

ABB drives ensure total coverage for vehicle wash systems



PDQ's new LaserWash M5 is driven by three motors, all of which are controlled by a single ABB machinery drive.

PDQ is the world's largest manufacturer of touch free vehicle wash systems. Based in Wisconsin, USA, the company invented a robotic arch that closely follows the contours and shape of any vehicle.

The company produces two products, the LaserWash4000 and the LaserWash M5. Both are based on a three-axis movement that ensures water gets to all parts of the exterior of the vehicle. The three components allowing this movement are the bridge, the trolley and the arch. The bridge moves from the front to the back of the vehicle. The trolley is mounted on the bridge and sprays a column of water to left and right. The arch rotates in a 90-degree axis, ensuring that water is sprayed at the vehicle at all times throughout the cycle.

Each of these components needs to move together in a precise way to ensure trouble-free, effective operation. They are driven by three motors, all of which are controlled by a single ABB machinery drive. The drive is responsible for ensuring that each motor runs for a specific time during the wash cycle. Two sets of parameters are programmed into the drive: one for the bridge motor and one for the trolley and arch.

Automatic vehicle washes are expected to run continuously, so it was vital to PDQ that it had a drive that did not require manual resetting. "If we ever have a problem, the last thing we want is for the drive not to reset automatically," says Mark Vickman, electrical retailer at PDQ. "One of the key features that ABB provides for us is the auto-reset function."

As many vehicle washes are sited in remote locations, productivity and profit can be lost if a technician has to be called out to reset the drive. One of the key features of the ABB drives is that they can reset themselves automatically without manual override.

"If something happened, where the car wash needed to be closed, and it took six hours before a technician to get there, that would work against the metrics with our clients," says Vickman.

Operation in extreme climates is essential for PDQ, as its customer sites can be in places where the drive is exposed to direct sun on the cabinet. Other sites can experience temperatures as low as minus 20 degrees. "We have been impressed in how the ABB drives handle environmental extremes," says

Ken Dollhopf, vice president of research and development at PDQ. “The thermal qualities of the drive – how it dissipates heat and cold – have allowed us to operate efficiently in these areas.”

Resistance to voltage fluctuations is also a characteristic of the drives that PDQ finds useful.

“In a commercial setting, our car wash may be right next to a big mall. When they turn the lights on at night, the voltage drops from 220 V, down to 188 V in no time,” says Dollhopf. “We need a drive that is able to handle a large range of voltage fluctuations and ride through those.”

PDQ finds that by using a 220 V, single phase input to the drive, it can connect three-phase motors at any frequency, making the car washes easier to produce for global markets.

“As long as ABB remains on the cutting edge of drive technology, they will always be considered in any of our new projects,” says Dollhopf.



Mark Vickman demonstrates a test for the ABB machinery drive.

Challenge

- Need to control three motors to give three-axis movement and hence complete coverage of vehicle

Solution

- Three motors are controlled by a single ABB machinery drive
- Drive ensures each motor runs for a specific time during the wash cycle
- Two sets of parameters are programmed into the drive: one for the bridge motor and one for the trolley and arch.

Benefits

- Plug and play operation for easy integration with car wash
- Resistant to extremes of temperature and voltage fluctuations
- Can be connected to three-phase motors at any frequency

