

Princeton Energy Plant Operations Best Practices

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Co Gen Plant

- Decision to build in early 1990s
- Replaced 1921 boiler house
- Princeton believed in operations to run this plant
- May 1995 initial construction
- Fall 1996 first KWH and steam.
- Plant embraced Ops & Maintenance







Economic Dispatch

The First Step & Now

- ICETEC Implementation
- Princeton met ICETEC at IDEA, Baltimore 2003
- Started dispatch August 1, 2003 - New Jersey deregulation.
 - Turbine dispatch 7 to 15 MW
 - steam/electric chiller dispatch.
- Savings –
 - 800k in first year.
 - between \$1.5 - \$2.8 m now.
 - Continued improvements & full market integration
 - high value even with lower gas costs.
- Meeting dispatch is rewarded by pay for performance
 - embraced by Union
- 2013 Introduced limited turbine control for Frequency Regulation

Overview (current)



Full Chiller Dispatch Screen



Regulation Screen



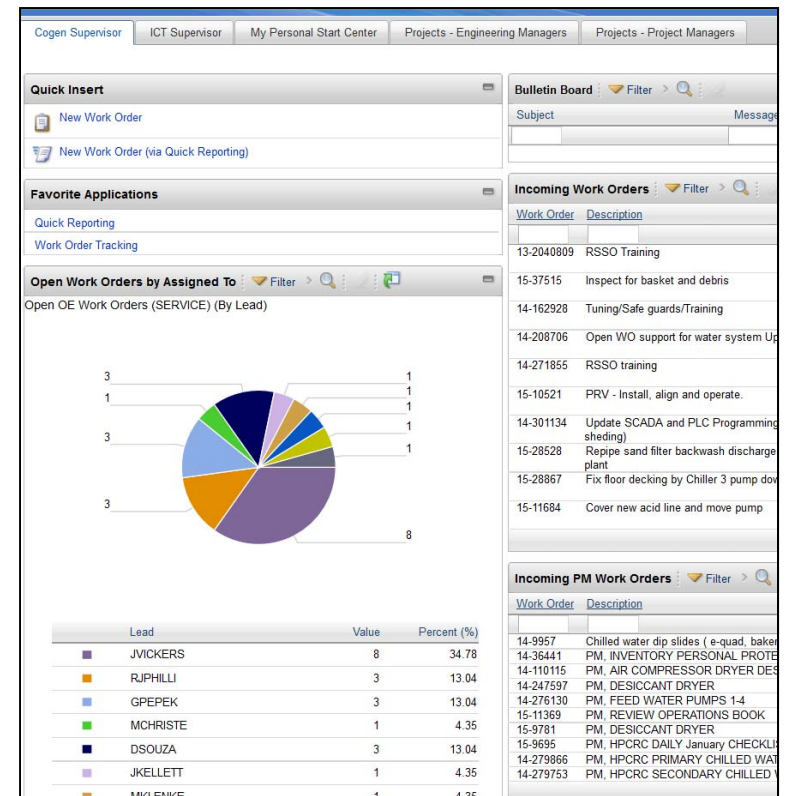
Water Treatment

- **Prior to Cogen**
 - Broken glassware
 - In the dark
 - Under the boiler
 - In the corner
 - Word of mouth procedures
- **Today**
 - High Quality Lab & Tools



Maintenance Management

- Maximo
 - **Before:**
 - memory, experience and paper
 - **Today:**
 - Its an evolution in progress
 - 2000 assets
 - Tracking man hours and dollars spent on assets
 - PM's, work orders, Major maintenance, work packages, inventory and safety
 - **The Dream...**



Energy Conservation Projects

- We seek many layers of benefits
 - Less energy used (pays for it)
 - Safer
 - Less water
 - Less pollution
 - Less risk
 - Easier maintenance
 - More reliable
 - Controls, VFD's we have to remember to keep it simple!



How to Work in Our House

- **Our House**

- Work and respect our plant and people
- Don't ever think we need your company to keep us alive
- Remain competitive
- Communications at all time
- Optimization through information to operations
 - Control HMI or Dispatch system
- Working as partners / providing help and involvement from our staff.

The Way We Consider New Stuff

- **The Sales Guy**
- Does it work? ...at the scale we're interested in?
- Pro-forma and space required?
- Peer visits, kick-the-tires!
 - Ops talk to ops & maint staff!
 - What breaks?
 - How does it break?
 - What can you fix vs. OEM?
 - What spares are needed?
 - How is service?
 - How responsive?

Our Team



The Take-Away

- Seek Constant Improvement
- Get Past Fear Of Change
- Seek Input From All Staff
- Learn From Other's Experience
- Provide Good Tools & Training
- Require Respect & Quality

Thank You

Overview (current)

