

# A *New Way* to **Manage Energy**

Continuous improvement methodologies apply to energy issues

## BY DOUG BURGESS

**M**any large corporations have employed continuous improvement methodologies such as ISO 9000, Six Sigma, and ISO 14000 to improve customer satisfaction and wring costly inefficiencies out of their operations. In the view of many of these same companies, however, energy has remained a fixed cost, not susceptible to the same techniques that have proved effective company wide. Still forerunners that recognize energy costs and efficiency as integral to profitability are taking another look at applying continuous improvement to their energy operations. They presume that successful energy management must be more than conducting energy audits and doing a few retrofit projects. Energy management is being rediscovered as a management discipline, in which the well-understood business principles of continuous improvement (CI) can be applied.

The J.R. Simplot Company, a privately held food and agribusiness corporation based in Boise, ID, applied EnVINTA's One-2-Five program to its energy operations in the US. Simplot owns and operates many facilities in the U.S., Canada, China, Mexico, and Australia, employing more than 11,000 people. Simplot uses

numerous energy-intensive processes to turn out millions of pounds of french-fries and other potato products annually, as well as producing ammonia and other fertilizer products. "We

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believe the EnVINTA One-2-Five process helped us to identify attitudes and projects that could result in millions of dollars in savings for Simplot. Today's energy prices clearly serve to validate the EnVINTA methodology and make the adoption of this or a similar program by manufacturers imperative," said David Hawk, director, Simplot Energy Natural Resources.



Simplot's Caldwell facility identified a range of improvements including: implementing procedures, metering and monitoring etc

Traditionally, Simplot's energy department and its individual plant sites monitored and controlled energy use, with most cost-saving opportunities focused on production efficiency and corporate energy purchasing, areas in which the company took a very proactive approach.

Rising energy prices and increased exposure to energy efficiency and conservation approaches made Simplot anxious to effectively manage its energy use. In 2003, Simplot, therefore, elected to participate in a Northwest Energy Efficiency Alliance (NWEAA) demonstration program after being approached by the group. The program looked at changing business practices related to energy management in food processing and pulp and paper businesses located in Idaho, Montana, Oregon, and Washington. Simplot agreed to integrate EnVINTA's One-2-Five program consumption management strategy into its operations

to diagnose effectiveness of their business systems and practices associated with energy management, develop implementation strategies to take advantage of identified opportunities, and create real savings for one operational project at each facility. In return, NWEAA funded 50% of the implementation costs.

Simplot and One-2-Five made substantial progress in the ensuing nine months of the program, capturing energy-cost savings through improvements in operating procedures that required minimal capital investment. Because the One-2-Five program elicits company-wide involvement and support from upper management, leadership has funded many new savings projects identified by employees. So far, two of Simplot's sites have progressed from One-2-Five 'two-star' ratings to 'three-star' ratings, which are unusual in the U.S. food industry).

Hawk said that the company engineering departments have

been impressed with the concept and procedures associated with the One-2-Five program. Hawk says, "I am particularly enthusiastic about the way in which One-2-Five involves all plant personnel, provides an analysis of plant and corporate cultures and climates, allows us to create intra-company and industry benchmarks and the process through which One-2-Five helps us to implement a sustained energy conservation and efficiency program."

One-2-Five is now an active and on-going process for Simplot. The company has adopted a formal 'continuous improvement' process for energy across Simplot's entire food division and is confident of achieving significant savings across all plant sites.

In 1999, EnVINTA launched One-2-Five as a process to help companies to deliver their "quality system" for energy, similar to proven CI systems used by business to manage other issues. One-2-Five helps companies integrate energy management into their existing business infrastructure to effectively drive change.

Traditional approaches to energy management generally target the utilities engineer or energy manager who identifies technical equipment change-outs and perhaps applies utility rebates requiring little or no senior management approval. Companies using this technical energy audit

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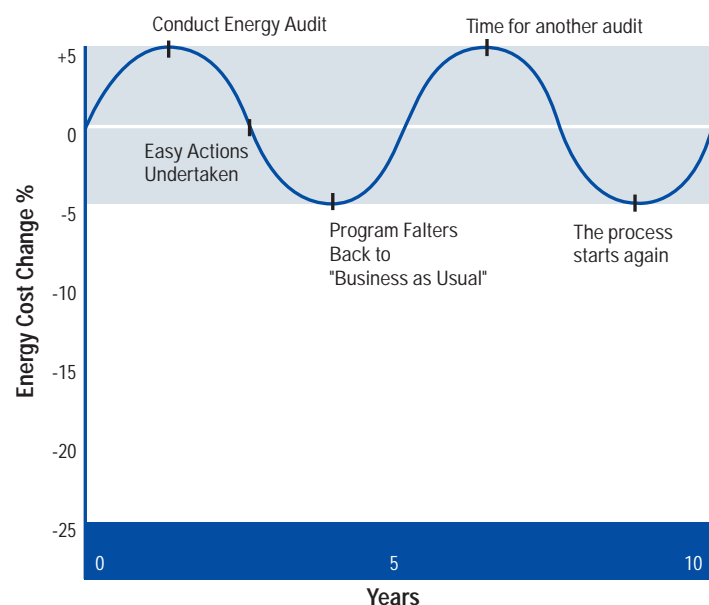


Figure 1. The traditional approach to energy management leads to unsustainable short-term savings.

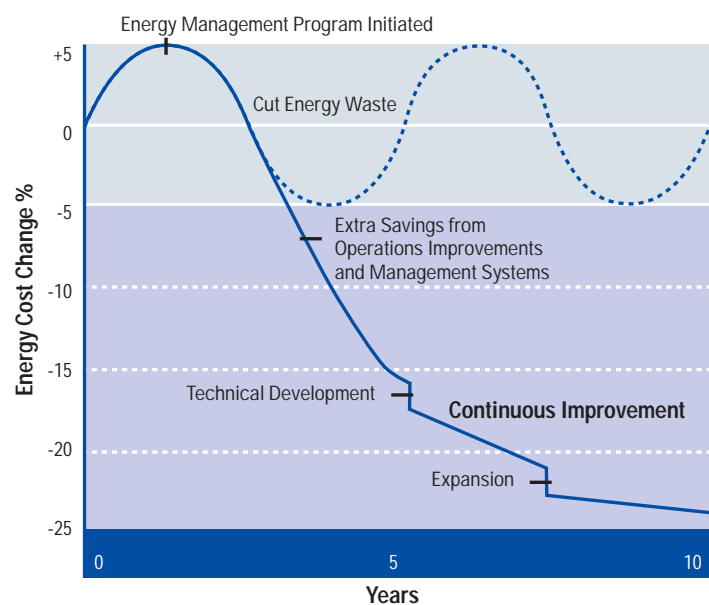


Figure 2. The One-2-Five approach to energy management yields continuous improvement.

approach generally experience an unsatisfactory ‘roller coaster’ result (see figure 1).

In contrast, companies initiate the One-2-Five process with a management diagnostic, in the process gaining senior management buy-in during an approximately two-hour session. A trained professional facilitates the session to engage senior representatives from cross-functional departments within the company or a major site. Addressing 20 total management issues in 10 topic areas, the process provides the company with a best practice rating from one to five stars (hence One-2-Five). Software employed during this initial session rates each

of the 20 management issues (plus two progress and achievements) on a five-step scale, and draws attention to the five most critical areas for improvement. For example, one topic examines leadership and within that topic, the company’s corporate commitment to energy will be evaluated.

The diagnostic leads the company’s management team through a series of yes/no statements at five levels of development for each management element. Based on the customer’s response to these questions, they are ranked for each of the 20 aspects tested. The One-2-Five software automatically conducts a gap-analysis to define which

elements where least progress has been made and combines this score with the customer’s priority weighting to come up with the top five priority areas for action. The definition of priorities is an important feature of One-2-Five as it helps managers to define critical next steps from the myriad of possible actions. It helps them understand that there is no point in implementing a comprehensive metering and monitoring system without assigning accountabilities so that the information gathered will be used. As a result One-2-Five is not just a scoring system, but also a process to help the company with their energy management planning, and which will generate an updated plan every 6-12 months when the process is repeated.

The diagnostic process also allows businesses to benchmark their energy practices against 1300 other sites and down to a four-digit SIC code.

One-2-Five helps companies own the CI energy management process and build internal competency. The CI process enables businesses to capture operations and maintenance savings. The process also provides companies with a long-term CI process that is integrated into formal business practices and culture. So, when new equipment is being purchased or new plants designed, energy efficiency becomes a key part of the purchasing and approval process (see figure 2).

All Simplot sites took part in the project and highlighted a demonstration project through One-2-Five to concentrate on. A team from the Aberdeen, Idaho, facility used One-2-Five to focus on operating practices as an area for improvement. Examination of dryer operations revealed significant opportunities for improvement. Traditionally, operations personnel focused solely on product quality and throughput. While this focus is certainly vital to the site’s success, these personnel appeared to have little real understanding of the impact of operational decisions on energy usage. The team’s analysis confirmed that substantial reduction in energy utilization could be achieved at no capital cost by adopting an

education and awareness-raising exercise. The exercise also led to updating of operating procedures and improved operational information tracking and compilation.

The team put the operations personnel through “Dryer School,” where they:

- Identified improvements to

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the standard operating procedures to allow tighter control on energy utilization

- Listed key parameters to be trended and displayed for operators
- Learned why energy management is important
- Saw ideal energy consumption of the dryers
- Examined current performance in energy utilization
- Evaluated the operating decisions that affect energy usage

The Caldwell, Idaho, team broadly recognized that additional focus on energy management initiatives would be required in order to maximize the effectiveness updating the boiler systems in their facility to incorporate low NOx burners. The site team commenced an evaluation of the opportunities available and undertook a series of group discussions and reviews, which identified a range of improvements for consideration, including:

- Instituting procedures to measure and trend boiler efficiency
- Increasing operator training and awareness
- Improving metering and monitoring
- Improving calibration procedures

- Adding improved boiler controls

As a result, Simplot could totally shut down one of the facility’s boilers with confidence that no disruption of site steam supply will result. Operators will attend additional sessions to reinforce practices, and the site team plans to expanding its focus to include the reticulation system and condensate return improvements.

“There are many ways that energy opportunities at individual plants can be found and addressed. However, One-2-Five is the most reasonably priced and comprehensive approach that goes from discussions straight to dollar savings. In truth, I would recommend One-2-Five as the first step for anyone with a manufacturing plant who wants to have a legitimate sustained energy management program” said Hawk.

In March 2004, after completing the initial steps of One-2-Five and evaluating the results of the NWEAA pilot, Simplot’s various company groups committed to an enhanced company-wide energy management program. The formal commitment includes

- Establishing committees to guide energy improvement projects
- Earmarking capital for energy improvement projects
- Implementing tracking mechanisms to set, measure, and compare performance indicators
- Installing additional targeted metering for plants and premises

Over the next 12 months, other Simplot sites should continue to advance in areas that may improve overall star ratings, with a corresponding decrease in energy use and cost.

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