

CaseInPoint

Custom Services

Making A Big Splash

Special cabling helps fountain designers create oooohs and aaaahs.

Shooting water up 15 or more stories. Making it dance to classical tunes. Illuminating it in magical colors. Who can resist the special effects of today's water fountains? Seen as true crowd pleasers, fountains are popping up in casinos, hotel lobbies, shopping malls, and theme parks, proving that their addition can double or triple foot traffic.

"Although splashy fountains trigger excitement and emotions, creating state of the art water features is very much based on precise engineering," explains Senior Project Manager Gerald Tester, who oversees installations for Ontario-based Crystal Fountains. "It is truly where art meets design."

Crystal Fountains has designed and developed water displays for almost 40 years including an extravaganza with 380 individually sequenced effects at the foot of the world's tallest skyscrapers — Kuala Lumpur's Petronas Towers.

To create its eye-opening water shows, Crystal Fountains combines water nozzles, jets, and leapers with switches, sensors, pumps, drains, fiber-optic lighting, and PLCs with switching speeds of up to 20 times per second. Different devices, of course, create different effects. Foaming spray jets mix water and air to produce aerated white water — a feature that is highly visible and wind-resistant. Fanning spray nozzles push water through a flat opening to make a clear sheet of water for wind-free and intimate spaces. These nozzles generate clear sheets of water at low heights. Streaming spray jet nozzles produce both single and multiple streams of translucent water that vary in height from 3 to 100 feet and more.

Grouped together, multiple water switches can create a variety of geometric patterns such as spirals and alphanumerical characters. Varying heights can be produced using variable speed drive pumps. For spectacular nighttime viewing, water switches are combined with fiber-optic illuminators with high-speed switching devices controlling color change. Straight and touchable rods of laminar water are created, illuminated with color-changing fiber optics to make the rods glow from the inside.

Crystal Fountains collaborates with developers, architects, and contractors, offering conceptual sketches, storyboarding, and programming of water features, equipment, and piping plans; mechanical, electrical, and pneumatic systems design; waterproofing methods; and detailed mockup testing. A good portion of the engineering is dedicated to picking the right data and power cables.

One of the company's latest installations is North America's third largest water feature. Sporting a 400-foot water curtain with an available flow of 30,805 gallons of water per minute, it is located at the Mississippi-based Golden Moon Casino.

The giant water display is adjacent to a 22-floor hotel with a 82-foot-in-diameter globe that holds restaurants and an observation deck at the top. The water display is backed by 337 water switches, 11 pumps totaling 830 hp, and more than 220 miles of wire.

For the installation at the Golden Moon Casino, Crystal Fountains opted for a customized cable designed and built by cablemaker Leoni Tailor-Made Cable. Instead of using a bulky set of four individual cables, a new hybrid design was chosen. The solution combines a twisted data pair and three power conductors. The new all-in-one cable provides direct connections between PLCs and various field devices such as light switches, pumps, and special fanning nozzles that push water through a flat opening to produce a clear sheet of water. This consolidated cabling

solution reduced installation time by 20 percent.

"Almost 80 percent of our customers are looking for unique hybrid designs," says Dan Reese, vice president of quality at Leoni Elocab, the cablemaker's North American production site based in Kitchener, Canada. "Above and beyond offering substantial time and space savings, they allow for bullet-proof installation and come with an improved long-term service performance."

A major factor in getting the Crystal Fountains cable ready for the "big splash" was making it fully submersible. Finding the right jacketing material was key. Based on its expertise of building water-proof cables for tough sewer inspections and deep-sea submarine



The Golden Moon Casino installation required a hybrid submersible cable.



Water nozzles, jets, and leapers (right) with switches, sensors, pumps, drains, fiber-optic lighting, and PLCs are used to create eye-opening displays.



operations, Leoni picked a specially formulated polyurethane

(PUR) compound for the outer jacket.

Non-wicking fillers that were integrated into the cables backed up the hydrolysis-resistant PUR jacketing.

Leoni also offers the option of incorporating special sealing tapes in cables so that sealants swell instantly if attacked by water. Under regular conditions, these cables are slim and trim and can hardly be identified as watertight.

"Interestingly, these qualities are increasingly utilized in non-underwater conditions such as industrial cabling operated in an environment where moisture can cause cable damage," says Reese. "Because water infiltrates even the tiniest pinholes and migrates through most plastics, moisture can easily accumulate in systems that are considered to be well sealed."

More information on cable is available by contacting Leoni Tailor-Made Cable USA, 271 Route 46 W., Ste. C103, Fairfield, NJ 07004, calling 866-536-6422, visiting www.leoni-tailormadecable.com, writing in 300 on our reader service card, or replying online at www.pddnet.com.