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EUROPA PARK

Company: LOBO / Coherent

Location: Rust, Germany

Amusement parks have a long history of using lasers, both in multimedia shows and for visual effects in dark rides. Examples of both can be found in the family-owned Europa Park in Rust, Germany, which has just celebrated 35 years of success as the world's most visited seasonal park. This history was celebrated in a newly opened attraction, which includes lasers as a prominent feature of this unique visitor experience.

Historama consists of six stages arranged radially in what was formerly the Pyramid attraction structure. Visitors are seated in one of three moving cabin segments where seats are arranged theatre style. During the 15-minute ride, each cabin sequentially views all six stages; each has a different historically themed multimedia show, incorporating laser projection and 3D laser effects, 28 video projections and many special effects. The entire technical concept for the attraction was developed and implemented by LOBO, which has been a leader in laser and multimedia entertainment for almost 30 years, winning more International Laser Display Association (ILDA) awards than any other company.

A major reason that LOBO was asked to complete this project is that it is one of the few laser entertainment companies with both technical and creative teams. This enables it to take a show from concept through to implementation. LOBO is also a leader in show control systems, using its UNIX-based LACON-5 controller working with an optical bus system. Like all LOBO products, LACON-5 follows a modular approach. This allows both simple and complex shows to be built on a common platform, eliminating the need for costly custom control systems. Moreover, the optical bus makes it easy to distribute signals even over large distances and to integrate even unconventional control inputs, such as GPS or GSM messages. Alexander Hennig, Creative Director at LOBO, explained some of the details of the Historama ride: "The park owners wanted us to design something truly unique, and we have achieved this in part by heavy use of 3D effects. For example, a special variation of the so-called 'Pepper's Ghost effect' is projected on to a floor, and viewed by the audience through a partially reflecting screen at 45°. Moving this floor up and down makes the images approach or recede from the audience. We also use rear projection on a Holoflow screen, which is a laminar flow of water mist. And, of course, all these laser effects are coordinated with other dramatic visual components such as video projection and bright flat panel displays, as well as synchronised sound and simulated motion. In total, we use nine laser projectors in this ride, most of them fed via fibre optic links by lasers housed in a central room."

Currently, this central laser system uses two Coherent Pure Light Star mixed gas ion lasers. Interestingly, these lasers were original part of the Pyramid attraction previously located in this structure, and are the only audio-video components still in use from the original 1997 installation. Using two lasers provides the redundancy needed to operate the entire Historama attraction if a single unit fails. This eliminates the possibility of even temporary closure of this continuous operation ride due to laser problems.

Nevertheless, LOBO has already prepared everything to upgrade the Historama ride with its Sparks laser systems (already in use to produce beam effects in the park's EuroSat indoor rollercoaster). Sparks are based on next generation, optically pumped semiconductor (OPSL) technology in the form of Coherent Taipan laser heads with red, green and blue output. OPSLs have rapidly become the lasers of choice for lightshows for several reasons. First, their all solid-state construction makes them even more reliable than the ion lasers that will finally be replaced in Historama. In addition, they have a much smaller physical footprint, and their high electrical efficiency gives them a carbon footprint that is less than one tenth that of ion lasers. Moreover, the recent development of a high power Coherent Taipan with deep red (639nm) output enables full colour light shows with an expanded color gamut. Lastly, because these lasers can be directly modulated up to 150kHz, this reduces the need for external modulators in many installations.

The novel way these lasers are implemented in LOBO Sparks projectors will also improve the Historama by delivering brighter images with better colours. The secret behind the Sparks projectors is an optical system called PCS. In typical applications, it delivers a nine times increased brightness in comparison to standard Taipan OPSL projectors by reducing beam divergence by a factor of three. Taipan lasers already output a near-perfect TEM00 beam with a focusing factor (M2) approaching unity, but LOBO's solution was to design new optics and scanning systems from the ground up. The goal was to design an ultra-fast scanning projector with much larger diameter optics than any previous or competitive solution. Since beam divergence is inversely proportional to the size of the beam leaving the scanner, this yields a projected spot with only one-ninth the area of any other scanner. This results in a nine times brighter image.

Hennig explained: "Although safety regulations limit the maximum allowable laser power determined by the proximity of the viewing audience, this will be a significant boost in brightness, especially at the non-audience-scanning effects."

www.lobo.de / www.coherent.com