

Successful energy management

Experience shows that energy management is successful when the energy is managed like a resource, i.e. continuously, systematically, and in an organized manner, not like an expense (e.g. worrying about and paying the bills once a month). This requires the development and implementation of an energy management program (EMP).

Following is a summary of guidelines for setting up a successful EMP, plant- or corporation-wide. The main driving forces of a successful EMP are: economic considerations and profitability; environmental consideration; and social considerations.

Energy cost savings are direct profit, going straight to the 'bottom line' of the financial statement. For a plant operating with 5% profit margin, \$100,000/yr energy savings means a profit equivalent to an increase of production and sales of \$2,000,000/yr. In addition, there will be the corresponding reduction of greenhouse gas (GHG) emissions.

The major barriers in developing and implementing a successful EMP include:

- Energy is not visible ("out of sight, out of mind")
- Energy is not a core business, thus, there is a lack of interest and resources for it
- Competition with other capital projects
- Energy may represent only a small part of the operating costs
- Lack of knowledge in respect to energy management
- "Do nothing," the biggest competitor

As a consequence, to be successful, the EMP must:

- Include an energy monitoring, control, and reporting system
- Be integrated into corporate plans
- Be visibly supported by the executive management
- Be led by an empowered energy manager
- Specific manageable tasks be assigned to people
- Plant people participate in and are responsible for energy management

The development and implementation of a successful EMP almost always includes three key elements: executive management commitment; set-up of the energy management team; and development and implementation of the action plan. The efforts should be focused on setting-up the infrastructure and on execution.

The infrastructure set-up includes:

- Obtain visible commitment of the executive management
- Obtain resources
- Set up the energy management team.
- Prepare the action plan for: energy analyses and training; and setting-up of communication channels, accountability, procedures, standards, and tools, energy usage monitoring, control, and reporting; etc.

The execution includes: do the energy analyses; implement the selected energy management opportunities (EMOs); do the training; monitor and report; review and take corrective actions; publicize; and repeat.

Energy management can be included in the engineering activity of consulting engineering companies. The development and implementation of managerial and engineering procedures for performing the engineering activity in respect to energy management ensures that whatever is being engineered includes viable energy management measures right from the beginning, when it is more cost effective to implement.

The author developed and implemented this type of engineering approach in two reputable consulting engineering companies—Hatch and H.G. Engineering. The approach seems to gain recognition, as at least one government is following it up (i.e. "The Energy Efficient Design" method developed by the Danish Energy Agency in collaboration with the Danish Association of Consulting Engineers). According to the Danish program, companies that are developing new facilities or modernizing/expanding existing ones can use the services of an energy review team to optimize the design in respect to energy efficiency. Typical reported energy savings of projects following this approach are in the range of 15% to 30%, and even up to 50%. With the ratification of the Kyoto accord, perhaps the Canadian government should also consider this or a similar approach to help in meeting our substantial commitment in reducing the greenhouse gases emissions.