

Drive technology advances elevator system



A set of lifts in the 14 storey Peel House building in Manchester have been refurbished using a pioneering control technology that is simpler and more effective than conventional approaches.

“The refurbishment had become urgent,” explains John Bentley, managing director of Manchester-based ANSA Elevators, “so the client approached us, knowing of our reputation for a fast turn-around.”

Bentley approached Lifteknik, a controller manufacturer of Mold in Flintshire, who offered a direct-to-floor system based on Control Techniques’ Unidrive SP.

Previously, in the independent lift suppliers market, the norm has been a ‘creep-to-floor’ control profile, where a series of shaft encoders return position signals to the controller, indicating when to slow to creep speed (typically a drop from 2 m/s down to 0.5 m/s). The creep speed is anything up to about 4 seconds, when a second signal from a shaft encoder initiates a ramp to stop, which is based on time.

By contrast, a direct-to-floor profile uses a drive in speed mode which is changed to position mode (essentially servo control), initiated by correction sensors located, in this case, 430 mm above and below each floor. Any error in position is corrected constantly, giving high accuracy, reduced floor-to-floor times and a high quality smooth ride.

“This is only part of the story,” adds John Bentley. “Conventional thinking has dictated that gearless lift systems, which don’t have the benefit of geared ratios to improve a drive’s effective response, need to have a load weighing device to provide the lift controller or variable speed drive with an analogue signal as a torque feed forward signal. (In other words, most drives are too slow!). We have found that, with

Control Techniques Unidrive SP drives, the response is so fast and accurate that the load-weighing device is redundant. Add to that the savings on sensors and it all adds up to a lower cost system that’s quicker and easier to install – but giving high-end performance. It’s an unbeatable combination!”

The lift control system at Peel House is based on a Unidrive SP AC drive with a 22 kW synchronous permanent magnet gearless AC motor working in conjunction with the Lifteknik Quatrain control system.

The drive is fitted with an applications module programmed with the unique Control Techniques direct-to-floor software programme and accepts Sin/Cos feedback from a motor-mounted encoder that gives a resolution of more than 4 million ppr – a key factor in eliminating the load weighing device.

“The Unidrive SP from Control Techniques offers the independent market a massive technical and performance advantage over the more traditional lifts suppliers,” he says. “We now have a more advanced product to offer with networking, direct-to-floor capability, better ride quality and better reliability too.”

“And, this solution saves on a major cost - the load weighing device - with no roll-back on take off - as well as reducing the number of in-shaft sensors, which cuts installation time and cost.”

A key concern for building owners and elevator contractors is public safety and the ability to get elevator passengers rescued during a catastrophic power outage. The solution built into every Unidrive SP is a 48 Volt, DC backup power supply connection. In the event of a power loss, connection of a simple 48V UPS allows full load operation of the elevator’s motor at a slow speed.

Finally and crucially for the lift industry, Unidrive SP includes as standard, a “secure disable” function, which meets the requirements of EN954-1 category 3 for the prevention of motor operation. This can be used as the ultimate control function in a safety interlock system; it replaces up to two safety contactors, saving money on both equipment and installation costs.

“Unidrive SP offers the independents the opportunity to offer a better solution at a dramatically reduced life cost,” concludes John Bentley.



KEY BENEFITS

- LOWER COST SYSTEM
- QUICKER & EASIER TO INSTALL
- DIRECT-TO-FLOOR
- BETTER RIDE QUALITY
- ENHANCED RELIABILITY

For the full press release please visit www.controltechniques.com

