ESPC Experience at ORNL

Greg Palko
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ORNL Biomass Steam Plant
ESPC project part of TEAM Initiative

• $90M – 8 Energy Conservation Measures (ECMs)
• Center piece ECM – Biomass Gasification Steam Plant
• Steam decentralization and distribution upgrades
• Building Automation System (BAS) upgrades
• Mechanical upgrades in 2 selected buildings
• Metering; Lighting; Water – domestic and process

Aggressive schedule leading up to Award

Great Big Project
Complicated Steam System: Biomass plus major system redesign

- Eliminate 2 long runs w/no condensate return
- Distribution pressure for system reduced 30%
- Added a second remote steam plant
- Traps, insulation, etc. upgraded

Research operational issues complex

Wood chips are harder to manage than gas in a pipe

People expected improved working conditions
BAS and mechanical issues

• BAS in older buildings now match new Campus
• Simultaneous heating and cooling - freeze concerns

Training and O&M are extensive
Many additional buildings still need attention
Facility issues not understood during design, construction
“Can do”, positive relationships
Metering and Lighting

- The landscape is changing
- Technology
- Cost
- Integration
- Conditions drive costs

When is the right time?
How good is good enough?
Settling in the near term, still work to be done
Domestic Water

- “Typical” water ECM
- “Straightforward”

Don’t put aerators in labs
Flush valves are a social, political nightmare
Air compressors

• Huge savings in once through cooling water
• Decentralized remote area of Lab
• Reduced operating pressure

“Water is Free” mindset
“Right-size” the system
Generic lessons

- TEAM Initiative drove expectations, schedule

Good and Bad

- Plan ahead

Know your needs

- Projects can come in all sizes

You may not get everything you want

Would we do it again? – Absolutely!