Six ways to optimize a facility's energy consumption

Companies looking to improve their facility's energy efficiency should look at factors such as utilizing energy bills, conserving water, saving electricity through strategic placement, and other small, but helpful tips that go a long way to improving efficiency in many ways.

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Energy costs typically account for 30% of a facility's operating budget. That means nearly a third of all the money you funnel into your plant goes straight to the utility bill.

We already know about the popularity of green building and sustainable practices, but is it possible to go too green? In short, yes. Companies shouldn't go overboard so overboard on going green that they're overspending on unnecessary improvements, though.

So how do you achieve eco-friendly harmony? There are six factors that companies should assess for possible tune-ups.

1. Utilize utility bills

Analyzing utility usage year round can provide a comprehensive understanding of how your plant is using energy and water. The most efficient way to evaluate your efficiencies (or lack thereof) is to examine your bills over a 12-month period, so companies can identify trends and follow a plant's operations through all four seasons. Be sure to ask questions like:

- Are there energy spikes in some months versus others?
- Are there differences in operations during these times?
- Are there system inefficiencies?
- How is the plant being operated during these months?

Use this information to establish a baseline for your energy goals this year.

2. Assess the facility's thermal envelope

A building's thermal envelope is the outer shell that separates the conditioned interior of the building from the outside environment—everything from doors and windows to the ceiling and insulated wall panels. Weaknesses in the thermal envelope are one of the most common causes of energy inefficiencies.

Just as a tiny leak can sink a big ship, something as seemingly small as an improperly designed door opening can erase a significant portion of energy and utility efficiencies. But an airtight envelope isn't just important to reduce energy costs—it keeps out pollutants and helps prevent cross-contamination.

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There are several factors to consider when evaluating a plant's thermal envelope, including:

- Air or vapor leaks
- Frosting issues
- Ceiling and wall insulation.

Keep in mind, facilities gain the most heat through their walls and ceilings, so the quality of the insulation and the materials that make up the building's envelope impact how well mechanical systems work as well as refrigeration and electrical efficiency.

3. Identify ways to conserve water

Between processing and sanitation, food plants use a lot of water. Especially with the rising cost of water and sewer fees, conserving water is more important than ever.

Obviously, small flaws like leaking water hoses or leaking pipes are quick fixes that can go a long way. However, adjusting processing can often yield some of the greatest results.

Most water loss occurs during the sanitation process. Examine your cleaning practices and look for optimization opportunities such as reuse systems that treat water from waste streams and reuse it for non-potable applications in the plant. These modifications and flow restrictions can greatly reduce the amount of water used and lost during washdowns.

4. Save electricity through strategic placements

Consider the location of equipment. Where equipment is placed can greatly affect its lifespan. For example, locating electrical equipment either in production spaces or adjacent areas with little protection typically results in failure at one point or another. Is equipment located in wet-type process areas with heavy washdown requirements? What about dry, dusty areas of your plant? Failing to maintain all your equipment could be very costly if a process line—or the entire plant—has to shut down for a period of time.

5. Optimize lighting

Lighting can sometimes be taken for granted. We turn them on and off every day, but when was the last time you took a light reading of your entire plant?

When looking for optimizations, be mindful that certain fixtures are a better fit for certain areas of your facility. For example, LED is ideal for warehouses and processing areas, while cheaper fluorescent is best for employee areas and packaging. Consider the age of the lighting system, placement, controls and light levels.

Don't forsake safety in the name of energy efficiency, though. The Occupational Safety and Health Administration (OSHA) has a minimum requirement on lighting. Companies looking to save on electricity still must ensure lighting levels comply with regulations.

6. Don't overwork your refrigeration

Industrial refrigeration systems can account for up to 60% of a manufacturing facility's total energy expense. Oftentimes, refrigeration systems are unnecessarily running at full capacity. All aspects of refrigeration equipment can affect a refrigeration system, including:

- Proper equipment selection
- Proper system setup
- Maintenance
- Strategic variable frequency drive (VFD) application
- Correct control system programming.

Companies can reduce the temperature in your refrigeration room—and thus, reap energy savings—by improving lights and engines, installing proper doors and facilitating minimal foot traffic. Don't forget to inspect the air handling units on your roof. It's expensive to cool, filter, and dehumidify outside air, so don't overwork the systems.

Evaluating all of these facets across your facility can be overwhelming, and an outside perspective can help. A comprehensive facility assessment can help you walk through each step to discover optimizations that save you money, mitigate risks, improve return on investment (ROI) and build the business.

-Todd Allsup is the vice president of food and beverage facilities at Stellar. This article originally appeared on Stellar Food for Thought. Stellar is a CFE Media content partner.