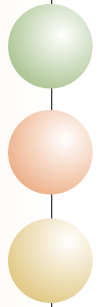


Case Study



Caterpillar Drives Down Energy Costs

Caterpillar Inc. is the world's leading manufacturer of construction and mining equipment, diesel and natural gas engines and industrial gas turbines. Headquartered in Peoria, Illinois, Caterpillar manufactures products and components in 49 U.S. based facilities and in 59 locations in 22 countries around the world. A large percentage of Caterpillar's U.S. based energy consumption is in the State of Illinois.

Energy improvements are an important focus at all Caterpillar facilities, demonstrated by the fact that they have reduced direct greenhouse gas from their U.S. facilities by 35 percent since 1990. Additionally, Caterpillar has committed, through the U.S. EPA's Climate Leaders Program, to reducing global greenhouse gas emissions by 20 percent per dollar revenue from 2002 to 2010.

In August 2004, the Caterpillar Mossville Engine Center, a major engine manufacturing facility, agreed to participate in an introductory session of the Manufacturing Energy Efficiency Program (MEEP). The initial meeting involved a 2 hour diagnostic analysis of energy management practices at the manufacturing facility using the One-2-Five®Energy tool. Following the session, Caterpillar agreed that the unique approach to improving energy management performance was a good fit with their 'relentless quest for perfection' embodied in their six sigma program. In October the Mossville Engine Center signed on to become a MEEP Demonstration site.

The Opportunity

The initial One-2-Five®Energy diagnostic identified five key initial actions that would help Caterpillar strengthen their already well developed energy management program:

- Further development of demonstrated corporate commitment to energy cost reduction;
- Baseline study or 'energy audit' of major energy consuming areas;
- Conducting energy awareness training;
- Developing guidelines for selecting new equipment which considers energy efficiency;
- Reviewing and reporting on the results of major energy savings projects each year.

The next step in the process was to conduct a site review to identify specific technical opportunities, which could drive energy savings. Some of the key technical opportunities included:

- Improvements to air compressor operations/sequencing;
- Demand control opportunities;
- Steam and compressed air leak repairs;
- Heat recovery from a 2600 hp compressor;
- Electrical reworking of a set of air blowers.

The Action Plan

All of the above recommended actions were compiled and presented to the Mossville Engine Center in an Energy Management Action Plan which outlined estimated savings potential of approximately \$600,000. After receiving the Action Plan, MEC formed a Six Sigma project team with Brad Stevenson as the team leader.

The Result

“With the help of the Action Plan developed by Hatch we have taken significant steps towards really taking control of our energy consumption,” said Brad. “We have developed a Site Energy Policy, started work on establishing a set of key performance indicators, and are finalizing a motor purchase policy. In addition we estimate that this year we will save \$400,000 through implementation of some of the technical opportunities presented in the Action Plan.

The significant progress made at MEC was recently confirmed when a follow-up One-2-Five®Energy diagnostic was completed and the site had moved from a two star to a three star status (on the one through five scale) since the initial diagnostic in August 2004. The next set of critical actions defined by the follow-up diagnostic include further work on establishing key performance indicators and examining operating procedures from an energy management perspective.

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