

Boeing Future-Proofs its Long Beach Assembly Center with LONMARK Open Systems

The Boeing Company's commercial airplane facility at Long Beach, Calif., started as a production plant for military transports, bombers and fighters during World War II and grew into a manufacturing behemoth, with 20,000 workers and 7.6 million square feet of manufacturing, research and development, assembly and office space. As Boeing consolidated operations at the plant, they wanted to invest in a solution that would make the facility more efficient – “smarter” as well as smaller.

The Long Beach plant is dedicated to assembly of the Boeing 717-200, one of the newest members of the company's commercial jet airplane family. The 717-200 twinjet, introduced in October 1995, is an environmentally friendly plane in demand for the growing short-haul market worldwide. But until recently the assembly plant turning out these 21st Century jets was saddled with fire alarm, energy management and other building systems that relied on an infrastructure dating back to the 1940s and '50s.

The Challenge

Boeing was very frustrated with the limitations of their legacy Energy Management System (EMS). This system locked facilities into one system, which required expensive gateways to connect to other manufacturer's equipment. This built-in obsolescence provided very limited access to the user interface which required a software license fee for each computer tied to the system. Tired of being stuck with obsolete protocols, combined with increased pressure to control costs and optimize facility performance, Boeing decided that they needed to adopt an open system for their facilities.

The Solution

Boeing was attracted to the LONMARK open system because it is supported by hundreds of manufactures and would

allow them to marry the best equipment and software from numerous suppliers, delivering “the best of the best.” They recognized the power of competitive bidding on projects, so that multiple integrators could work on jobs. Best of all, maintenance could either be performed in-house or competitively bid by independent integrators. This new flexible system would eliminate expensive gateways to connect vendor equipment together, delivering a more flexible solution with lower implementation and support costs over time.

Boeing began the process of updating the plant's systems by replacing its copper cabling with a fiber optic network. Systems integrators connected the existing fire panels, smoke detectors and sprinklers in several buildings to a new central monitoring system using fiber optic routers to connect to the fire alarm system.

Next Boeing replaced their old, proprietary EMS system by selecting the “best of breed” products. The installation involved mixing and matching a variety of flexible controllers, VAV controllers, programmable controllers, variable frequency drives and other equipment from seven different suppliers.

The building's lights were on 24 hours a day, seven days a week. The lighting control system didn't work any more, and parts were impossible to get, so Boeing retrofitted the system with a new commercial off-the-shelf lighting control system.

The new open system was tied together with a web-based Graphical User Interface (GUI). Building occupants are able to view their space temperatures and override their lighting from their desktop computers. Maintenance and engineering have access to the web based graphical user interface that also provides links to all maintenance manuals and drawings.

“I am probably one of the biggest cheerleaders for open systems out

there,” said Jeff Haberman, Boeing's facilities engineer in Long Beach. “With all of the proprietary systems that we had, I always had the feeling that the controls manufacturers and integrators were in control. Going to open systems I now have control of those systems. Moreover I can pick the best of the best and I can pick a company on the quality of their product and the quality of their service and expertise rather than being locked into one system.

The Results

“We have been able to do things with an open system that we never dreamt about doing with a proprietary system. For example, we now have the option to purchase equipment from different manufacturers and interface that equipment to provide such things as lighting control over our customers desktop computers, enabling users to control there own lighting. They can also monitor the space temperatures in their areas. Basically, when we were proprietary we couldn't do everything that we wanted to do. Now we have the option of doing whatever is within our imagination,” continued Haberman.

“As for energy savings, we have been able to reduce our energy costs by between thirty-six and thirty-seven percent over the last eighteen months. And that is equated to a reduction of 215,000 dollars per aircraft. Which is pretty huge.”

Boeing's commercial aircraft plant at Long Beach has an illustrious history, dating to its origins in 1941 at the start of World War II. Now, at the start of a new century, LONMARK open systems are helping make the plant a successful example of Boeing's ability to consolidate its operations efficiently to make its airplanes more competitive in the world marketplace.

Contact:

jeffrey.m.haberman@boeing.com
www.boeing.com