LA ProPoint combines cartoons with animatronics in innovative attraction

Setting the scene effectively for Great Wolf Lodge resorts in small spaces

LA ProPoint, a specialist in entertainment technology, has implemented a new movie theater attraction for the American resort chain Great Wolf Lodge. A frame surrounding the screen is animated with integrated animatronic elements and video projection. For the integration of AV, animatronic and automation equipment, LA ProPoint utilizes the universal Beckhoff technology, which supports entertainment industry standards and enables space-saving installation in the lobby.
Above: A scene from one of the Northwoods Friends cartoons

Left: The Great Wolf Lodge Resort in Bloomington, Minnesota, features the innovative Northwoods Friends Show theater developed and implemented by LA ProPoint.
Spellbinding entertainment can now be experienced in unusual places. Take, for example, the lobby at multiple locations of Great Wolf Lodge Resorts, a well-known chain of indoor water parks with hotel operations in the USA, where guests of all ages are welcomed by an innovative movie theater attraction. Here, the cartoon characters in the Northwoods Friends Show act in a special frame. Animatronic elements integrated into the frame move in precise synchronization with the action sequences and become part of what is happening on the screen. Video projections make the figures integrated into the frame even more lifelike. Following initial installations in four Great Wolf Lodge locations, more are already planned.

To successfully implement the new lobby theaters, an impressive amount of automation and networking technology needed to be installed into very small spaces. The entertainment engineering experts at LA ProPoint, based in Sun Valley, California, handled the design and installation of the project. The company specializes in entertainment and AV installations across North America. High-profile LA ProPoint clients include theme park and theatrical powerhouses like, for example, Cirque du Soleil as well as major sporting venues such as the AT&T Stadium, home of the Dallas Cowboys, and museum installations like the California Science Center.
Leading the convergence of AV and entertainment technologies

“Productions like the animatronic Northwoods Friends Show are so exciting because they demonstrate how AV and entertainment technology continue to overlap,” said Richard Adams, Automation Engineer at LA ProPoint. To implement the demanding theater installation for Great Wolf Lodge, LA ProPoint first had to find a control system that would combine the AV and animatronic functions seamlessly and cost-effectively. LA ProPoint was able to leverage expertise developed from a wide range of applications, including automation.

Showtime for automation with Beckhoff

At the end of the development process, the team decided on universal automation with a PC-based control platform and TwinCAT 3 software from Beckhoff. A CP6706 Panel PC handles the real-time control of all functions, including the stepper motor-driven animatronic elements and the AV equipment with TwinCAT. Using Ethernet TCP/IP, the TwinCAT control system connects to three different projectors from two different manufacturers, a Blu-Ray player, a high-end sound mixer and three BrightSign media players. “The most
important aspect backing our decision to use TwinCAT is the ability to program everything in one universal software platform,” Richard Adams added.

To establish communication specific to AV and entertainment applications, the TwinCAT SMPTE timecode interface can extract timing information sent by a SMPTE master in order to provide an absolute time reference in the application. “That says a great deal about the suitability of TwinCAT in entertainment applications, and this is significant from a controls engineering perspective because traditional PLC platforms just don’t go there,” explained Adams.

EtherCAT Terminals handle the system communication and enable a space-saving installation in a small control cabinet. For example, the EL3702 EtherCAT oversampling terminal acquires the signals from an SMPTE master, while the EL7041 EtherCAT Terminal operates as a compact drive amplifier for the stepper motors. Richard Adams commented: “The EL7041 stepper motor terminal was very easy to connect with the stepper motors for control. Instead of programming, mounting and wiring eight different motor controllers, everything is programmed centrally in TwinCAT and motors are cleanly wired back to DIN rail-mounted I/O.”

The CP-Link 4 one-cable solution connects the Beckhoff controller installed in a small space behind the scenes to a CP2907 Control Panel, which serves as a convenient user interface at the reception desk. The intuitive HMI developed in TwinCAT by LA ProPoint offers easy operation for all resort staff – from front desk personnel to AV and maintenance staff.

**Reduction in development and installation time**

Overall, LA ProPoint viewed its first ever PC-based control application as a success and is already planning further installations. “Programming the stepper motor control centrally in TwinCAT saved about a week in programming and troubleshooting time when compared with alternative approaches,” Adams reported.

“In addition to our software development savings, PC-based control from Beckhoff also saved significant time in panel design and installation. We are certain it saved several weeks of design and development time in this regard.”
Solutions for the entertainment industry
Innovative leisure park attraction combines animatronic elements and video projection in lobby movie theater

Customer benefit
- PC-based control supports communication standards of the entertainment industry and all control functions.
- TwinCAT considerably reduces the programming time.
- EtherCAT Terminals and compact drive technology enable space-saving installation.
- The affordable and easy-to-handle implementation is to be installed at further locations.

Applied PC Control
- TwinCAT 3 for programming with Structured Text, TwinCAT NC PTP for animatronics control, TwinCAT PLC HMI for the user interface, TwinCAT TCP/IP for vendor-neutral communication and TwinCAT SMPTE Time-code for AV device synchronization
- CP6706 Panel PC connected via CP-Link 4 to CP2907 7-inch Control Panel
- EL3702 EtherCAT oversampling terminal and EL7041 for controlling the AV systems and stepper motors respectively

Further information:
www.greatwolf.com
www.lapropoint.com
www.beckhoffautomation.com