Facilitator — June/July 2014

Change Language: Choose

**COLD CASH**
*James O'Neill*

Three easy ways to increase refrigeration efficiency

From walk-ins to reach-ins to refrigerated trucks, there are several simple measures that any restaurant can implement today to make their refrigeration systems run more efficiently, reduce their operating costs and increase their lifespan.

We live in an age where LED lighting and other complex energy saving projects are considered a must by many facility managers. However, for the typical restaurant, refrigeration systems can represent 20 percent of the total energy bill and lag far behind other areas when it comes to modernization. There are many medium to long-term efficiency projects that can be implemented to achieve these same goals, such as installing variable-speed drives and replacing standard compressors with newer high-efficiency models. However, a few painless projects can be implemented today, without disrupting operations or negatively affecting the customer experience, to make an immediate impact on the bottom line.

1. Upgrade from air conditioners to food conditioners
The only job of a refrigeration system is to maintain stable product temperatures. Unfortunately, for the last 150 years, there has been no fundamental change in the control technology that refrigeration systems use to make their start and stop decisions.

Most modern refrigeration systems are still essentially air conditioners encased in a cabinet. The stock refrigeration controls on these systems just measure changes to air temperature and tell the compressor, based on how the air temperature reading compares to the system set points, when the compressor should turn on and off. This creates inefficiencies like short cycling, as well as false positives (premature on cycles) and negatives (premature off cycles).

Even more concerning, the difference between air temperature and product temperature can be 20 degrees or more, so most systems simply have no idea how well they are doing at their one simple job of maintaining safe product temperatures.

In a major recent market shift, a growing number of companies are upgrading their air temperature controls to food temperature controls. Companies now understand that it is a necessity, both from a corporate responsibility standpoint and to limit liability, to start using product temperature as the control data for regulating the systems' decision making. Since product temperature changes much more smoothly and gradually than air temperature, compressors will start and stop about half as often compared to when they react to the volatile air temperature changes.

Bottom line: With a simple, zero-downtime upgrade of your thermostat controls, your restaurant can receive substantial energy savings, increase food safety and significantly extend the life of the equipment, with most upgrades paying for themselves in under two years.

2. Perform semi-annual systems audits and compressor/fan clean-outs
It is a simple fact that well-maintained refrigeration systems use less energy. Poor maintenance can increase condensing temperature or reduce evaporating temperature. At least twice per year, undertake an audit of your refrigeration systems:

• Check all doors to make sure they close properly.
• Check for and remove icing on the evaporator coils.
• If you have air curtains installed on your walk-ins, make sure there are no gaps that would cause more cold air to escape during door openings.
• Reorganize stock if needed to prevent air flow blockage and leave enough room for the air to circulate.
• Clean out compressor motor and fans to remove dust, grease or other debris to maximize air flow. In addition to consuming less energy, this will also help extend the life of the motors.

Bottom line: Scheduling this regular audit and clean-out once every six months can produce up to 10 percent energy savings and significantly extend the life of the equipment.

3. Manage the complete lifecycle of your refrigeration systems by implementing asset tracking and total cost of ownership measurement
Keep track of repairs, maintenance costs and depreciation at a granular level by barcoding your refrigeration equipment. When each new equipment installation, replacement, service call or general maintenance is performed, the barcodes are scanned and imported into a central software database to track these assets in real time.

• Perform a site survey at each location to determine how many systems need to be tracked and measured.
• Develop a technology plan to determine which system will be used to collect and analyze the data.
• Educate in-house maintenance staff and outside contractors on the new process for scanning the barcode each time they work on a system, whether for preventive maintenance, repair or upgrade.

Bottom line: A simple asset-tracking process will help reduce labor costs, track repairs and upgrades efficiently and provide increased visibility across the organization on equipment performance.

Companies that implement all three programs can expect a reduction in cold chain operating costs. For most chains, this amounts to a minimum of $1,500 per site per year that is recoverable without any downtime or the need to replace any existing equipment.

James O'Neill is the Director of Implementation at eTemp, LLC, and is responsible for managing energy-saving project rollouts worldwide.

VIEW ALL ARTICLES