
WARRINGTON, UK, JULY 16, 2014

Car park ventilation system gets ABB drives make over

The NCP car park in Drury Lane, Covent Garden, has been refurbished with variable-speed drives (VSDs) from ABB, giving better control of the ventilation system and more energy efficiency. The car park, which offers 330 parking spaces, is sited in the heart of London's West End under the New London Theatre.

NCP wanted to modernise the car park's ventilation system to make it suitable to meet current demand in terms of efficiency whilst at the same time achieving significant energy savings.

George Murphy, Building Services Engineer – South for NCP says: "The car park is used at predictable times, with business from commuters during the day and theatre goers during the evening. We wanted a system which would proportionally control the ventilation dynamics in response to the actual vehicle movements within the car park whilst maintaining adequate statutory environmental conditions. This step change has also resulted in reduced wear and tear on the ventilation system.

The fume extraction ventilation system consists of two centrifugal extraction fans located in a common plenum chamber through the theatre chiller room and two axial supply fans in the corridor area of an adjoining restaurant. Both sets of fans are operated in duty, standby configuration.

NCP asked ABB HVAC partner Drive Control to look at how the system could be improved.

Jez Wyant of Drive Control says: "One of the challenges was the limited access available, as some switch boards and cabling are located in areas within the theatre itself and the adjoining restaurant."

Drive Control recommended using four ABB HVAC drives. Two 37 kW drives were used for the fume extract fans, while two 22 kW drives were used for the supply fans. All were rated at IP54.

The two extract fans are supplied with separate mains power from a new junction box installed outside the plenum chamber in the chiller room. To simplify the project, much of the original cabling and some original switches were retained.

A single phase 220 V supply is also taken from this junction box via 2 A MCBs. This supply is switched using a relay inside the duty VSD to the motorised damper, operated by an internal timer in the VSD.

Once the damper has opened, a start command is then sent to the VSD. A carbon monoxide (CO) sensor is installed adjacent to each VSD. This detects the CO level in the plenum chamber and sets the speed of the drive proportional to the CO level, with 50 ppm being 25 Hz and 100 ppm being 50 Hz. If the detected CO is below this level, the duty fan will operate at a fixed frequency of 20 Hz.

A 4-20 mA frequency dependant control signal is derived from each VSD running the extract fans. These signals are transmitted via the original cables to the new junction box and from there again via existing cables to the supply fan VSDs. Firstly the signal is used to operate a supervision relay to start the VSD via the digital input. This signal is also used to tell the VSD how fast to run to match the extract fan speed.

The supply fans are driven by two old 19 kW class E motors, requiring the installation of output side filters to the VSDs to reduce the possibility of motor winding damage.

The project was part of a rolling program that has seen Drive Control refurbish 25 NCP car parks so far, with more planned for the near future.

ABB (ABBN: SIX Swiss Ex) is a pioneering technology leader in power grids, electrification products, industrial automation and robotics and motion, serving customers in utilities, industry and transport & infrastructure globally. Continuing a history of innovation spanning more than 130 years, ABB today is writing the future of industrial digitalization with two clear value propositions: bringing electricity from any power plant to any plug and automating industries from natural resources to finished products. As title partner in ABB Formula E, the fully electric international FIA motorsport class, ABB is pushing the boundaries of e-mobility to contribute to a sustainable future. ABB operates in more than 100 countries with about 147,000 employees. www.abb.com



Caption: The NCP car park Drury Lane has been refurbished with variable-speed drives from ABB.

—
For more information please contact:
Layla Hewitt
Marketing Communications
Phone: 01925 741517
Email: layla.hewitt@gb.abb.com

ABB Ltd.
Daresbury Park
Daresbury
Warrington WA4 4BT

Emma Jenkinson
Armitage Communications
Phone 020 8667 2218
Email: emma.jenkinson@armitage-comms.co.uk