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The lighting scenarios and motion sequences created using 3D DMX software are converted into precise, synchronized control signals for the nozzles, pumps, and LED lights, working on the basis of a PC.

site, DMX control channels required for this purpose were created for each device in TwinCAT 3 HMI. Operators can also access the system remotely and, for example, respond quickly to an alarm message by email.

Conserving water resources

The solutions from Fluidra and Beckhoff don't stop at aesthetics and technology, however – both companies are also committed to using ecological resources sustainably. For this reason, Font dels Colors has implemented a water cycle that significantly reduces consumption and ensures efficient use of the valuable resource of water. In addition, UV filters and disinfection systems have been installed to maintain high levels of water quality without the use of harmful chemicals.

According to the experts at Fluidra, this integrated approach involving technological and ecological innovations is setting new standards for planning and constructing water systems. Combining aesthetically appealing water displays with ecological responsibility points the way toward a more sustainable and exciting future for urban spaces.
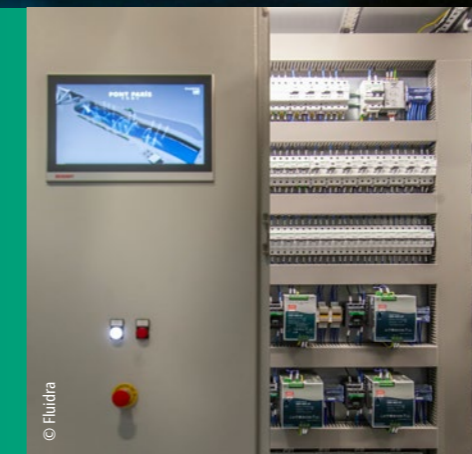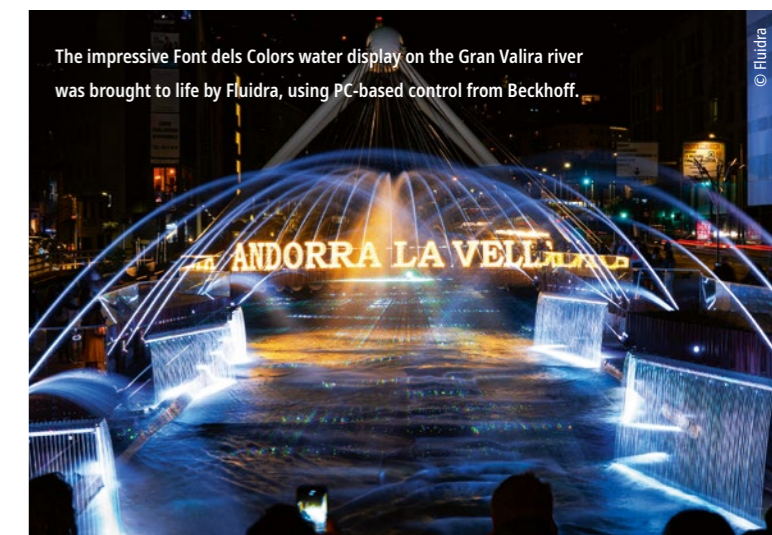
Control cabinet with the CP2216 multi-touch built-in Panel PC and TwinCAT 3 HMI for on-site operation and status queries.

PC-based controlled water installations

Water, light, and audio coordinated with outstanding precision

Fluidra S.A. creates impressive installations involving water, light, and music – one example being the Font dels Colors fountain in Andorra's capital city. To automate and synchronize the technical systems, the company relies on PC-based control from Beckhoff, whose openness and flexible approach to creativity open up a whole host of possibilities for designers.

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The impressive Font dels Colors water display on the Gran Valira river was brought to life by Fluidra, using PC-based control from Beckhoff.

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Fluidra's technical skills and Beckhoff's expertise in automation technology are at the heart of spectacular water displays such as the Font dels Colors in Andorra, the twin fountains in Plaça de Catalunya (Barcelona), the fountains in La Pedrera Park (Argentina), and the Vadistambul shopping center fountain (Türkiye). These projects contain PC-based control technology from Beckhoff, including TwinCAT 3 PLC/NC PTP and TwinCAT 3 HMI Server as software, plus EtherCAT Terminals and EtherCAT Box modules – which can be installed in a decentralized configuration – acting as the I/O level. The lighting technology is integrated using technology including EL6851 EtherCAT Terminals (DMX master). A CP2216 multi-touch built-in Panel PC allows technicians to control the system as required, call up status messages, and respond to alarms.

Developed by Fluidra in collaboration with architects Pere Cervós of Pere Cervós Arquitectura and Ricard de Deus of Causa Estudi Arquitectura, along-

side the construction company Locub S.A., the Font dels Colors water display combines an impressive installation with light and music located next to the Gran Valira river and the Puente de París bridge in the heart of Andorra's old town. This attraction transforms the city promenade into a living work of art that captivates tourists. Another special feature of the project is its innovative, sustainable approach in which the water for the cascades is taken from the river and then reused.

Precise synchronization a must

PC-based control allows all the components of the Font dels Colors and other projects to work in perfect synchronicity – from the lighting effects and background music to the dynamic choreography of the water jets and pumps. Fluidra makes full use of Beckhoff's extensive modular I/O portfolio, which covers everything from simple digital inputs and outputs to motion control and

AM8000 servomotors. The communication options with DMX management systems are a key advantage; Fluidra uses these for programming and operating the water installations, for example.

Fluidra uses its 3D software to create the sequences for its water displays, from the jets and illumination features to the sound system. The control data for the light and water jets is then output via what are known as DMX control universes. These sequence programs are installed on a separate DMX player, which is included in every system. The sequences are transferred to the CP2216 Panel PC via an EL6851-0010 EtherCAT Terminal (DMX slave) and EtherCAT, and are executed in TwinCAT 3 PLC/NC PTP – in other words, converted into control signals for the various components, including the servomotors. Any components with a DMX connection can be integrated directly via additional EL6851 EtherCAT Terminals (DMX master). To allow intervention in the sequences on