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Bristol Airport upgrades air conditioning and improves efficiency with ABB drives

Bristol Airport has ensured its air handling units (AHUs) continue to provide good service by replacing ageing variable speed drives (VSDs) with new units from ABB.

Steve Cox, Engineering and Maintenance Manager for Bristol Airport, explains: “Our previous VSDs were 12 years old and were getting to the point where they may be unreliable. Although we had no problems with breakdowns, to improve reliability we decided to be proactive and replace them with more modern and efficient units.” The AHUs provide heating and cooling to the terminal building.

Replacing the existing drives would also allow the airport to take advantage of the latest fault-finding features of modern drives, such as those offered by ABB. Says Cox: “In particular, we were interested in the functions that modern drives have, giving us more control over their operation. The load monitoring function is very useful, as if a belt fails, the load will change, causing an alarm to be raised. This is quicker than trying to determine the fault through inspection.

“Also, we recently had a new BMS (building management system) installed. The ability to link drives to the BMS and send alarms to engineers also ensures we can identify and resolve faults quickly.”

The airport assessed VSDs from two vendors. “We performed two trials with a VSD and motor, one from ABB and one from a competitor. Our engineers preferred ABB’s solution,” says Cox. “Our engineers thought the ABB drive was easier to interact with and to program, as it had very logical, user-friendly menus that made for easy navigation and fault finding. It was easy to find the functions we needed without getting lost in sub-menus.

“When setting up, it was easy to program one drive and then copy the settings across to another drive, simply by moving the plug-in control unit from one drive to another.”

The complete installation uses 12 ABB HVAC drives to run six AHUs. Situated in the basement airside, two are 15 kW on units used for air intake only. Five are 22 kW for air intake and the other five are of 18.5 kW for air extraction.

Although energy saving is not a priority for this application, the drives have the ability to operate the AHU motors at varying speeds at different times of the day to match actual demand. The real-time clock allows them to be operated at full speed at 06:00 when the airport is starting to get busier and ramp the motors down to 30 Hz at midnight when there is less activity.

Carl Turbitt of ABB says: “We took time to discuss their requirements and to provide the technical support they needed. Part of this involved training including running hands-on sessions for their engineers to show them what the ABB drives can do.”

Says Cox: “ABB provided just the support we needed, leaving us a demo drive so that all our engineers could have hands on experience. When it came to installing the drives, they were on site to show our engineers how to set the drives up and transfer parameters from the old drives to the new.”

ABB's authorised value provider network was also of interest to the airport. "ABB can support us through two local partner companies, APDS and Drive Control, if any major fault occurs," says Cox.

Bristol Airport has so far installed and commissioned two of the drives with the help of ABB staff and plans to use several others in AHUs in other buildings around the airport. "We now standardise on ABB drives," adds Cox, "and specify to pump and fan suppliers that they should use ABB drives wherever possible."

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Caption: Bristol Airport upgrades air conditioning and improves efficiency with ABB variable speed drives.

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