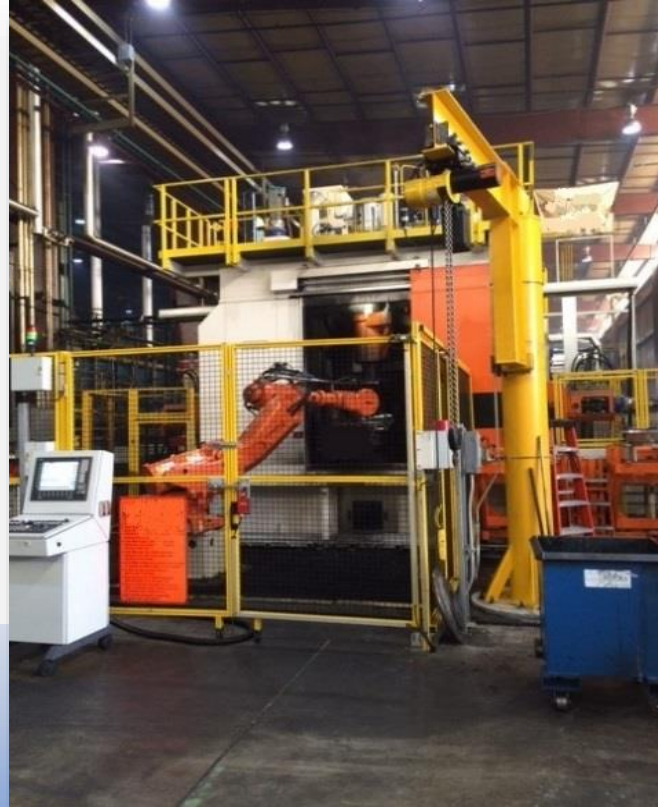


# VERTICAL FLOW FORMING INSTALLATION

**Problem:** A customer needed to install two new Vertical Flow Forming (VFF) machines as well as supporting equipment to increase production and increase complex reliability. The goal of the project was to increase capacity of the forging plant while increasing the overall up time of the plant's equipment. The approved budget for the purchase and installation of equipment was \$4.15 Million and \$4.6 Million.

**Solution:** Project Technologies & Services (PTS) provided the customer with support by managing the project and construction for the preparation and installation of the equipment.



*First vertical flow former installation*

PTS provided the customer with engineering input and customer support. PTS was a liaison between the customer and the equipment providers, reviewing and signing off on engineering drawings provided by the equipment manufacturers to ensure customer's needs were met. PTS worked with vendors, the customer, and subcontractors to create a working schedule for the project.

The preparation for the new equipment began with PTS developing layout drawings of various proposals to determine how the equipment was going to be added to the current production flow. Onsite dimensions were performed by PTS to confirm the new equipment would fit, while also leaving enough room for forklift traffic and access for maintenance to work on the equipment. After meeting with the facility's production and maintenance leaders a layout was chosen and the installation moved forward.

The chosen location required a relocation of the maintenance department. PTS oversaw the installation of the addition ensuring compliance with the strict safety rules of the customer. While the addition was being built PTS designed the foundation for the new VFF. This foundation included a self-contained trench drainage system. PTS put together bid documents for the installation of the foundation, completed site visits, reviewed proposals and ultimately oversaw the installation of the foundation.

The new VFF required 125' of double layered conveyors to be added to the existing system to bring and remove product from the new equipment. PTS put together the specification for these new conveyors, held bid meetings with conveyor builders, reviewed the proposals and chose the manufacturer to build the system. PTS held review meetings with the conveyor manufacturer and initiated an acceptance test upon completion of the conveyor build. Also, PTS completed specification and bid reviews for the electrical and mechanical installation of the conveyors.

In addition, PTS created the specification, bid review and installation oversight for a Controls Engineering firm to program the conveyors to work with the existing conveyors and VFFs while working with the new VFF to bring/remove product as it was needed.

The new VFF required 1,000-amp power supply, cooling water supply and return, city water supply and compressed air supply. PTS completed the specification, bid review and installation oversight for the running of these new utilities from their existing locations in the facility to the new equipment. The tying in of these utilities required the facility to be shutdown.

The VFF also required other supportive equipment for production use, including two free standing bridge crane systems and a two-ton jib crane.

The contract to purchase the VFF included installation by the OEM with the help from local electricians, millwrights and the supply of tools and equipment. The customer's maintenance staff was not available to help the OEM with the installation so PTS created the specification, and bid review with Electrical and Mechanical contractors to supply the installation assistance of the equipment.

During the installation of the VFF PTS managed eight separate teams of contractors; OEM, Electrical and Mechanical installing the VFF, Electrical and Pipe fitters installing the utilities to the VFF and the electrical, mechanical and conveyor controls contractors installing the conveyors. The installation was scheduled during shutdown weekends and holidays to tie in different equipment and utilities as it was possible to not slow or delay the installation of the new VFF or production.

Upon completion of the installation of the VFF a runoff of the new equipment was completed for 7 consecutive days, 24 hours a day. During this runoff, PTS had a representative present at all times to document any production stoppage to determine the root cause.

During the installation of the first VFF the customer's management team determined that it wanted the second VFF to be installed into a different plant instead of next to the first VFF as originally planned. When this decision was made, three months remained before the second VFF was to arrive. The facility that this VFF was being added to did not have enough room to fit the new machine, therefore, existing equipment would need to be moved and an addition would need to be added. The size of the addition would be limited due to the proximity to shipping docks and a roadway to another facility.

PTS began by completing layout proposals of the new addition and equipment and then presented the layouts to production and maintenance for feedback. The customer approved the recommended layout design and work began on the new addition. PTS completed the structural design of the addition which included a five-ton building crane to assist maintenance due to the space limitations within the building. With the completed structural design a specification for the material supply of the addition was created, PTS reviewed the bids.

PTS worked with a local architect to expedite building permits with the municipality the facility resided in. Specifications were created for the steel erection of the building, the installation of electrical within the building, the installation of fire suppression sprinklers, installation of the building crane, installation of city water, natural gas and the continuation of compressed air, cooling water supply and return lines from the existing building. PTS managed the erection of the building and the installation of all the utilities along with scheduling inspections by the city inspector. PTS worked closely with all contractors to maximize productivity, minimize down time and ensure all safety requirements were met.

The new VFF location required 70' of double layered conveyors to be added to the existing system to bring and remove product from the new equipment. PTS put together the specification for these new conveyors, held bid meetings with conveyor builders and programmers, reviewed the proposals and chose the manufacturer and integrator. PTS held review meetings with the conveyor manufacturer and integrator during manufacturing and held an acceptance test upon completion of the conveyor build. PTS completed specifications and bid reviews for the electrical and mechanical installation of the conveyors.

The contract for the second VFF, again, included installation by the OEM with the help from local electricians, millwrights and the supply of tools and equipment. PTS completed specifications and bid reviews with Electrical and Mechanical contractors to supply the needed installation help and equipment.



*Second VFF install with new addition*

Upon completion of the second VFF, another 7 day, 24 hours/day runoff was completed. Again, during this runoff, PTS had a representative present at all times to document any production stoppage to determine the root cause.

Both projects were completed on time and below the established budget.