

Royal Concrete makes big pipes using Beckhoff Technology

Royal Concrete pipe story



→ At Royal Concrete, located in Stacy, Minneapolis, they make big pipes. So big, you could drive a motorcycle through the cement sewer pipes that are 5 feet in diameter and weigh in the neighborhood of 6 tons. Making such big pipes does not leave much room for error since rework is not an option. Therefore, switching from a labor-intensive process of making concrete sewer pipes and manholes to a \$5 million fully automated production line required technology that is, not only, reliable and technically capable, but also understood by Royal employees.



Control Panel in Royal Cements control room.

Left: Steve Gentry, Royal Engineer and IS Manager; right: Jim Swanson Royal V.P./General manager.

These requirements were met using the Beckhoff technologies and support from the Beckhoff U.S. headquarters in Minneapolis. TwinCAT software running on a Beckhoff Industrial PC is the brains responsible for vertically lifting the 6 ton wet pipe while at the same time transferring the pipe to the next process. One of the Beckhoff many I/O networks, Interbus, is the communication channel responsible for making the massive pipe move.

Since installing the new line, purchased from Austrian manufacturer Schlüsselbauer in 1999, Royal has increased its productivity, reduced the number of employees on line and moved steps closer to its goal of running three shifts. After getting manufacturer support from Europe during the commissioning period, which is about to end, Royal's people have peace-of-mind knowing their equipment is controlled with Beckhoff PLC systems and ongoing support is available locally.

Jim Swanson, Royal V.P./General manager, described the numerous tasks performed automatically, using Beckhoff control technology, during the manufacturing process. It takes a cage and installs it in a jacket, pours the pipe, strips the

pipe, puts it in a kiln and turns the steam on. When ready to be stripped out, it automatically takes the pipe out of the kiln, delivers the cured pipe to another area where it removes the pallet and header. The machine then cleans the top and bottom pallets and puts them back into the magazine. The finished product is stripped out, turned, put on a conveyor, stenciled with product number and plant number. The pipes are then hauled away.

Worldwide sales and support network

Swanson said that he was relieved to find Beckhoff products (I/O systems, Industrial PC and displays, plus software) were installed by Schlüsselbauer and that Beckhoff was located in the U.S., and better yet in Minneapolis. "If and when we need a part, it can be shipped from 40 miles away rather than 2,500 miles from Austria. It's like having a local, reliable mechanic to troubleshoot and replace readily available parts when a vehicle breaks down after going out of warranty," said Swanson.



Royal's Engineer and IS Manager, Steve Gentry, put it another way. "Automation technology is now a mission critical area for us. We're on a learning curve because we didn't have the hardware or software expertise in house." To date, Gentry has contacted Beckhoff for a few replacement parts and foresees the need for occasional assistance from the Beckhoff application engineers in the future. Gentry recalled when a lightning strike burned out a hardware component. "We don't yet have the knowledge or experience to troubleshoot the tough problems. Now we can get it from Beckhoff," he said. Gentry and others in the company are looking forward to attending an upcoming Beckhoff TwinCAT and I/O training class.