

HIGH-SPEED LASER SHINES AT SHOP-AIR CUTTING OF ALUMINUM

Maker of world-class machinery for mining and tunneling, typically custom-tailored to customer requirements, DBT America knew it needed a big press brake to handle fabrication of heavy plate components, but it also wanted quick setup and changeover flexibility with the operator ease of touchscreen Windows-style control.

It found the solution to those needs at CINCINNATI Incorporated, which had just introduced a new line of PROFORM hydraulic brakes with advanced PC-based touchscreen control and “see



Jim Napier, president of Production Manufacturing Inc.

first, then do” simulation graphics in 14 models sizes up to 2000 tons. In a welcome surprise, CINCINNATI recommended against buying the biggest model, instead proposing a 1500-ton PROFORM

with quick-change tooling and a bumping bolster to handle AR plate up to 2” thickness.

“Because of the AR plate requirements, we initially felt we would need an even larger press brake,” notes Bill Herstine, DBT Production Operations Manager. “Joe Campa, the CINCINNATI sales engineer, suggested using a bumping bolster to form or straighten the AR plate. By utilizing this bumping bolster, the 1500-ton press was more than adequate and proved to be the most cost-effective solution.”

Installed at year-end 2003 at the company’s Houston, Pennsylvania plant, 15 miles south of Pittsburgh, the 1500-ton press-brake with 16-ft. bed gives DBT the ability to form or straighten any material used on varied product lines, emphasizes



Herstine. The most common materials are 1/4” to 1” thick A572-50 or ASTM A514 steel, but certain products require AR400 and AR450 plate ranging from 3/4” to 2”.

The rugged PROFORM with PC-based control and quick-change tooling provided the right combination of power and flexibility for DBT’s tailor-made mining solutions. “Because our systems configuration is primarily customer-driven, very few parts are the same,” says Herstine. “The tooling package provided by CINCINNATI allows us to set up three different tooling configurations at once on the PROFORM press,” he says. “If a different punch or die is required, it only takes minutes to change it.” An adjustable V die, part of the CINCINNATI tooling package, also helps avoid change-outs to further speed setups.

The PC-based PROFORM replaced an all-manual press brake. The powerful control combines 3D graphic interface with simple touchscreen operation to speed setup and programming for optimized bending productivity. Advanced control software and simulation graphics allow helpful 3D rotational viewing of the part, including detailed presentation of part shape and gage fingers.

The 15.1-in. LCD touchscreen control uses simple icon-drive Windows® operating system, eliminating the need for keypads and key switches. The operators made the transition to the touchscreen control without “old dog/new tricks” issues, reports Herstine.

New parts program can be generated through manual data entry

or by drawing the part in cross-section or flat pattern, then selecting the tooling and bend sequence. A special job setup page displays tool segment lengths and tool locations, as well as notes to reduce setup time. The control can access jobs from its internal hard drive, floppy disk or network connection. At present, operators program parts directly on the PC, but DBT is exploring offline programming for various machines in the plant, including the PROFORM, said Herstine. The PC control's networking capability will enable easy download of the programs.

Precision servo hydraulics assure that parts are formed as programmed, allowing the PROFORM to hold ram repeatability to ± 0.001 " (0.025mm) along the entire length. Each PROFORM is tested before shipping to ensure ram repeatability. The PROFORM features adjustable stroke length and full-tonnage throughout the stroke. Programmable ram speed allows users to maximize forming speed for fast throughput with small parts and select optimum speed for large parts to reduce back-bending and ease part handling.

Loading of the heavy plate material is currently aided by a 15-ton overhead crane, but DBT America had CINCINNATI modify the press brake for mounting a 5-ton crane on the machine. "The crane is being designed and fabricated by us in-house and should be installed by year-end," says Herstine.

New projects are pretty common at the Houston facility, which has steadily broadened its product range since its formation in 1995 by DBT Group, a global mining equipment maker. The plant produces armored face conveyors, stage loaders and belt tensioning mechanisms for longwall mining operations, as well as continuous miner and belt systems. It also supplies components for transportation equipment and roof support systems made at other DBT locations.

While manufacturing has become increasingly varied, demanding greater production flexibility, notes Herstine, "we are proud to say that our quality is better than ever. The CINCINNATI PROFORM press allows us to maintain the level of quality our customers expect. We consider our manufacturing facilities to be world class. Why should we settle for production machines that are anything less?"

That commitment to quality can be found top to bottom throughout the organization, he stresses. "Our president, Mr. William S. Tate, once said that 'We may lose orders because of relationships, price and delivery. We cannot lose orders because of substandard quality.' We live by this statement in all our manufacturing facilities," states Herstine.