

Example Misapplications of Energy-Efficient Technologies

When designing or upgrading facilities, equipment, systems or processes that can significantly impact energy performance, it is important that close attention be paid to how new energy-efficient technology is specified, applied and used in order to avoid misapplications. Installation of “energy-efficient” equipment does not ensure improved efficiency if the retrofit is not properly specified. And, no energy efficient technology will capture savings when installed or programmed incorrectly.

As an example, consider energy efficient AC induction motors. Premium efficiency motors are manufactured using high quality materials to reduce losses, and they consistently demonstrate efficiency improvements of 2 to 5 percent over standard motors. A downside of improved efficiency is that in most cases energy-efficient motors operate at higher speeds than standard motors. This presents a problem in centrifugal device applications such as pumps and fans because higher speed corresponds to higher energy consumption. When replacing standard motors with energy-efficient motors in centrifugal applications, ensure that the replacement motor has the same rated speed as the original, or increased energy consumption will result.

Another example related to improper installation of energy-efficient technology concerns air-side economizers. Air-side economizers are a common approach to energy savings in new or retrofit facilities. The economizer is a set of outside air dampers that is controlled to bring in outside air when its temperature is below that of the return air. While this technology is a proven method to reduce cooling costs in buildings, a recent survey by the California Energy Commission (CEC) found that almost 70% of the installed airside economizers were not functioning correctly and, consequently, not saving energy. Misapplications discovered included dampers not connected to actuators so they would not open, and improperly programmed controls that fail to open the dampers when the outside conditions are cool enough. These installation errors should be identified and corrected during construction.