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Americast Adopts Austrian Production Equipment to Rise Above Competition in the East Coast of the United States

More and more, American precasters are seeking a competitive edge by investing in the latest production technology in order to remedy serious labor shortages while significantly improving production rates. Interviews reveal that precast concrete producers are investing in advanced systems such as Austria's Schlüsselbauer equipment. It is interesting to investigate the rationale behind choosing this expensive European technology. This article also reveals the resulting improvement in product quality and one American precaster's level of satisfaction with the decision to partner with Schlüsselbauer.

■ Sue McCraven, Senior Technical Consultant, USA ■

The first thing that one discovers about Schlüsselbauer technology when interviewing U.S. precasters is that this Austrian system is certainly not inexpensive; in fact, this is quite costly equipment relative to the typical plant machinery in America. So what motivates the owner of a precast plant to invest in European production solutions?

Mid-Atlantic Precast Company Seeks Economy of Scale

Privately owned Americast, Inc., acquired its 40-acre (16 hectare) Ashland, Virginia, plant in 1997; the Ashland facility and its remarkable production machinery are the subject of this article. The Ashland plant joined two other company operations loca-

ted in Harrisonburg, Virginia, and Halls town, West Virginia. "Our three plants in the mid-Atlantic region," explains Bill Tichacek, Americast's President, "created a geographical triangle in the local market wherein each of our plants made different products."

With 210 employees, Americast is a leading supplier of precast concrete manholes, pipes, drainage structures, bridge elements, stormwater runoff structures, wet wells, meter vaults, septic tanks and retaining walls. Americast manufactures a wide range of manhole sizes with the following inside diameters:

- 36 in. [915 mm]
- 48 in. [1,220 mm]
- 60 in. [1,525 mm]
- 72 in. [1,830 mm]
- 84 in. [2,135 mm]
- 96 in. [2,440 mm]
- 120 in. [3,050 mm]

This wide range of sizes also allows Americast to meet the specific needs of many clients. All circular components, at a minimum, meet the requirements of ASTM C-478 (Standard Specification for Precast Reinforced Concrete Manhole Sections; ASTM stands for the American Society for Testing & Materials) and AASHTO M-199 (199-05 Standard Specification for Precast Reinforced Concrete Manhole Sections, AASHTO stands for the American Association of State Highway & Transportation Officials).

Americast has a long and proud heritage in the precast industry under its parent company, Eagle Corporation, and has been in operation over 60 years. Americast's dedication to quality is evidenced by the National Precast Concrete Association (NPCA) Certified Plant Award for both its Ashland, Virginia, and Martinsburg, West

Virginia, facilities. NPCA's Certified Plant designation only recognizes precast concrete organizations that consistently operate at the highest standards of production and quality control. Additionally, the company is VDOT (Virginia Department of Transportation) and Maryland DOT certified.

In the mid 2000's, Americast was critically analyzing its future; in particular, the company management was seeking the best economy of scale for their operations while, at the same time, solving serious regional labor shortages. When Americast was at its peak of business in 2007, the company principals travelled to Europe. This trans-Atlantic trip was based solely on manage-



Americast's Ashland facility, which uses the Schlüsselbauer Exact 1500, has four 60-ton [55 Mg] aggregate bins, and two silos, one for cement and one for fly ash (25% of fly ash replacement for cement is permissible in the concrete mixture).



Advanced Concrete Technology's (ACT) 2-yd³ [1.7 m³] machine.



"Software is an integral part of the plan," stresses Operations Manager, Don Anger. "With the Schlüsselbauer system, batching and production are totally integrated."

ment's viewing of a CD that described Schlüsselbauer systems; this CD was sent to Americast by Tom Higgins, Jr., P.E., President of Schlüsselbauer North America, LLC, headquartered in Nashville, Tennessee.

Why Did Americast Partner With Schlüsselbauer?

"We had shown this Schlüsselbauer CD to Dave Brinser, our General Manager, and to Don Anger, our Operations Manager," recalls Tichacek. At this time, Americast was looking to install new equipment at one of their locations. According to the author's interview, the Americast staff found the Austrian system "mind boggling," "too good to be true," and "incredible."

Because of this positive initial reaction to the system, Tichacek made the decision to travel with the owners and managers to Europe to tour plants in Germany, Poland, Belgium and Holland as well as visiting the headquarters of Schlüsselbauer Technology in Austria and this country's precast concrete plants.

In Europe, says Tichacek, "we saw the best and asked ourselves 'where have we been?'" Asking the precast owner in Breslau, Poland, if he would do it again, given the cost

of Schlüsselbauer equipment, the owner of this very modern Polish facility said, "Yes, I would do it again." Even though the equipment was more expensive than Tichacek had expected, smart precasters don't argue with success.

Labor Shortage is a Serious Problem

It is important to realize that shortage of labor is a major concern for U.S. precasters and that the industry is very labor-intensive. Moreover, young people coming out of high school don't typically plan careers laboring in a precast plant. "In 2005, it was very hard to find people to work for us," explained Operations Manager, Don Anger, "in fact, we still struggle to find qualified people." Specifically, with Schlüsselbauer's system advantages with regard to labor, says General Manager, Dave Brinser, "now we can operate with three workers and a supervisor compared to seven guys plus a supervisor before." Obviously, such labor efficiencies are a critical consideration in selecting production machines.

As a specific example of this labor problem, Americast must compete with Phillip Morris (Tobacco titan, Phillip Morris, has relocated its New York City headquarters back to its native Virginia where it was initially incorporated in 1919. Phillip Morris employs 6,800 Richmond, Virginia-area workers) and other regional factory operations for workers. Moreover, the company requires more technically trained people to operate Schlüsselbauer's sophisticated equipment. In fact, Americast has gone through staff twice, trying to find employees who are familiar with automation and high-speed machines. Precast operations have traditionally been a "sledge hammer and shovel" environment says Dave Brinser, "and not computer screens and push-button automation." Don Anger, who has been in the business since 1974, emphasizes that, "the hardest part about adapting to the Schlüsselbauer system is not only understanding the system's integration, but the personnel must also take ownership of, and understand the integration of the equipment." Securing competent staff took time: three men trained for three months to learn the new system.

A Fully Integrated Approach

Americast was convinced that, with Schlüsselbauer equipment, they could move in a direction to be an industry leader and solve their labor problems at the same time. Moreover, from a more technical aspect, reinforcing steel for U.S. precast concrete is



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Pallets are never handled by hand, never damaged in transport. "This is critical" explains Operations Manager, Don Anger, "as dents and indentations in the pallets will adversely affect the joint tolerances and the proper connection of the manhole pieces to one another."



Schlüsselbauer engineers suggested this ingenious elevated maintenance floor so that Americast could accommodate the Exact 1500 production system in a 22,000-ft² [2,045-m²] building. "Schlüsselbauer had to effectively fit 5 lb. [2 kg] into a 3 lb. [1.5 kg] box," laughs General Manager, Dave Brinser."

covered by rigorous industry standards. Tichacek explained that while some other precast machines tend to torque the reinforcing steel, Schlüsselbauer's Exact 1500 does not. Furthermore, the Exact 1500 exceeds ASTM and DOT standards that Americast must meet while, simultaneously, allows the company to produce more product volume.

A complete manhole consists of the base section and various components including, but not limited to: risers; cones; flat tops; grade rings; and finally, an iron casting at the top. In the near future, monolithic manhole bases with inverts will be produced with Schlüsselbauer's Perfect manhole base production system; automated hotwire saws for shaping the invert polystyrene elements are an integral part of the Perfect system.

Raising the Bar on Product Quality

"For our clients, we wanted to figure out how to separate ourselves from the com-

petitor," says Tichacek, "and we were determined to improve the surface finish quality on our dry-cast products." By setting a company goal to raise the bar on quality and focus on improving customer service, Americast believes they can be more competitive in their market area.

Pointing to a large regional map on the wall of the meeting room, Tichacek describes the region served by Americast's three plants. The region extends from Baltimore, Maryland, and Washington, D.C., southward to Richmond and Virginia Beach, Virginia. Americast also serves Virginia's Shenandoah Valley. In Ashland (the second plant to be automated), dry-cast mix is used. At the present time, manhole cones, flat tops and risers are dry-cast with the Exact 1500, using ten different molds.

On a specific technical aspect, Americast's Don Anger had spent significant time assessing joints. In this respect, the single-offset joint by Schlüsselbauer is standard and thus a better strategy for Americast's customers than shipping a myriad of different joint arrangements, depending on the company plant of origin.

Dry- Cast, Curing and Testing Procedures

The Exact 1500 is a fully automated dry-cast production plant wherein all functions are monitored from a central control station; this totally computerized station handles not only production, but also all functions, including pallet and header management. Manhole grade rings are produced on Schlüsselbauer's Ringmaster, a fully automated grade ring production plant.

Currently, the manhole base blank unit is cast first, followed by coring the pipe openings. The invert (pipe channels) is a secondary cast and a very labor-intensive process. To explain, Tichacek says: "We handle the manhole base piece seven times to accommodate an invert in a base and ship it to the customer."

Americast uses a Welden steam generator for curing product in insulated kilns that are supplied by Kraft Energy; kiln capacity is 90 units. A temperature of 100°F (38°C) and proper humidity are maintained for optimal cement hydration. Curing is completed in about 12 hours, or overnight. Automated robotic technology is used to transfer cured precast units. Dry-cast products are produced and transferred via moving floors to the polystyrene-insulated kilns. Americast's curing methods achieve 4,000 psi [28 MPa] concrete compressive strength in 12 hours

(overnight). The low w/c concrete will typically gain up to 9,000 psi [60 MPa] in 28 days. This impressive production rate means that Americast has the capability to ship to clients just one day after production. The result achieved is so good that many Americast clients think the high-quality dry-cast finish must be a wet-cast process. "Our own company quality control department tests concrete cylinders every day, breaking specimens to verify strength at three, seven and 28 days," according to Dave Brinser. Self-Consolidating Concrete (SCC) is monitored for viscosity (plastic properties) using the flow or spread test; this is the most com-



Michael Weissenfels, Sales & Marketing Manager for Schlüsselbauer, says "all engineering is performed in-house and the company works with the precaster to solve any production issues."



General Manager, Dave Brinser, proudly presents Americast's precast quality, which is evident in the finished product.

mon test used by precasters and is in the process of being standardized by ASTM. Aggregates are independently tested by Americast for quality even though the company uses only DOT-approved quarries.

More Than Production Solutions

One of the most remarkable aspects of Americast's relationship with Schlüsselbauer is the solid support and practical solutions provided by the Schlüsselbauer professionals and engineers. For example, when Americast was ready to install the Exact 1500, the existing square footage of the Ashland facility was not sufficient.

But with Schlüsselbauer's ingenious custom design for an elevated maintenance area, the

tight quarters were able to accommodate the Austrian-built equipment. "We've dealt with West-Coast equipment companies before," recalls Tichacek, "and we had time zone problems that caused communication break-downs." A big part of the Schlüsselbauer purchase decision, says Tichacek, "is the great advantage of the local Schlüsselbauer headquarters (under the management of Thomas Higgins, Jr., P.E.). Having technical support nearby in Nashville, Tennessee, makes all the difference." Americast is on a first-name basis with Schlüsselbauer representative Tom Higgins, and if the company has any problem, the solution is just a phone call away.

"Like a Symphony"

One appreciable advantage to the new system is that there is no longer any need for Americast to carry a large inventory. A more slimmed-down inventory is due to Americast's ability to produce large quantities quickly and to changeover machinery for different products in just a few hours. In conclusion, Americast's president is completely satisfied with Schlüsselbauer's system, technical support, design assistance, local headquarters and responsive communication. "I like to think of the Schlüsselbauer system running here in Ashland as 'like a symphony,'" Tichacek sums up. "Schlüsselbauer is a good partner," adds Dave Brinser, "if there's a problem, they're there for us." There's no arguing with a solid vendor/precaster partnership that also results in a doubling of production (160 pieces in one eight-hour shift) with half the people.

According to Tom Higgins, Jr., "at Schlüsselbauer, the focus is value. We deliver solutions not just machines. Competitive producers in the concrete industry naturally consider cost for prudent business reasons, but also analyze the equipment's life-cycle in making critical decisions."



"I like to say that, to me, Schlüsselbauer's production system is like watching a 'symphony of moving parts'," says Americast President, Bill Tichacek. "You might say that our ultimate goal with the Schlüsselbauer system is that Americast wants to be in the forefront of manhole and pipe production technology."

FURTHER INFORMATION



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