

CASE STUDY

Metal Stamping Company Implements Successful Expansion Project in Partnership with PRAB Conveyors

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Duane Lawrence, Project Engineer, E&E Manufacturing

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E&E Manufacturing produces heavy gauge stamped metal fasteners, progressive die metal stampings, and high value added assemblies. With facilities in Plymouth, MI and Athens, TN, they serve a heavy industrial manufacturing customer base including Tier 1, Tier 2, and OEM's in automotive, heavy truck, military and other industries.

E&E combines strong engineering and manufacturing talent with safe, clean, state-of-the-art facilities allowing them to tackle complex manufacturing problems for their customers.

Customers often rely on E&E to help them with over capacity, short lead-time production situations. These demands require reliable engineering and production time and near perfect delivery on deadlines. The strong reputation of the company lead to business growth, which meant they needed to expand their production capabilities.

In January of 2013, the company was awarded a sizable contract from a new customer. The contract would extend several years and require an investment in new presses and dies. E&E was prepared to make the changes necessary to provide this new customer with high quality product and on-time delivery; however, expansion of this type would be challenging.

Adding the necessary capacity would require three new presses in an existing facility that was landlocked. This meant the expansion would have to be contained within the existing footprint of the building. In addition to the presses, the project also had to account for the scrap handling requirements. This was the challenge before project engineer Duane Lawrence.

As Duane reviewed the overall scope of work, he knew setting the presses would be a relatively easy task once a proper

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location was determined. The company had many presses and the plant staff was very familiar with proper installation procedure. The real difficulty would be the addition of the scrap handling system.

For help with the selection, design, and manufacture of the necessary metal scrap conveying system, Duane turned to PRAB. E&E had worked with PRAB numerous times before, starting in 2004 when PRAB helped the Athens, Tennessee location with their material handling requirements. The original conveyors are still in place today, working through 2 shifts, 5 days per week, with only minimal scheduled maintenance necessary.

PRAB had also engineered a metal scrap conveyor system in the Michigan facility several years earlier. The system included two steel belt conveyors working from a Niagara press to a load-out area. A third conveyor then discharged the material evenly into two outside containers. Duane sought to get the same dependability and reliability for the new scrap system as he experienced with the existing systems.

The first project objective was placement of a new 1650 AIDA press. The addition of this press was the key to satisfying the new customer contract requirements and therefore, would be the first of three presses to get installed. The goal of this project was to install the press and effectively remove the scrap while working with existing infrastructure, and maintain the tight project schedule and budget.

PRAB engineers started the design process by working with Duane and the project team to complete a comprehensive RFQ form as the starting point for the project, so all parties understood the foundation of what needed to happen. This form is structured to help identify various factors in selecting the right piece of material handling equipment, such as:

- Required components for scrap removal
- Full nature of the scrap to be handled.
- Key performance indicators.
- Potential conflicts
- Critical path project elements and more

In addition to the physical constraints, the project also had a tight completion deadline because the new contract awarded required parts on a just-in-time production basis. Further constraining the progress of the project were a series of end product design alterations which changed the thickness and configuration of the scrap coming off the press; thus requiring changes to the scrap system with no movement in the project completion date.

After several meetings, it was determined the best way to position the new press and handle the scrap was to daisy chain the new equipment off of an existing conveyor system, allowing that system to carry all of the scrap into the transfer system and to the load-out area.

The next hurdle for PRAB engineers was to fit an underground conveyor into an existing 25' deep in-floor pit and elevating the scrap above the machine but not above the floor level

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so material could be discharged into the existing Oscillating conveyor.

The size of the scrap coming from the 1650 AIDA press would be 10" x 10" x 1/4" thick. Normally a 6" pitch steel belt conveyor with a 3/16" belt thickness would be used to adequately handle the size and weight of the scrap falling from the press on to the belt. However, the existing space in the pit would not allow for the size required for the 6" pitch Steel Belt. Therefore, PRAB custom engineered a 2-1/2" pitch steel belt conveyor, which has a standard 1/8" thick belt, with a reinforced plate. The engineered plate helped to overcome the space constraint while maintaining the durability and reliability of the conveyor operation.

Deadlines were tight and emotions were high the weekend before a must-go Monday morning startup. PRAB technical field service technicians spent the weekend assisting with conveyor installation, controls tie-in, and QA/QC testing. The E&E and PRAB teams worked together as one to ensure proper installation of the press and scrap handling system. The system worked as designed and E&E was ready for production runs on the Monday morning deadline.

PRAB engineers worked overtime with Duane to make sure they designed a system that would move the scrap load away from the press quickly and effectively. The scrap handling project had many edits and changes yet the organization and communication of both parties working in partnership made the project successful.

Several months after the project completion, Duane Lawrence commented in retrospect, "PRAB worked with us all the way through the project with all of the changes, budget adjustments, and time line requirements. Most importantly PRAB stuck with us on the last weekend before start-up. It was a fire drill but we came through it on a very positive note. Today our system is still running smoothly and performing as guaranteed."

About PRAB

PRAB is a leading engineer and manufacturer of conveyors, chip and fluid management systems, and industrial water and wastewater treatment equipment. Our customized solutions automate metal handling, reduce labor costs, reclaim and recycle expensive cutting fluids/coolants and maximize return on recycling metals. With our expertise, honed by more than 4,500 installations for the world's leading OEMs and suppliers, PRAB continuously improves material handling, housekeeping and compliance to environmental rules and regulations within the automotive, aerospace, medical, electronics, defense, off-road and energy markets. For more information about PRAB, visit prab.com.

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