

Eric Bliss, Energy Conservation – A Key Ingredient in Making Chocolate (Speaker #7)

Tuesday, April 14, 2015 9:45 a.m.

Questions

1. Who should be on an energy team?

Anyone can participate. Team members should be familiar with the operation and be among your top performers and top influencers in order to have the best chance for success. Typical roles on the team are Lead, Data Champion, Scribe (takes meeting notes and distributes communications), and Awareness Champion (organizes promotional and educational events). I'd suggest also having broad representation from your organization for breadth of experience and viewpoints.

2. You mentioned a new substation – was that to replace an old inefficient sub or due to increased demand? Should older subs (more than 50 years) be replaced?

Electrical equipment does wear out. The new unit did replace an old one that showed signs of impending failure from its preventive maintenance testing. If your substation is 50 years old, I would strongly recommend a full condition assessment to make sure it's still reliable. Having said that, replacement will not significantly affect your energy efficiency. It will however, give you an opportunity to implement sub-meters that cost relatively less than retrofitting the existing gear.

3. Demand response – if you do this don't you also pay a lower kw/hr rate? Not just granular data?

Some utilities offer a modified tariff structure for curtailment-eligible service. Demand Response (DR) is different and does not affect your tariff structure as it is managed through a DR aggregator independent of the utility. Note that the DR programs vary throughout the country.

4. If compressed air is the number one opportunity for savings, what would the number two area be?

There are a few choices that may be your number two. Lighting is often an opportunity. Upgrading lights also reduces your replacement costs as LEDs last as long as 25 years. Another opportunity is lubrication and alignment. Not only do you increase machine life, you also reduce motor load by having proper lubrication and alignment. A third may be your combustion devices (boilers and dryers and roasters). If you have extensive steam usage, monitor your steam traps and make sure they are operating properly. Finally, Variable Frequency Drives (VFDs) are a great way to reduce motor speed and therefore power consumption.

5. How is power priced? Is the source of the power considered: nuclear, solar, gas, coal etc.? Are some states less expensive than others?

There are literally thousands of tariff structures for power throughout the country. Some states

are certainly less than others. The source of the power is usually up to the end user; the power generation is deregulated and the pricing is extremely complex. Regardless you do have a choice on the source, which absolutely affects the price.

6. Can you supply details of data loggers: brands, availability, cost, how to install and downtime to install?

I would recommend doing a web search for data loggers. There are many different types and features. Installation is typically fairly easy but depends on the type and the features.

7. Have you considered making your own power? There was a time when I heard a lot about this, but not so much lately...why?

There are several ways to generate your own power – some utilities and states even promote self-generation or distributed generation with financial incentives. All require a significant capital investment. The economics are dependent on the difference between the cost of electricity vs. the cost of the alternate fuel source. There are still many areas that have a sizable cost difference where the self-generation paybacks are around 6 – 9 years.

8. How many BTUs does it take to turn the lights on in Yankee Stadium?

I can only guess so here goes: The typical field light is 750 – 1,500W. The Yankees advertise that they use high-efficiency lights so let's say theirs are 700W each. Based on pictures of Yankee Stadium, they have approximately 50 banks of approximately 40 lights. That all adds up to about 1.4MW, or about the same as a mid-sized candy factory. Check your favorite team's web site; chances are they have a sustainability program that includes energy efficiency.

9. Turning off machinery saves money, but is it ever less efficient to shut off machines due to energy required to "heat up" the machine again? What would you recommend to win a debate with production management on this discussion?

Yes, it can be more costly to shut down equipment than to leave it running, especially if there are heat-up requirements. The debate can be resolved by calculating the energy needed to heat up the process and compare it to the energy needed to keep the process going. A third possibility is to consider an idle state that uses less energy but take less time to recover.

10. Has understanding your costs per product type affected your product mix or sales priorities?

That's not likely because the energy component of the unit cost for most foods is relatively low compared to the raw materials and labor components. On the other hand, knowing your energy intensity for a given product helps you manage your pricing and margins better.

11. What does "sustainable" mean?

It has various meanings depending on the context. Usually in the context of energy, sustainable means that the energy source is renewable, such as solar, wind or geothermal, rather than a source that is consumed such as fossil fuel or nuclear.