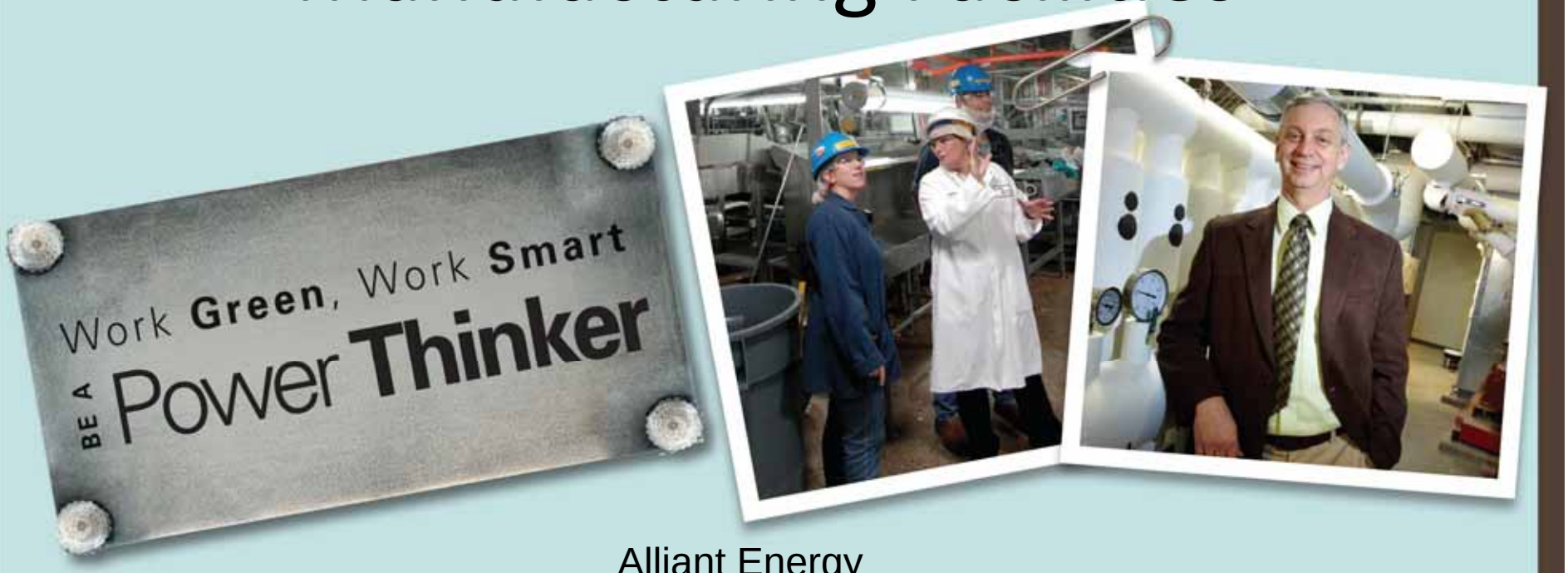
Retrocommissioning for Manufacturing Facilities



Alliant Energy
General Mills
Michaels Energy
December 13, 2012

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Introduction

- Participant:
  - Mark Robinson
  - Plant Electrical and Controls Engineer
  - General Mills
- Utility:
  - Kari Gehrke
  - Senior Product Manager
  - Alliant Energy
- Implementer
  - Gary Ambach
  - Director of Energy Programs
  - Michaels Energy

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Industrial RCx

- Substantial potential for savings
- Oriented to process controls, process support equipment, space conditioning, and ventilation
- Examples
  - Diversified Products Manufacturer—30% savings in electric consumption and 11% savings in natural gas use
  - Food Processing Facility—7.5% reduction in electric consumption and 27% reduction in natural gas use
- All within a two year payback→greater than a 50% ROI

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Industrial RetroCommissioning

- Major questions for today
- What is RetroCommissioning (RCx)?
- Does it fit with industrial facilities?
- What is the potential?

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What is RCx

- RCx is the optimization of the building's automation system to minimize energy consumption
- RCx is also used to reduce/eliminate maintenance costs such as frozen water coils, frequently burned out belts, seized air conditioning compressors

Alliant Energy's RCx program

- Designed to produce results—reductions on energy bills you can see
- Produces long term results that are reproducible year after year
- Verified savings
- Operator training

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Alliant Energy's RCx Program at a Glance

- Screening
- RCx Study
- Implementation
- Functional Performance Testing
- Training
- Verification of savings

The Alliant Energy RCx Program

- Alliant Energy will pay for the RCx study
- IF:
- Customer agrees to implement the RCx package identified by Michaels

Screening

- Facility walk thru
- Inventory of process equipment
- Determines energy saving potential
- Directional for preparation of study proposal and next steps
- No cost to end user

Detailed Study

- Interview staff familiar with building operation
- On-site measurement of key parameters for a week or more, as desired
- Detailed actual equipment performance
- No guesswork
- Deliverable: detailed report with decision-making information

Implementation Documents

- Once approved, Michaels generates implementation documents
- Implementation documents describe exactly what must be done
  - Control sequences
  - Equipment specifications
- Contractor quote based on implementation documents
- Michaels answers questions during implementation

Implementation and Performance

- Customer implements actions identified in study report
- Most actions can be implemented within six months
- Allows up to 18 months to implement complex measures or walk through budget processes

Functional Performance Testing

- Test control sequences to ensure intent/savings are met
- Real-time testing while contractor is on site
  - No follow up calls for problems
  - Easy to correct problems on the go
  - No grumbling, arguments, or hassles
- Energy savings assured
- Alliant Energy funded

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Staff Training

- Training provides
  - How customer's systems use energy and what was done to save energy
  - How to operate the systems
- Ensures savings are maintained over the long term
- Deliverables: training and operational documentation
- Alliant Energy funded

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Verification of Savings

- At 3-4 months post-implementation to ensure savings make sense
- After a full 12 months of post-implementation to demonstrate savings
  - Can be weather normalized as appropriate
- Deliverable: Report demonstrating savings from energy bills
- Alliant Energy funded

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RCx Program Results

- Overall facility projects
  - Electric savings 17.5%
  - Natural gas savings 25.5%
  - Energy dollar savings 18.8%

Industrial Example

- General Mills
  - Mark Robinson
    - Plant Electrical Engineer

Facility Information

- General Mills
  - Food Processing
  - 1,400,000 square feet
  - LGS Tariff Customer

Alliant's RCx Proposal

- Addressed HVAC units and controls
- Controlled by building automation system
- Approximately 100 units
- Studied representative sample of units
- Study included
  - On site inspection
  - Monitoring unit performance
  - Assessment of energy utilization
  - Identification and analysis of energy saving opportunities

RCx Study Results

- Energy Savings
  - Electric savings 3,727,000 kWh
  - Natural gas savings 137,000 therms
  - Energy dollar savings $343,000

- Current Status: Verified savings via Functional Performance Testing

RCx Study Key Learnings

- Challenged our thinking
- Opened our eyes to other options
- Allowed us to consider additional units
- Finance loved it!!!!
  - Outside Opinion
  - Validation of Savings
- Helping us meet our goals
  - Other GMI Plants Jealous

Will RCx Benefit My Facility?

- Key things to look for:
  - PLC controls
  - Compressed air systems of more than 200 HP
  - Refrigeration systems
  - Process hot water
  - Temperature and/or humidity control critical to production
  - Process cooling loads
  - Fan total horsepower of 100 HP
  - Large pumps totaling 100 HP
  - Hours of operation exceed 3500 hours

Questions?

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Save the Dates

Apr. 29-May 1, 2013	AESP's Spring Conference Dallas, TX
Sept. 30-Oct. 2, 2013	AESP's Fall Conference Seattle, WA
Jan. 27-30, 2014	AESP's National Conference San Diego, CA

For more information - www.aesp.org