

## Minimize production downtime by contracting for grooved piping

**Challenge:** When International Steel Group's (part of Mittal USA) Burns Harbor, Indiana-based steel making facility required a major rebuild of the No. 1 continuous slab caster, it needed efficient, reliable products and services to minimize disruptions to operations.

**Solution:** International Steel Group (ISG) turned to Victaulic, who 15 years earlier had installed a piping system in another part of the plant, making it one of the first steel mills to use grooved piping components on such a large scale. Innovative Victaulic grooved and Pressfit<sup>®</sup> piping systems were used to reduce field construction time and cost, enabling the contractor to meet a compressed time schedule and eliminating excessive downtime for the steel mill. Victaulic minimized lost revenue associated with a 42-day shutdown.

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### A Time and Money Story

A single source for a total system of mechanical pipe joining products, Victaulic was brought on board to offer cost savings and improved onsite efficiency, while also keeping ISG's project on time and on budget. The general contractor on the project was Graycor, located in Homewood, Illinois. Working with Correct Construction Co. of Portage, Indiana, and global engineering firm Aker Kvaerner, Victaulic supplied a complete line of grooved valves, fittings and couplings for a variety of utility services. These services included compressed air lines for actuating controls and lubrication; nitrogen lines for purging operations, chilled water, cooling water supply and return lines; and lake water supply and return lines. All of these systems were key requirements from ISG in order to minimize lost revenue associated with the shutdown during the 42-day outage.

Aker Kvaerner specified both grooved and Pressfit<sup>®</sup> stainless steel piping, depending on pipe size and service, to meet stringent project requirements. Better suited to specific applications than welding, flanging or threading, the grooved piping system provides ways to quickly, easily and economically join pipe using four basic components: grooved pipe, gasket, housing and nuts and bolts.

“Victaulic systems were specified for this project because they meet ASME B31.1 and B31.3 piping code requirements, and also because they have a lower total installed cost than traditional threaded or welded systems,” said Tom Maus, Aker Kvaerner project manager. “The systems are easier to install and require less installation time than traditional systems.”



### **Innovation Driving Reliability**

Victaulic couplings, including Style 07 Zero-Flex rigid couplings and Style 77 flexible couplings, were specified. Equipped with an angle pad design, the Zero-Flex couplings provided rigidity for valve connections and long, straight runs of pipe while reducing the number of components handled during assembly. The Style 77 flexible couplings — designed with cross-ribbed construction — provided a stronger component for pressure piping systems and reduced equipment noise and vibration. Stainless Steel Style 77S flexible couplings were used to join grooved-end stainless steel pipe and offered corrosion resistance and strength.

Requiring no flame or arcs as with welding and no cutting oil, chips or preparation time as with threading or flanging, the Vic-Press stainless steel piping system provided a fast, easy, clean and reliable means for installing stainless steel pipe and fittings.

The caster rebuild required the Pressfit System to join small diameter, stainless steel pipe. Inclusive of Pressfit couplings, elbows, tees, reducers and adapters, the system allows for quick, reliable pipe assembly with a hand-held pressing tool and provides corrosion resistance.

Vic-300 MasterSeal butterfly valves were also used. Featuring a patent-pending seat design to ensure full 360-degree sealing, the valves are designed for pressures ranging from vacuum to 300 psi (2065 kPa) and for bi-directional, dead-end services to full working pressure. The Vic-300 MasterSeal butterfly valve is designed with an ISO-standard mounting flange that allows any type of actuation to be mounted quickly and easily.



### **Value-Added Implementation = Success**

The system's ease of installation required minimal training and enabled ISG to use some of its own maintenance employees. Victaulic Industrial Sales Representative Jeff Carlson trained ISG mechanical maintenance technicians to roll groove the pipe onsite, eliminating double handling and cutting overall labor costs.

“Victaulic representatives made regular visits to the project site and trained the contractor's personnel to use the Victaulic equipment and tools,” said Joe Boyce, ISG project manager. “The onsite training was provided at no cost by capable sales staff and translated into significant savings for us in terms of installation time and cost.”

To further ensure onsite efficiency, Victaulic's Construction Piping Services (CPS) team prepared construction drawings based on original engineering drawings completed by Aker Kvaerner. All materials were bagged-and-tagged — a system that ensures materials are organized in accordance with the construction schedule — reducing material handling and coordination by 95 percent.

“Victaulic made sure all of the materials were onsite and ready to be installed during the outage,” Jack O’Malley, Correct Construction project manager, said. “Workers were not forced to wait around for the product to be delivered, which oftentimes becomes a great expense.”

“Time is money, and there would have been severe penalties if the caster was not up and running on Day 42 as scheduled,” noted Boyce.

The No. 1 caster is not the only portion of the facility containing Victaulic grooved piping. More than 15 years ago while under the ownership of Bethlehem Steel Inc., the mill expanded its operations to include a hot-dip galvanizing line for producing galvanized sheet steel. Because of the high cost of initial installation and the ongoing maintenance and repair of a welded system, the company opted for a mechanically grooved-end piping system for a variety of utility services, and became one of the first steel mills to use grooved piping components on such a large scale. Mill employees grooved and assembled the pipe onsite and found system repairs and modifications very simple.

“Because the grooved system is easy to maintain, we can seamlessly perform maintenance during planned outages without having to shut down the mill and incur revenue loss,” said Jim Wedzina, ISG craft supervisor. “The system has been installed for more than 15 years now, and I’ve never experienced any problems.”

The use of Victaulic piping components for ISG’s utility piping systems was an important factor in enabling the piping contractor and plant forces to meet the installation schedule and allowing the plant to be brought back into production in the allotted time. The system’s reduced total installed cost and speed and ease of installation allowed ISG to get the No. 1 caster up and running in the least amount of time and the lowest possible cost — fulfilling the project’s critical time and budget requirements.

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### **About Victaulic Construction Piping Services**

Victaulic Construction Piping Services, located in Allentown, Pa., offers an estimating/project management/drawing package designed to help effectively and efficiently apply Victaulic piping systems. Construction Piping Services provides no-charge value analysis; project management, including bills of material and cut sheets; and project pre-planning services and software to maximize benefits of the Victaulic piping system.

### **About Victaulic**

Celebrating more than 80 years of mechanical joining, Victaulic is the world’s leading producer of mechanical pipe joining systems. Headquartered in Easton, Pa., Victaulic has manufacturing and distribution facilities worldwide and employs approximately 3,000 people. The company, in partnership with its subsidiaries, develops products for a full range of industrial, commercial and institutional piping systems.