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The 90/10 Rule: Energy Use Improvements at Prime Tanning

by Michael Kuhns

The obvious must be stated: for many older businesses in Maine, survival is becoming increasingly difficult. Energy management has become an especially crucial part of doing business, and now with the recent rapid rise in the cost of oil, energy conservation and/or reduction is vital. Adding to the energy picture is global climate change. To address these, it is imperative to involve the workforce, following what is termed the “90/10 rule.”

There are many common axioms that pervade the workplace. For example, there is one that states that “80 percent of the work gets done by 20 percent of the workers.” Another similar saying states that the source of an organization’s success is “90 percent people and culture and 10 percent technology and tools” (Vavra 2008)—the 90/10 rule mentioned earlier. That might seem counterintuitive in this high-tech digital age, but the following three examples demonstrate that it is the commitment and persistence of people that can help many older Maine businesses to increase energy efficiency, reduce carbon dioxide (CO₂) emissions, and even to simply survive.

Many people find that it is easier to keep doing what has been done rather than implementing change. This is human nature. For many years at Irving Tanning (now Prime Tanning), high-quality leather for shoes and handbags was manufactured in a system that heated water to the various temperatures needed for the process. That system generated a large quantity of heated water which was then stored until needed. It was extremely complicated, involving several heat exchangers, automatic valves, and long lengths of return piping. This was basically equivalent to a home hot water system

with a constantly heated tank, only on a much larger scale. From analysis of the system, it was clear that most of the heat used for the water was lost as radiant heat. To remedy this, the system needed to be converted to provide hot water on demand, eliminating the need to store large quantities of heated water.

A team of employees most familiar with the system was established in the fall of 2000. This team also included one employee who knew very little about the system. The team began to hold regular meetings to discuss what was known and what was unknown about the system. Information that was unknown was collected and discussed at the next meeting. Initially, the attitude among most participants was not helpful, with participants frequently mentioning that the current system worked and the new system would not be able to meet the needs of the process. The employee with little knowledge of the system kept asking why or why not. As this was done, the experienced members began to find solutions to what appeared to be technical roadblocks, and soon a complete solution for an on-demand system was configured and implemented. This was accomplished in the spring of 2001 by simply rearranging the existing facility components, not installation of new technologies. Technically it was easy, but attitudes needed to change. Once they had, something significant was accomplished. The new system had fewer components, was much simpler to operate and maintain, and saved roughly 35 percent on fuel oil. And this problem was solved by remembering the 90/10 rule and focusing on people.

Another project at the facility involved lighting in one particular building. Existing lighting was similar to that in most of the older businesses in Maine. There were several different types of lighting systems, which had not kept up with years of internally relocating equipment. Some areas had three or four different types of lights, and some of the fixtures uselessly illuminated the top sides of equipment. Furthermore, the leather products had to meet specific color requirements of the customer, but with all of the different lighting systems in the building, a piece of leather could take on different hues depending on where in the facility it was examined.

Working with Efficiency Maine in early 2004, we developed a project to determine actual illumination needs, increase energy efficiency with new lighting systems, and provide a consistent light spectrum throughout the facility. Again, the technology part was fairly easy as it was off-the-shelf equipment, but the project needed a constant push forward for three reasons: it required a significant outlay of capital; not everyone was convinced that it was needed; and many did not believe that significant savings could be realized by simply changing the lights. After several months of persistence and presentation of the analyses, the project was approved. After installation in the fall of 2004, all three goals were achieved, with greatly improved lighting quality, measurable monthly savings, and a consistent spectrum of light throughout the facility. This project was another good example of the 90/10 rule in action. Special thanks are due to the Efficiency Maine program staff. Without their help, this project might have never happened.

The last example of people being the primary driver for success involved finding a very low-tech solution to a low-tech energy problem. Because it is so low-tech, many building energy programs may overlook it. The problem is leaky buildings.

Older facilities in Maine are notorious for points of infiltration, in other words, for a variety of reasons, old buildings have holes. During the winter, warmed air flows out allowing the cold air in. The converse is true for summer. Both conditions cause energy inefficiency. The problem is that people look at each hole and think that each is too small to be of any consequence. However, with any building energy management program, it is very important to stop this type of infiltration. It is much more valuable than insulating, as radiant heat typically occurs more slowly than direct air flow in or out.

In August 2004, the solution came from a single person performing a simple exercise: quantifying the total area of all the holes. Since estimates were acceptable, this was a quick exercise. As older buildings can have a lot of holes, the area can reach significant levels quite quickly. One surveyed building, with all the holes added together, had the equivalent of a 12-foot-by-12-foot hole. The repair of these holes was usually simple,

ranging from fixing a broken window to replacing clapboard or caulking a crack, but the savings were immediate. Some of the holes were caused by employee behavior, such as leaving a door open or propping up a window and not closing them when going home for the weekend. This was technically easy with a simple solution, but attention was needed to get the issue noticed. A novel approach by an employee, not technology, has led to significant savings.

The above three projects reduced the annual energy costs of the company significantly. Some of the savings are quantifiable, others not, but it was estimated that there was a savings of about 30 percent of the total energy cost with a proportional reduction in CO₂ emissions. Without these reductions, this company, now Prime Tanning–Hartland, would probably not be operating today.

All three problems described were solved by people, not technology. At a minimum, the 90/10 rule was in play each time. Technology is certainly needed, but its importance should not be over emphasized. Conversely, people should never be overlooked as a resource. Be committed, be persistent, and work with those people available. These are the starting points for successfully reducing energy use and, therefore, reducing our dependence on fossil fuels. 🐟



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