



Nortech Systems

Nortech Systems, Bemidji, Minnesota

Facility Types: 1 building:
offices and production space.

Facility Square

Footage: 60,000

Date Built: 1979

Number of Facilities

Personnel: 3

BOC Participant

Profiled: Greg Pierce,
Facilities Engineer

Facilities engineer Greg Pierce has overseen several significant energy efficiency projects at Nortech Systems' Bemidji facility. Greg and his colleagues are responsible

for maintaining the facility's HVAC, lighting, and other building systems as well as the production machines used to build and assemble connecting harnesses and cables for medical equipment such as MRI and CT scanning machines.

Challenges

Gaining Approval for Upfront Costs of Efficiency

One of the challenges that every facilities manager seems to encounter is gaining approval or "buy-in" from upper management for the upfront expenses of efficiency upgrades. The BOC training taught Greg how to identify the "quick hit, short ROI" measures that quickly pay for themselves, which helps him demonstrate to management that he's done the legwork and is knowledgeable about valid efficiency investments. These smaller, short payback projects help pave the way for gaining approval for more significant, longer-term investments in the future.

Uncertainty about Vendor and Equipment Choices

Making purchase decisions about new equipment based solely on the vendor's recommendations and your own gut instincts is challenging. One of the most useful aspects of the BOC training in Greg's mind was

learning about the "real world experiences" of other people undertaking similar projects.

Results

Efficiency Goes Beyond the Initial Investment

Greg had already made some significant investments in energy-efficient equipment prior to taking the BOC training course, but through the BOC training, he learned that there's much more to energy efficiency than simply selecting the most efficient equipment. Optimizing operations and maintenance practices helps to maximize energy savings from high efficiency equipment. For instance, Greg had replaced an old, inefficient air compressor with a high efficiency 25hp compressor prior to taking the BOC training course. However, it was the BOC training that taught him that adding a storage tank would allow the compressor to run unloaded for longer periods of time and reduce the overall amount of cycle time, which reduces wear and extends the life of the machine. Greg observed that preventive maintenance has "importance beyond what we see today."

He also added a valve bank to eliminate air losses and reduce the need for compressed air.

Upgraded Lighting

One ongoing project has been a gradual replacement of all the building's T12 fluorescent lights with T8s. Some sections of the plant were retrofitted to T8s all at once, as money was available for those projects. On

One of the most valuable things I gained from the BOC training was the discipline to set up a schedule of preventive maintenance. There's a cost to not doing certain things.

-Greg Pierce



the maintenance side, all burnt-out fixtures were replaced with T8 lamps and ballasts. This approach allowed a gradual shift to the more efficient lighting without a significant upfront cost.

Programming of HVAC Controls

An HVAC controls system was installed prior to Greg's time at the plant, but was not functional. Through the BOC training, Greg realized the importance of the system and worked with a vendor to repair it, enabling nighttime thermostat setbacks and complete fan shut-downs during unoccupied times. This repair and programming of the HVAC controls system has resulted in significant energy savings and keeps building conditions more stable.



HVAC controls system used to reduce energy consumption during unoccupied hours.

New Computer Monitors

Greg started replacing old CRT monitors with energy-efficient flat screen computer monitors prior to the BOC training course; however, in the training he became aware of Otter Tail Power rebates available for the new monitors which reduced the upfront cost and enabled him to make the upgrades more quickly.

Achievements Yield Nearly 20% Reduction in Electricity Consumption Since 2006

Altogether, Greg has observed a 19% reduction in the facility's average monthly kWh electricity consumption from 2006 to 2010. Some of those savings are due to the more efficient air compressor, which was installed prior to the BOC training, but improved maintenance, the added storage tank and

valve bank, the HVAC controls repair, and the lighting and computer monitor upgrades also contributed to the impressive reduction in energy use.

Networking and Sharing Information Builds Confidence in Projects

Greg found that one of the key BOC training lessons was the importance of identifying reliable and qualified vendors and then building a relationship so that you can rely on them for their technical expertise. Building ongoing relationships with the BOC course instructors and other classmates is also extremely useful. In Greg's words, it's crucial to "let the experts be experts" rather than "going it alone and trying to figure it out yourself."

We're just one of six facilities in the U.S., but I've gone down to some of our other facilities to share information, look at their HVAC systems, and offer them suggestions based on what I've learned from the BOC training so they can try to duplicate it.

-Greg Pierce

A big advantage of taking the BOC course as opposed to teaching yourself out of a textbook is developing those relationships with the instructors and classmates. Greg and his BOC classmates communicate about their project experiences, what's worked well and what they are struggling with, new technologies and services, and their experiences with different vendors.

Greg has also worked to share the lessons he's learned in the BOC training with his colleagues at Nortech Systems' other facilities. Sharing information among a trusted network of colleagues and experts builds confidence that energy efficiency projects that sound good on paper will be successful in the real world.