

Automation maximizes court time and profits for gymnasiums

Highlights:

- Today’s gymnasiums often require quick turnover between sports and events
- Litania worked with Springfield Electric to develop the Powr-Touch 6, an intuitive automated system that lets a gym employee control multiple systems at one time
- The system relies on numerous Phoenix Contact products, including PLCnext Technology, which ensures reliable and robust control

“Any dream we have, the hardware can deliver.”

Miguel Figueroa, Operations Manager

Customer profile:

Litania

Today’s state-of-the-art gymnasiums accommodate many different sports and groups. A recreation center hosting a volleyball tournament on a Saturday afternoon might be home to a basketball championship later that same evening. Litania Sports Group makes it easy for facility employees to manage these demands.

Litania designs, manufactures, and sells equipment for sports facilities. This equipment, under the brands Gill Athletics and Porter Athletic, is used in worldwide championship sporting events. About 75 percent of Litania’s products are manufactured at its 225,000-square-foot factory and office in Champaign, Illinois.

Litania’s customers range from small school gyms to large, commercial recreation centers with multiple playing areas for a wide range of sports – basketball, volleyball, and more. Some of these facilities can have up to 16 courts for a single sport (Figure 1).

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Figure 1: Litania’s customers range from small school gyms to large commercial recreation centers with multiple playing areas for a wide range of sports – basketball, volleyball, and more. Some of these facilities can have up to 16 courts for a single sport.



Challenge:**Modern sports centers demand quick changeover**

In between games or events, a sports center's employees might need to lower the backboards, move curtains between areas of play up or down, turn the scoreboards on, and lower the shades.

"A lot of our day-to-day deals with control systems. Everyone wants to put a little bit of technology into the sporting equipment, Miguel Figueroa, Operations Manager, explained. "No one wants to crank 30 winches in a facility. They want to move them very quickly to change the configuration of their buildings."

"There are only so many keys or buttons you can push. Time is money, so it's not cost-effective to have someone walking around and pushing buttons on 18 different control panels during a court changeover," said Greg Lueberring, Vice President of Research and Development at Litania.

This is especially important in commercial facilities, where different groups rent courts. The centers can't afford a lot of downtime between games or leagues, as customers expect their courts to be ready at the time they booked.

"As you get these bigger pay-for-play facilities, they want to move the entire gym quickly," said Miguel. "They want to have one staff member sitting in one spot running the entire facility rather than having somebody moving all of the key switches in different locations."

With this in mind, Litania created the Powr-Touch gymnasium control system to automate these controls. Powr-Touch is available in several different levels based on the number of controls needed.

Several years ago, the Litania engineering team custom-built the Powr-Touch 5. This generation added wireless capability, so a gym employee could use a tablet to operate multiple systems. However, the system was difficult to install, and servicing it was a little bit different every time. "Powr-Touch 5 got the job done, but it was a spaghetti string of boxes," said Miguel.

There were also limitations on the number of people who could operate the system at a given time. If four people at a facility logged into their tablets simultaneously to move units in different parts of the gym, the system would crash.

Solution:**A flexible, open ecosystem**

Robby Bauer, application engineer from Springfield Electric, introduced the Litania engineering team to

PLCnext Technology from Phoenix Contact. PLCnext Technology is an open automation ecosystem that expands the capabilities of a traditional programmable logic controller (PLC).

Initially, the Litania staff was hesitant to use a PLC. In their experience, "some PLCs don't like to be pushed too hard," Miguel explained. But they quickly saw the value and flexibility of the PLCnext Technology, which led to the next-generation Powr-Touch 6. Working with Robby, they spent a lot of time researching and developing a solid infrastructure for the Powr-Touch 6.

"The Powr-Touch 6 Pro control system is a PLC-driven control system," said Robby. "But PLCnext Technology gives it Internet of Things (IoT) features that you might not see in some of the legacy PLCs. You get robust, reliable control, but you can also be adaptable for IoT applications. It's a solid controller that's easy to integrate into our panels and to program" (Figure 2).

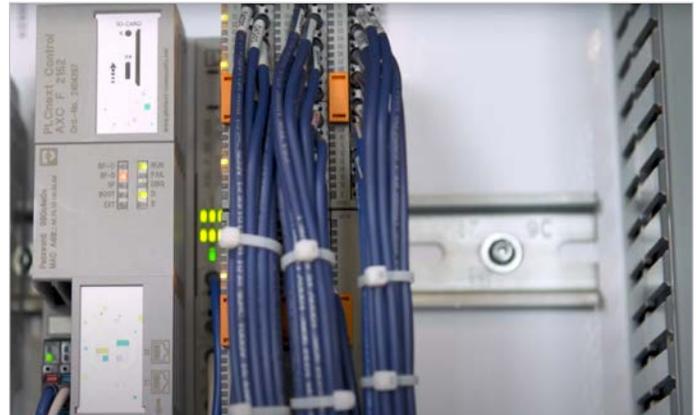


Figure 2: PLCnext Technology is an open automation platform that makes it easy to implement IoT applications.

Robby programmed the system with PLCnext Engineer. This software is compliant with traditional IEC 61131-e programming, but also allows integration with high-level languages like C, C++, C#, and MATLAB. It also offers modern visualization using HTML5 and user interfaces built through PLCnext Engineer and displayed on the built-in web server.

Litania and Springfield Electric built a custom HMI using these included visualization tools that makes it easy for rec center staff to control up to 64 pieces of equipment. Robby said, "We can view our visualization from everything from a tablet, to a phone, to a PC." The intuitive interface makes it easy for an on-site user to adjust the control system without involving Litania engineering (Figures 3A and 3B).

For example, if Basketball Hoop 1 is accidentally wired to the controls for Basketball Hoop 2, the admin screen makes it easy to rearrange the controls without downloading new software or rewriting the program.

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Figures 3A and 3B: The custom HMI makes it easy for rec center staff to control up to 64 pieces of equipment.

The control system includes a wide variety of Phoenix Contact products – terminal blocks, power supply, unmanaged switch, and an FL mGuard router (Figure 4). The mGuard adds remote service capability. If a facility has an on-site technical challenge that they cannot correct through the HMI, someone from Litania or Springfield Electric can remote into the system to assist. Robby explained, “Whether they’re in New York, California, or Florida, we can connect to those systems and troubleshoot from right here in central Illinois.” Not only is this much quicker than in-person service, it reduces travel and service costs for both Litania and the end customer.

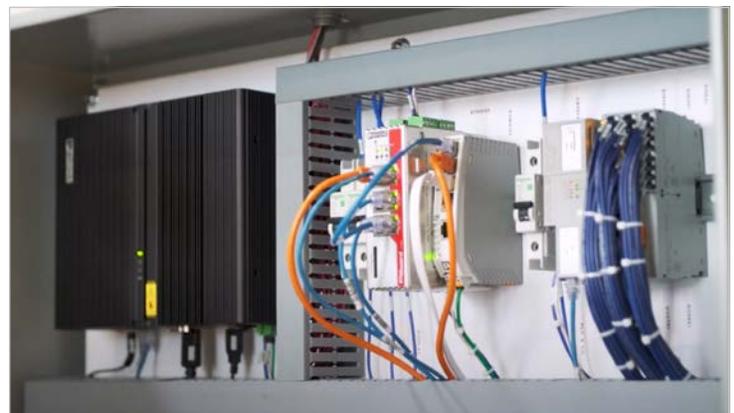
The Powr-Touch 6 is backward-compatible with earlier generations, so a facility does not have to rewire a previously installed system to upgrade. Litania is still adding capabilities. For example, they hope to add a calendar capability, although that feature is still being developed

Results:
A jaw-drop reaction

Powr-Touch 6 gives gymnasiums the flexibility and ease of use they need to maximize their court usage – and, just as importantly, their profits. The settings can be preprogrammed, so staff don’t have to click each button every time. Up to four different employees can log in on their individual tablets at the same time, so they can each control their own space. The Powr-Touch 6 is the only system on the market that allows simultaneous user control.

“When we show our customers how easy the interface is, we get a jaw-drop reaction, even if they’re only equipping a six-pack elementary school gym,” Miguel concluded. “Now, I think we have the product we always dreamed of. Any dream we have, the hardware can deliver.”

Want to see the system in action? [Watch a video about the application.](#)



Figures 4: In addition to PLCnext Technology, the Powr-Touch 6 relies on many other Phoenix Contact components, including the FL mGuard, unmanaged switch, power supply, WLAN radios, and terminal blocks.