



LON Technology Gives Fireworks Company More Bang for its Bucks

It's not unusual for a fireworks display to be choreographed to music. The companies that stage fireworks events, however, typically rely on expensive and proprietary commercial firing systems that are difficult – if not impossible – to expand or modify. Sonning Fireworks, a small company based in Sonning, England, wanted to design an advanced firing system that was expandable, safe, and cost-effective. The company achieved its goals using Echelon's LON control networking technology, an open, extensible architecture that lets devices from multiple vendors interact with each other. Its new portable firing system, called LONFire, connects fireworks to a LONWORKS based remote control system that has diagnostic and timing features. The fireworks are connected to channels and controlled via nodes. LONFire



can fire 42 electric igniters per node (an igniter lights the fuse on the explosive). The system currently uses 10 nodes, but its capacity is virtually limitless, thanks to the expandability of LON systems. To network the system, Sonning used Echelon's FTT- 10 Free Topology Twisted Pair Transceivers. Echelon's free topology (FT) wiring supports any type of wiring method, so it reduces system installation time and costs. It also makes networks easy

to expand because it has no restrictions on wire routing, splicing, and node placement. In addition, FT signalling supports communication over long distances – an important feature for Sonning, which needed to ensure safety in the field.

Robust, Flexible Framework

“LON technology gave us a robust and flexible framework in which to develop our firing system,” says Sonning system designer and integrator Chris Clarke. “This let us concentrate on writing the firing system functionality rather than writing and debugging the complete system architecture.”

To ensure a safe and trouble-free show, LONFire performs automatic tests to confirm that the fireworks are correctly connected to the system. This lets Sonning quickly detect any problems and fix them proactively, rather than discover them mid-show. Once the system is cleared for operation, the software downloads the show to the nodes as

numbered events and then sends firing instructions to the nodes via the LON technology. Software developed by

Key Benefits:

- Automatic system diagnosis ensures safe, trouble-free shows that are perfectly synchronized to music
- Thanks to the expandability of LON systems, LONFire's capacity is virtually limitless.
- LONFire was developed at nearly half the cost of a proprietary system

Sonning synchronizes the fireworks display to music. LONFire displays the music on screen, in either a waveform or spectral analysis, to let Sonning employees pinpoint exactly at what point in the music they want to fire the explosives.

The Sky's the Limit

Thanks to LON technology, Sonning was able to develop LONFire for nearly half of the cost of a proprietary commercial system. Clarke estimates that Sonning will recover its costs over two large shows. Not only is LONFire more inexpensive than large commercial systems, but it can also provide many extra features at a fraction of the cost of its competitors. Because LONFire can easily integrate with entertainment industry standard protocols such as DMX (which controls intelligent lighting, video, and lasers), Sonning can add features such as lights, video, lasers, and flames to its shows. With LON technology, the sky's the limit, says Clarke. “My ultimate aim for the system is to fire multiple, simultaneous shows at different locations, connecting the firing systems over a secure VPN over the Internet,” he says. “This would be a first in the fireworks industry.”

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