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Letter to the Editor

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The question is sometimes raised as to whether manufacturing companies should be concerned with energy efficiency and even be committed to establishing and maintaining energy efficiency programs. When looking at the general financial landscape of an industrial company there are three main costs to be managed. These are raw materials, labor and energy. Managing the use of materials needed to produce a product is almost always done well because if this is not, the company cannot long exist. Companies naturally do a pretty good job managing labor. If there are not enough employees, production levels cannot be maintained. Being overstaffed typically does not occur for long periods of time. So, the last area where major cost savings are possible is energy. With rising prices for natural gas, oil, electricity and other energy sources ignoring energy management can deliver a major financial hit to the bottom line.

In a world where tracking and reducing carbon emissions is becoming the rule instead of the exception, managing energy use is the key factor. In Europe a metric ton (MT) of carbon has an actual value of between \$75 to \$100 per MT, US \$. The US does not currently have a carbon tax even though States like California and Washington and the northeastern states do have cap-and-trade programs. Generally speaking, the cost of carbon emissions, both in the US and Europe appear to be headed higher in the coming years. Any competent management team must have a plan to address this growing cost.

How should a company think about organizing its energy management activities? A good place to start is to research the energy management standard ISO-50001. This standard lays out in detail how to establish and run an effective energy management program. While many companies decide not to formally pursue obtaining ISO-50001 certification, studying the

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recommended structure and activities can lead to the implementation of an effective program. There is also ISO-50001 Ready, which is designed to get a company started in developing an energy management program along the lines of the full ISO-50001 standard. It is sometimes called ISO-50001 Light. This can be a good starting point. The US DOE and US EPA also have voluntary no cost programs to support energy efficiency programs.

After years of working with companies on energy management there are some important items that should not be ignored. Some of these will be listed and discussed. These are not necessarily in any particular order or order of importance. It is not meant to be an all-inclusive list.

- Upper Management must be committed and involved is the energy efficiency program. When an assessment or Treasure Hunt starts at a manufacturing facility having the plant manager or someone even higher up the corporate chain of command attend the kick-off meeting and say how important the activity is to the success of the company makes a world of difference. It sets a tone for the program and the event.
- Each plant should have an energy champion and a significant portion of their job be dedicated to running the energy program. You cannot just add this responsibility to someone who already has a full plate of responsibilities.
- Each plant should have an energy management committee made up of representatives from engineering, maintenance, accounting, health & safety and management. This committee must meet at least monthly to identify and promote potential efficiency projects, work for their implementation and discuss other energy-related issues.
- Plant representatives should have a relationship with the local utility and generating companies providing energy to the plant. Several times per year the plant should have their company representatives from the utility companies into the plant to discuss issues with the service and any programs the utility might have that could benefit the company. Somes there are rebate programs the company never knows about and fail to participate in. The utility rate structure should be thoroughly understood by multiple employees at the plant. Issues like electrical demand, power factor, time-of-use rates, interruptible rates, etc. must be thoroughly understood at the plant.
- The Energy Committee should run a suggestion/reward program for employees at the plant. A suggestion box should be established where all employees can suggest projects

or changes in procedures to save energy or make other improvements. Once or twice a year energy program should give an award for the best suggestion made during the last period of time. An annual award like a long weekend trip to a resort will keep the participation rate high.

- Give out tee shirts, hard hat stickers, etc. publicizing the program.
- Allocate a pool of funds annually to pay for energy efficiency projects.
- For multinational companies, if plants where there is no carbon tax must compete for funding for projects with plants located where there is a carbon tax, allow both to claim the value of reduced emissions at the same carbon value in payback calculations. If the plants without a carbon tax cannot include the carbon value in their calculations, they cannot compete with the other plants and will receive little or no support for energy projects.
- Annually, hold a corporate meeting of all the energy managers and teams where they can present about successful projects and spread the word so these ideas can be implemented across the company.
- Hire a corporate energy manager to communicate with all the plants to help organize and run the energy efficiency program.
- Have members of the most successful plant programs visit other plants to share their projects and other secrets of their success.
- Have weekly video meetings where ideas are exchanged, and plants make suggestions for each other.
- Encourage each plant to hold at least one energy Treasure Hunt each year. The first of these may require assistance from outside experienced personnel, but after one or two the plant can support this activity internally.
- Participate in US DOE energy conservation programs and utilize the resources DOE has to support the energy efficiency program.
- Apply for awards and recognition for the program's successes. Publicize the successes of the program.

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- "You cannot Manage what you do not Measure." Develop an ability to obtain the measurements necessary to accurately quantify savings for suggested energy saving projects.
- Plant managers should have energy performance as one of the deciding factors in determining the amount of their annual bonus. In fact, all employees who receive performance bonuses should have energy performance as one of the deciding criteria.

Establishing an energy management program with the characteristics mentioned above will foster an environment within the corporation where energy efficiency and environmental stewardship can flourish. New employees must be trained in how the program is organized and functions to assure it continues and grows into the future.

Author Biography

Dr. Glenn T. Cunningham has taught mechanical engineering courses at Tennessee Tech University since 1986 and is the former director of the Industrial Assessment Center, which has provided over 230 energy assessments for small to medium sized industries funded by the U.S. Department of Energy (DOE). Dr. Cunningham has been involved in performing assessments for over 35 years for a wide variety of clients. Dr. Cunningham holds the following licenses and certifications: Fellow of the American Society of Mechanical Engineers; Certified Practitioner in Energy Management Systems, and Registered Professional Engineer in Tennessee and Kentucky.

