Market-Driven Energy Efficiency

Building a facility and then retrofitting it to be more energy efficient has been a practice used in the refrigeration industry for years; however, some forward-thinking companies are planning for efficient facilities from the start, and as costs come down, more organizations are willing to spend more upfront to see returns in the long-term.

However, due to regional disparities in energy costs, more progress is being made in the Northeast United States, and less in the Pacific Northwest.

As with most industries, cost is king, but somewhat counterintuitively, energy efficiency hasn't been a primary consideration in the planning process of facility development.

"The driving force isn't so much on energy efficiency; what's really happening in the industry is that because the profits are so high, energy efficiency isn't thought about [as much as other factors as a cost-cutting measure] in the initial construction of a facility," said Jeremy Olberding, vice president of sales at Colmac Coil Manufacturing. More thought is given to first costs, capacity, throughput and how soon everything can be delivered. "All of those things are way more important than energy efficiency up front," he added.

Olberding likened it to building a house. An individual hires a contractor, and says they want to keep the costs below $400,000. The contractor delivers, and the home is built on budget, but once the family moves in, they realize their energy costs are higher than they would have liked them to be. "Then they say, 'I wish I would have put in solar panels, thicker walls or an energy-efficient furnace.' What's driving the energy-efficiency movement is people wanting to save money after the fact," he said.

It might seem backwards, but to understand this thought process, Olberding said it has to be thought of in the context of payback. "Most of these energy efficiency systems wouldn't meet a 12- 18- or even 24-month payback that other things in the plant would meet," he said.

Joe Fazzari, Colmac's vice president, added, "The payback is too long for [these systems] to make the cut [in the planning stage], but it eventually gets on the list."

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– Joe Fazzari, vice president, Colmac

However, as costs come down and environmental awareness mounts, some companies are making energy considerations and having conversations about energy efficiency before construction starts. "It's probably one-in-ten or one-in-twenty at this point," Fazzari said, "but that absolutely will increase in the future."

The change will be driven by market forces, Olberding said. "It has to pay back or improve product quality or improve safety," he said. "Energy bills are big, but it's one of the lower operational costs." In some cases, especially where energy costs are low, such as in the Pacific Northwest, some energy retrofits wouldn't even have a 10-year payback. If that's the case, Fazzari said it simply isn't feasible.

What is driving this in other places, such as the Northeast, Olberding said, is the last push in the form of utility incentives. "If a utility will put up x amount, and you'd save x on the energy bill, you combine those together, and now you have the money to spend on energy efficiency," he said, "It takes this type of formula."

There are examples of this currently happening, but only in certain parts of the country. "It's happening in the Northeast where the power is expensive, and they don't want to bring on additional demand," said Olberding. "They're working with facilities to do that work."

"For example, they'll pay a cold store to shut off their compressors during the day," Fazzari said. "They'll incentivize them to run the compressors at night, they'll get temperature down to minus-10 and let it creep back up to positive-10 during the day."

While this doesn't make the facility any more efficient, it does make the entire grid more efficient by not requiring the construction of additional capacity. "You're reducing your bill, and you're reducing the need to build a new power plant," Olberding said.

Operating under this type of model, Olberding said solar panels on cold-store facilities are starting to make more sense. "You're not going to get a two-year payback, but it's a tremendous ten-year payback," he said. "Because they're thermal batteries, you can be running that during the day when you get peak demand, you'll never have to sell energy back. You size the system so that it's running your compressors during the peak of the day, then it's a giant thermal battery all night."

Bidvest, a facility located in Perth, Australia, experimented with this concept and saw great successes, Fazzari said, adding that this could be the prototype of how some facilities can be constructed and run in the future. "We expect to see a lot more of this," he said.