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ABB variable speed drives ensure clean air at Q-Park car park

ABB standard drives for HVAC are providing greater fan control for the system providing ventilation and fire safety for a new car park in Sheffield. The Q-Park car park on Rockingham Street has space for 531 cars over six floors. To ventilate the car park of carbon monoxide and ensure that smoke can be vented in the event of fire, four fans are installed on the main car park ground floor. Two fans are used for air movement within the car park and two for extraction, driven by two 1.5kW and two 4.8 kW ABB standard drives for HVAC respectively.

The fans and drives were installed by PSB UK Ltd, a company specialising in the smoke ventilation of public and commercial buildings. Tim Haigh, Operations Manager of PSB, says: "One part of the system is designed to monitor the carbon monoxide levels in the car park and initiate ventilation when the level rises above recommended levels via an independent control panel providing three, six, or ten air changes an hour, depending on conditions."

Depending on the number of air changes needed, the drives run at 25, 30, 50, 60 or 100 percent speed.

"The variable-speed drives are vital for this as we could not achieve the air changes we need using a two speed system," says Haigh. "As well as the energy saving benefits of only running the ventilation when we need it, the drives also have the advantage of soft start, so that the fan motors do not draw a large current on start up."

The other major function of the ABB drives is driving the fans providing smoke extraction in the event of a fire. In a single level car park, a normal level of air extraction might be six changes an hour, rising to 10 changes an hour in the event of a fire, with the drive running at full speed. Car parks such as the Rockingham Street car park, six air changes an hour would need to be doubled to 12 changes if a fire broke out. This is beyond design specification and inefficient resulting in wasted energy and more expense in its initial build.

To ensure the fans do not shut down, the ABB drives are equipped with a built-in 'run to destruct' function in the drive software. With this activated, the drive will run the extraction at full speed, ignoring any alarms or other commands. "It's a vital safety feature, unique to ABB drives," says Haigh. "If we used other suppliers' drives, we would need to add extra hardware to get that function."

Another feature of the ABB drives which Haigh finds useful is the Modbus communications facility that comes as standard with the drive. "This is far better than using communications based on laying wires and relays between components of the system. Installation is much easier and there is less to go wrong," says Haigh.

ABB is PSB's preferred supplier of low voltage AC drives. PSB uses the drives on all of its projects throughout the UK. "ABB is a well-known brand," says Haigh. "We have used others but we find ABB supplies a robust reliable and quality product which ideally suits our requirements"

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Caption: ABB standard drives for HVAC are providing greater fan control for the system providing ventilation and fire safety for a new car park in Sheffield.

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