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WATER FEATURE DAZZLES TORONTO SHOPPERS

Many shopping centres have fountains with mechanical sprays and bubbling ponds. At the Don Mills Shopping Centre near Toronto, this has been taken several steps further with a stunningly choreographed water and light show. Designed & Engineered by Karajaal, a water experience company based in Saint-Sauveur, Quebec, the water feature at Don Mills is Canada's first robotic fountain, and only the fourth in North America – and has, at its heart, a 22-axis motion control system using Control Techniques drives that was engineered by industrial automation specialists Rotalec.

The goal was to create a unique water feature to complement the shops at Don Mills and inspire visitors to stay and return, so that they take in all of the facilities offered in this new urban village. The designers Karajaal were already long-term customers of Control Techniques / Rotalec for their standard fountain projects in which Control Techniques' Commander SK AC drives were being used for pump control and thus the height of the water jets. This project was much more ambitious, with the requirement to handle not only 22-axes of movements, but also the programmed sequencing of 78 lights in and around the fountains.

Karajaal chose Rotalec with Control Techniques for this project because of their high level of technical expertise to translate the artistic ambitions of the designers into reality. Karajaal specified a centralised system that was easy to program and configure using 'Motion Perfect' software, to create and modify motion profiles and to synchronise complex water/light-show sequences. The panel engineering, assembly and testing was carried out by Rotalec, a value-added Control Techniques partner, at their facilities in Montreal.

KEY BENEFITS

- SYNCHRONISED WATER & LIGHT SHOW SEQUENCES
- CENTRALISED SYSTEM
- EASY TO PROGRAM & CONFIGURE
- MULTI AXIS CONTROL
- REMOTE ACCESS VIA ETHERNET

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CONTROL TECHNIQUES

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Unlike typical fountains that are mechanically driven, the Don Mills 45x35-foot water feature uses innovative robotics and automation technology to choreograph water and light in fascinating ways. Each of the feature's water elements is combined with lights and programmed to create movement and texture. Twice every hour, the water feature erupts into a four-minute spectacle. Sensors and pressure plates allow visitors to influence the choreography of water and light, creating a truly interactive experience.

The 22 axes are all controlled by a Control Techniques MC224 Motion Coordinator with motors being controlled by Control Techniques Commander SK AC drives. Ten of these are positioning the angle of the nozzles and 12 are modulating the water flow to vary the height of the water jets.

The MC224 also takes care of more than 100 I/O, turning off and on 78 LED projectors in programmed sequences in synchronism with the water movements to produce a stunning night-time display.

The operator interface is provided by CTVue, a graphical HMI that communicates with the MC224 motion coordinator. This allows the operator of the fountain to change the pre-programmed 'recipes' or adjust the speed and angle of motion. The fountain can also be turned off and on depending on the time of day and footfall in the shopping centre simply from the 8.4" graphic touch colour TFT screen. Communication between the interface and the motion coordinator as well as the drives is all done via a Modbus network, which also provides simple diagnosis of any faults. In addition, this solution will allow remote access to the whole system via the Ethernet, so that Karajaal can provide rapid troubleshooting or reprogramming from their office in St Sauveur, Quebec, some 500km away.

The MC224 centralised high performance multi-axis control motion coordinator is capable of 24 axes of coordinated motion control in conjunction with Control Techniques drives. The powerful CTVue HMI line and integrated drivers for Control Techniques drives make it easy to integrate HMI with CT drives. The medium sized CTVue308A graphical TFT touch screen gives good, bright and clear colour graphics and has Ethernet, RS485, two RS232 ports and one compact flash port.

The Commander SK drives chosen for the 22 movement axes are renowned for their reliability. Commander SK is extremely compact, yet packs in amazing versatility; It is easy to fit, set up and use, with all the 10 parameters most users need being accessible from the display keypad, which is included as standard. Very important for this application is its energy-saving efficiency and its state-of-the-art manufacturing standards which are responsible for its outstanding reliability.

Control Techniques' technology partner in this venture, Rotalec, has been a high technology distributor of industrial machine automation products for 25 years. Based at Saint-Laurent, Quebec, the company is a systems integrator to provide complete automation solutions.

Founded in 2001, Karajaal is a water experience company that collaborates with commercial property developers and architects to design and build "sustainable water features" to attract new visitors and create greater long-term property value. Its creations can be seen in commercial centres, hotels and resorts, public areas, office buildings and high-end residences throughout North America and Canada.