

Interactive Rides uses industrial controls and safety to deliver one-of-a-Kind excitement

Remember the schoolyard teeter-totter? You'd sit on one end of the wooden plank with the central pivot, your friend would sit on the other end, and you'd take turns pushing each other skyward.

Now take that teeter-totter, scale it up to Paul Bunyan proportions, and install a metal track and an open car that seats eight passengers. Then, airlift the thing to the top of the tallest building in Las Vegas and position it so that, when one end of the 80-foot teeter-totter dips, the car races down the track and 30 feet beyond the edge of the building. The result: screaming occupants who feel like they're about to plunge 900 feet to the Las Vegas Strip below. Suddenly, the teeter-totter reverses (producing several moments of weightlessness), the car races back toward the tower deck, and then the whole cycle starts again.

It's not exactly your average schoolyard playground experience, and it's not just some thrill seeker's wildest fantasy; In fact, it's the X Scream, and for the past few years, it's been delighting and scaring the willies out of visitors to Las Vegas' 1,100-foot Stratosphere Hotel and Casino. Interactive Rides Inc., of Logan, UT, designed and built the X Scream. For its innovative use of Rockwell Automation products and technologies, Interactive Rides is this year's recipient of Rockwell Automation's Extreme Machines award.

"Rockwell Automation's Allen-Bradley products were a natural choice for us," says Jacob Rippstein, a sales executive with Interactive Rides. "Their systems and products are widely used in the amusement rides industry. We have always had great technical support for all of their products."

Operation of X Scream, which is one of three thrill rides atop the Stratosphere Tower, is governed by Allen-Bradley ControlLogix PLCs, a



X Scream controls with PanelView Plus operator interface.

PanelView Plus operator interface, and redundant I/O that ranges from simple proximity switches to AMCI multi-turn resolvers. The primary control component of the ride is a hydraulic proportional valve used to rock the teeter-totter. The valve is controlled by the PLC via an analog output. Redundant resolvers are the principal feedback devices for the angle of rotation.

The control system features more than 100 distinct programs that can create random combinations of movement.

"We wrote routines into the code that make it seem like the ride's malfunctioning. It really freaks the riders out," says Dan Sexton, an Interactive Rides control engineer.

But while the thrill-seeking Las Vegas visitors may feel like they're gambling with their lives instead of their money, Interactive Rides puts safety and reliability at the very top of its list in designing and building its rides, says Rippstein. The redundant PLCs function in lockstep, allowing either to take over operation if an error in the other is detected. The ride also employs hardware watchdogs (SSAC) and E-Stop safety relays that must be set for the ride to run. If an error is detected, the ride fails in a safe position.



Sexton praises the performance of the redundant controllers.

"The intercommunications between the two PLCs is so much easier than it used to be," he says. "With ControlLogix and Ethernet, it's very easy to set up, and you're able to get so much more data communicated back and forth quickly than was possible in the past."

He also notes that spread spectrum, frequency hopping RF modems on each car provide an additional level of safety.

"Using these devices, we're able to monitor the status of restraints holding in every passenger. They report back to the PLCs through the entire ride process. If there are any problems detected, the ride fails immediately into safe mode," he says.

Interactive Rides was founded in 2000 and has designed and built rides at amusement centers throughout the country, including Rye Playland, in Rye, NY; Knotts Berry Farm in Buena Park, CA; and the Stratosphere in Las Vegas. The company, which employs 35 people, specializes in developing unusual rides that provide guests with unique experiences.

"We love the challenge of providing a complete package, from the design of the ride and the structural and mechanical engineering to the design of the control systems," Rippstein says. "What really sets us apart from our competitors is that we provide our users with a high level of service, engineering, and design. It's not your standard stuff that just anyone can do."

In light of X Scream's location, the ride's installation was among Interactive Rides' biggest challenges, says Rippstein.

"We designed, built, and tested it on the ground to prove it would work. Then, we tore the whole thing down and had to airlift it via

helicopter, piece by piece, to the top of the tower," he says.

Nearly every major hotel and casino built in Las Vegas during the past two decades has featured signature attractions to draw in the visitors. The Stratosphere made its mark with thrill rides atop the tower. Interactive Rides' unique approach, as well as its dedication to safety and service, made the company a good fit with The Stratosphere. Following the success of X Scream, which opened to visitors in 2003, Interactive Rides designed, built, and installed a companion ride, "Insanity – The Ride," atop the hotel.

Insanity consists of an arm that extends out 64 feet over the edge of the tower and spins passengers at up to three Gs. As the ride increases speed, centrifugal force pulls the ride's cars outward to an angle of 70 degrees. Like the X Scream, Insanity flings riders over the edge of The Stratosphere tower, so riders spend much of the experience looking down – way down – at the city below.

It's one thing to design and build these sky-high thrill machines, but do the Interactive Rides employees actually enjoy climbing aboard and riding them?

"Oh, you bet! That's the really rewarding part," says Rippstein. "There isn't a person here who wouldn't get aboard those rides, and most everyone here has. They all put their blood and sweat into creating them, so it's rewarding to be able to actually ride them." X

EXTREME MACHINES