

DRIVEN TO TERROR

Unidrive SPs chosen for zero gravity ride

The Dalton Terror, a zero gravity drop tower, one of the most popular attractions at the Walibi theme park in Belgium, has recently been refurbished to include high power Unidrive SP AC drives from Control Techniques and motors from its sister Emerson Industrial Automation company, Leroy Somer.

This drop tower, a round tower of 77metres height, has five rows of seats, each with four person capacity in a ring around the tower. The seats, weighing 1.5 tonnes empty, are hoisted by speed-controlled Leroy Somer geared motors to the top of the tower, where they are released to drop in free fall at a maximum speed of 110km/hr, generating complete weightlessness. Magnetic current brakes that comprise permanent magnets fitted in the seats generating powerful Foucault currents in the metallic frame of the tower, provide fault-free guaranteed braking, independent of the power supply, bringing the ride to a safe slow speed with hydraulic shock absorbers providing the final soft stop at the base. This makes the Dalton Terror a 'zero-risk' attraction.



The Dalton Terror was originally installed in the park in 1998 and featured the previous 'Classic' Unidrives to haul the seats to the top of the tower. The new owners of the park, the French 'Compagnie des Alpes', has been investing heavily in the upgrading of many of the rides, with the accent heavily on safety. When they decided to refurbish The Dalton terror, the faultless and precise movement of speed profile of the previous Control Techniques drives proved a powerful argument to the choice of the latest generation of AC drives and five heavy duty 75kW Unidrive SPs, operating in closed loop flux vector mode, were fitted as part of the total renewal of the control panels. Signals from encoders fitted to each of the Leroy Somer LSMV motors feedback to the drives and, using SM Universal Encoder Plus option modules, are re-



KEY BENEFITS

- WORLD LEADING DROP TOWER
- FAULTLESS & PRECISE MOVEMENT
- HIGHLY RELIABLE
- REDUCED DOWNTIME
- REDUCED MAINTENANCE COSTS



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transmitted to the PLCs that control the safety of the whole process.

The LSMV asynchronous motors, which are specially designed for use with frequency converters with reinforced windings, are fitted with a parking brake, a feedback encoder and a forced fan for continuous operation at low speed. The braking energy is dissipated via the braking resistors, mounted on the roof of the control cubicles.

“Reliability, availability and footfall of the attractions are first priority for our marketing and our success,” says Marketing and PR Manager, Dominique Fallon. “This refurbishment dramatically reduces the downtime of the Dalton Terror as a result of breakdowns or repairs,” he says. “So the flow of visitors through the turnstiles is greatly improved and our maintenance costs are consequently reduced. The revamping of the Dalton Terror has been a tremendous success that strengthens our position in the amusement park market.”

The Unidrive SP AC variable speed drive range spans 0.75kW right up to 1.9MW. Unidrive SP is the world’s most advanced ‘solutions platform’ AC drive, configurable into five operating modes – open and closed loop, vector, servo and regenerating modes - connectivity to most industry standard networks and accepting most position feedback protocols. With a range of plug-in module options, its on-board PLC can be supplemented, as in this case, with specialist feedback and communication modules.

At Walibi Belgium, an engineering and maintenance team of 38 is responsible for daily checks to assure the smooth, safe and proper operation of each of the attractions. Twice a year, TUV SUD Benelux carries out intensive inspections to ensure that all machines and other constructions conform with safety regulations NEN-EN13814 and, annually, the local fire brigade practises on the park area to ensure fast and efficient rescues and evacuation in the event of an emergency.

Walibi has a wide range of attractions to suit every age and level of courage! Many of these are unique in Europe. Particularly popular are The Werewolf, the Calimity Mine, The Vampire, The Flash Back, The Radja River, The Challenge of Tutankhamon and, of course, the prime attraction The Dalton Terror, one of the world’s leading drop towers.



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