Cool Companies

It's a State of Mind

Joseph Romm, former director of the U.S. DOE Office of Energy Efficiency and Renewable Energy, received extensive praise for writing his 1999 book *Cool Companies: How the Best Businesses Boost Profits and Productivity by Cutting Greenhouse Gas Emissions*. It's considered a classic today in conservation journalism by many, and for good reason. The lessons and strategies employed by leading "cool" companies to cut heat-trapping emissions by as much as 50 percent in their buildings and factories are as applicable today as they were nearly a decade ago.

While most of Romm's case studies come from Fortune 500 companies, his examples are applicable to healthcare engineering because what he really describes are paradigm shifts in the way leading companies think about energy. Take, for example, the simple notion of "low-hanging fruit". Are "obvious" energy-saving investments – those with the quickest payback or highest rates of return - ever exhaustible? Not to cool companies, they aren't. Energy improvement is continuous.

The Myth of Low-Hanging Fruit

To illustrate his point, Romm introduces us to the Louisiana Division of Dow Chemical, an ENERGY STAR Partner. With more than twenty plants employing some 2000 workers making chemicals such as ethylene, the division was incredibly successful at using pollution prevention to increase productivity. "You might have predicted," Romm writes, "that by 1982, after two major energy shocks, if any company in the country had captured the low-hanging fruit of energy savings, it would be one as energy intensive as a world-class chemical manufacturer." Nonetheless, the division's energy department began a yearly contest in 1982 to find energy-saving projects that paid for themselves in less than one year (an ROI of over 100 percent). Dow's success was stunning and completely changed everyone's mindset. Here is their record:

The first year had twenty-seven winners requiring a total capital investment of $1.7 million with an average ROI of 173 percent. After these projects were completed, skeptics inside Dow felt the game was over. They were wrong. In 1983, thirty-two winners were selected requiring a total capital investment of $2.2 million dollars and a 340 percent return, creating $7.5 million in savings the first year and every year after that. Even as fuel prices declined in the mid-1980s, the savings kept coming. As the contest continued, the winners increasingly achieved their economic gains through process redesign to improve production yield and capacity. By 1988, these productivity gains surpassed the energy gains. The average return for the 1989 contest was an astonishing 470 percent, the highest ever. That year, sixty-four projects costing $7.5 million saved Dow $37 million a year – a payback of eleven weeks.

Ten years of annual contests and nearly 700 projects later, was the well of ideas finally dry at Dow? Not at all – the contests in 1991, 1992, and 1993 each had more than one hundred winners with an average ROI of 300 percent. Savings from the projects of just these three years alone exceeded $75 million a year.

As Romm writes, "If Dow, with all its well-trained engineers and a systemic process for identifying opportunities, hasn't finished capturing all its energy-savings opportunities, how likely is it that your company has?"

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Why? Why? Why? Why? Why?

Frank Gilbreth, a U.S. efficiency expert at the turn of the 20th Century, argued for systematically determining the goals of work by repeatedly asking the question, *Why?*

Fifty years later, Taiichi Ohno took Gilbreth's management techniques to Japan and invented the just-in-time production system at Toyota. Ohno wrote, "To implement the Toyota production system in your own business, there must be total understanding of waste. Unless all sources of waste are detected and crushed, success will always be just a dream." Ohno recognized that finding waste was difficult work. He advised, "Underneath the 'cause' of a problem, the real cause is hidden. In every case, we must dig up the real cause by asking why, why, why, why, why."

Repeating Why Five Times

1. ***Why*** did the machine stop? There was an overload and the fuse blew.
2. ***Why*** was there an overload? The bearing was not sufficiently lubricated
3. ***Why*** was it not lubricated sufficiently? The lubrication pump was not pumping sufficiently
4. ***Why*** was it not pumping sufficiently? The shaft of the pump was worn and rattling.
5. ***Why*** was the shaft worn out? There was no strainer attached and metal scrap got in.

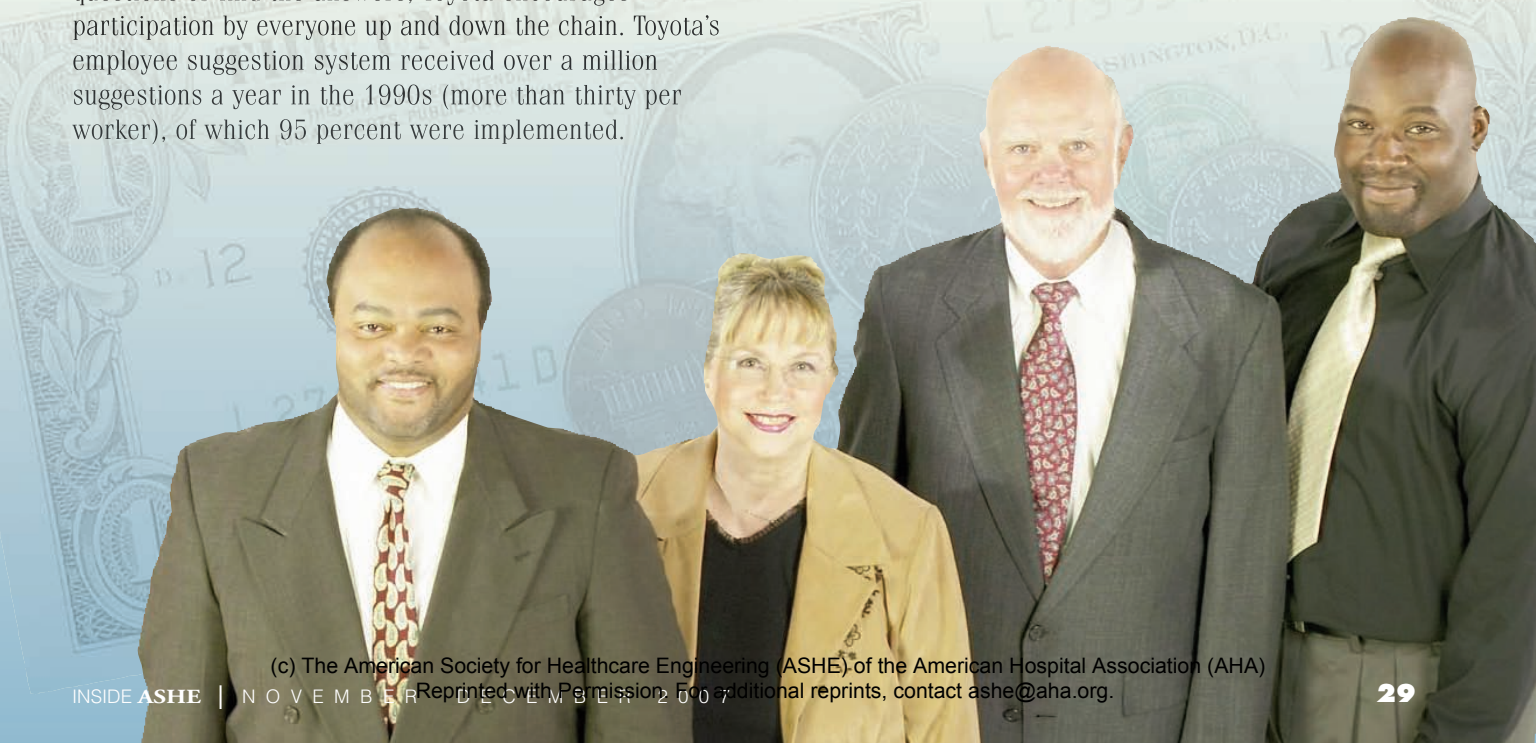
Since few managers are able to ask all the right questions or find the answers, Toyota encourages participation by everyone up and down the chain. Toyota's employee suggestion system received over a million suggestions a year in the 1990s (more than thirty per worker), of which 95 percent were implemented.

QUEST for Savings

Another ENERGY STAR Partner known for engaging employees to dramatically reduce its energy is InterfaceFLOR Inc., the world's largest manufacturer of commercial carpet. With the ultimate goal of becoming a "zero waste company", Interface believes it must harness the skills and experience of every employee to identify and reduce energy waste. Interface launched QUEST (Quality Utilizing Employee Suggestions and Teamwork) in every plant and division, with locations in the US, Australia, Canada, and the UK. From 1994 through 1998, QUEST teams cut costs by $76 million.

While Romm recounts many examples of worldwide success, the company's most astounding results may very well come from a small seventy employee plant in Canada. In 1995, Interface Flooring Systems (IFS) of Canada used 3.6 kWh of electricity and 0.6 cubic meters of natural gas to produce a square yard of carpet. By the end of 1998, it used only 1.7 kWh and 0.18 cubic meters. How did it manage to cut energy and carbon emissions by more than 50%?

The company's technical manager provided a six-part answer: 1) senior leadership "gave us tough emissions targets" and a "structure for action" 2) the company took an integrated approach to process redesign by making the technical manager in charge of *both* manufacturing and the environment. Consequently, there aren't two divisions fighting each other every time a decision is made 3) the company pursued *all* the standard energy savings measures – upgraded lighting, improved HVAC, improved motor and compressed



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air systems 4) eliminated a number of energy- and waste-intensive steps by combining printing into the tufting process (almost like embroidering their carpets). This redesign not only saved energy, it saved water, helping to reduce consumption from 120,000 gallons a month to about 10,000 – all within a year 5) Believing that what gets measured gets improved, IFS of Canada began tracking energy use per month; peak load per month; gas and electricity use per unit product; total BTUs per unit product; and other metrics.

The sixth reason cited is so unexpected and innovative, it's worth quoting directly. "[The technical manager] noted that when the company started its energy-saving efforts, employees were skeptical. He began to believe that "if employees do not see the benefits of energy conservation for themselves, we will not be successful as a company." So they began a program to educate employees about energy use and to help them reduce energy use *in their own homes*. The company circulated a memo offering to provide free audits and subsidized retrofits to employees interested in reducing home energy bills. Interface hired experts to check homes for heating loss, fix leaks, do caulking, and provide cost-benefit calculations for retrofits that required buying new materials, such as insulation for ducting and hot water heaters. Some employees saved as much as 20% of their energy bill, which was worth hundreds of dollars a year."

Leading Companies are Environmental Leaders

Interface, Toyota, and Dow – despite their amazing track record over the years – are not done with saving energy. (Dow for instance is committed to reducing energy intensity by 25% from 2005 to 2015.) To them, the fruit of savings are not high overhead on some imaginary tree, but on the ground, waiting to be discovered by employees who are engaged and rewarded for finding them. It's a state of mind that puts these companies on a continuous journey rather than one with a short-sighted "final" destination. And that state of mind pays off in dividends beyond what anyone could have imagined - for the company and for the environment. Now that's a pretty cool concept for hospitals to adopt anywhere. ASHE

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Healthcare Facilities that applied for and received the ENERGY STAR in 2007

Blount Memorial Hospital – Maryville, TN

Bronson Hospital, Bronson Healthcare Group – Kalamazoo, MI

Buffalo General Hospital, Kaleida Health – Buffalo, NY

The Christ Hospital, Cincinnati, OH

Franciscan Skemp Mayo Healthcare, Mayo Healthcare – LaCrosse, WI

John D. Dingell VA Medical Center, Department of Veterans Affairs – Detroit, MI

John L. McClellan Memorial Veterans Hospital, Department of Veterans Affairs – Little Rock, AK

Martinsburg VA Medical Center, Department of Veterans Affairs – Martinsburg, WV

Medical Place One, MetroNational Corp. – Houston, TX

Medical Plaza 3, MetroNational Corp. – Houston, TX

Memorial Hospital of Carbondale, Southern Illinois Healthcare – Carbondale, IL

Mercy Medical Center, Trinity Health Corporation – Dyersville, IA

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