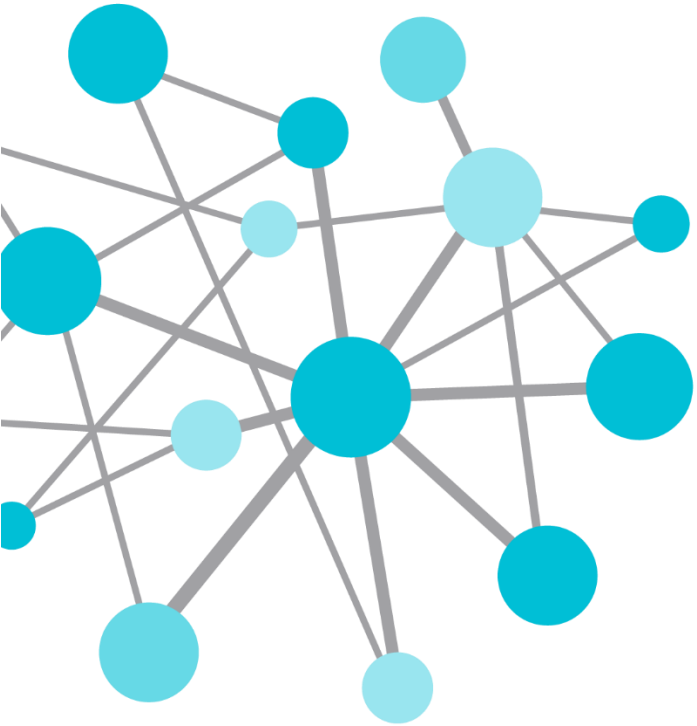
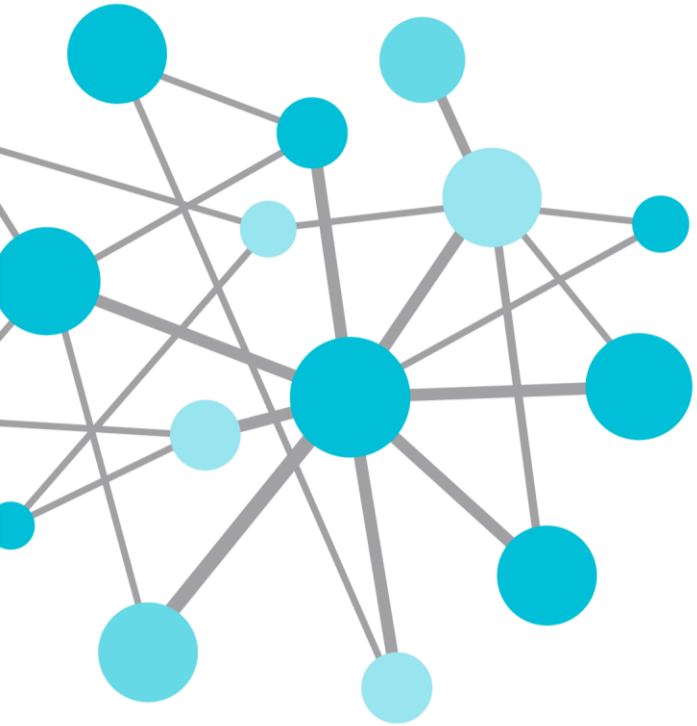
- IT Analyst / PI System Admin
- Corning Life Sciences



Thank You



THANK YOU

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