

McDonald's save 50% on fan power with ABB standard drive for HVAC



McDonald's restaurants throughout the UK are using ABB standard drives for HVAC to save energy and control cooking odors.

McDonald's was updating cooking equipment in a number of its restaurants across the UK. During the project McDonald's realized it could reduce its carbon footprint by making large fans run more slowly.

The company decided to use a low voltage AC drive to achieve the slower fan control. Among its criteria was a branded drive that had shown itself to be reliable and that once fitted needed no further attention.

There was also a problem affecting the operation of cooking equipment in the kitchen. In order to contain cooking odors within the kitchen area, McDonald's aims to supply 85 percent of the air extracted through air conditioning plant. High extraction rates were creating an imbalance that meant

whenever an external door or window was opened, there was a rush of cold air into the kitchen. This affected the energy consumption of the equipment as it attempted to maintain the cooking temperature. It also meant the air conditioning was working harder to maintain a comfortable temperature.

Overall, the company was hoping to see 40 percent energy savings and, through the soft-start feature of the AC drive, less wear and tear on the fan.

Fan control in real-time

ABB Drives Alliance partner, Inverter Drive Systems (IDS) were asked to look at the application and come up with the correct AC drive.



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Case notes

IDS' solution was a 5.5 kW ABB standard drive for HVAC (Heating, Ventilation, Air Conditioning). Using the drive's real-time clock, IDS made the fans run at full speed over the busy periods and at 80 percent speed at other times. On some installations, a boost button allows the fan to be speeded up to its full extraction speed if needed.

Customer expectation exceeded

The installation of the ABB standard drive resulted in a 50 percent saving in energy, exceeding the customer's expectation. The saving was even greater in locations that had oversized fan motors from the 1980's.

Another major benefit is the reduced fan noise that the ABB drive allows, particularly important to McDonald's at night. Reducing the fan speed also cures the problems caused by the imbalanced air flow.

The application design required no involvement from the restaurant management team. The retrofit work was fitted in around the busy times in the restaurant to avoid disruption. The fan would normally be fitted on one day and changed over in a quiet time the following day.

Solved problems

- High energy consumption
- Imbalanced air flow causing problems in cooking area

Solution

- 5.5 kW ABB standard drive for HVAC set to run at full speed over the busy periods and at 80 percent speed at other times



The ABB standard drive for HVAC features an inbuilt real-time clock which helps the fans run at full speed over the busy periods and at 80 percent speed at other times. All information can be viewed through the drive's control panel.

Benefits

- 50 percent energy saving, exceeding customer expectations
- Cure for imbalanced air flow
- Reduced noise
- No involvement needed from restaurant management



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