



The E5 Compact Express adds unmanned operation through highly compact load/unload automation. With the E5, both the position and speed of the punch and die are programmable, which allows punching, nibbling, cutting, forming, marking, bending, and tapping in just a single setup.

New Fabrication Technology

New Technology from Finn-Power Meets Telecom Manufacturer's Growing Needs.

When Jim Morroni founded Electric Equipment & Engineering Co. (EEE), Denver, CO, in 1922, it was just a small firm selling motors and electrical systems. However, this fledgling company soon earned the reputation of being able to tackle the challenging jobs that competitors couldn't or wouldn't attempt. Today, this third-generation family business would make patriarch Jim Morroni proud. His commitment to innovation and engineering excellence still exists through his two sons, Dick and Tom, and grandsons Tim, Greg, Craig, and Mike—all part of the current EEE management team.

Nearly 65 years ago, the company began manufacturing products for the telecommunications industry and has evolved into a fierce competitor in manufacturing power distribution and transfer systems in all shapes and sizes from 200 – 4,000 amps.

“All the products that we manufacture today have been

invented or pioneered at EEE,” explains Greg Morroni. “We do not make what you would call a ‘me too’ product.”

“We designed and introduced the very first microprocessor-controlled transfer switch,” adds Tim Morroni, Greg's brother. “Our larger competitors now manufacture this product in much larger volume than we do, but we can innovate quicker than they can. We innovate constantly in order to compete.”

History of Increased Productivity

The first fabrication machines installed at EEE were two single-station presses. These machines served the company well for many years, but fierce competition in the telecommunications industry and rapidly-growing demand for just-in-time deliveries forced EEE to look for more productive fabrication equipment. In 1999, EEE chose the Finn-Power P5 hydraulic turret punch press to replace one of the

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Tim Morroni's company, Electric Equipment & Engineering Co., utilizes the Finn-Power E5 Compact Express to produce power distribution and transfer systems in all shapes and sizes from 200 – 4,000 amps.

single-station presses. “We recognized that if we wanted to compete more effectively, we had to upgrade our fabrication equipment,” says Greg Morroni.

The P5 is still in production at EEE, and this purchase began a 10-year relationship with Finn-Power that covered several generations of machines purchased to keep up with growing demand. In 2000, EEE introduced another new product that created a rapid increase in production and prompted the company to add an F5 hydraulic turret punch press.

In 2005, strong demand for another product line, the integrated load center, once again was responsible for adding new fabrication automation technology from Prima Finn-Power—the C5 Compact Express. This product added un-manned operation to the C5 turret punch press through highly compact load/unload automation.

“Even though we had short lead times and increased demand, we didn’t have to add to the workforce because of the machine’s automation,” explains Tim Morroni.

Servo Electric Technology

The latest generation of Finn-Power equipment to arrive at EEE was the E5 Compact Express in early 2009. This machine has many of the same features as the C5, while offering the advantages of servo-electric drives, such as high precision and lower energy consumption.

The Finn-Power E5 turret punch press, a new generation, precision fabricating system, features a servomotor-driven punch mechanism and is both flexible and accurate. In the E5, both the position and speed of the punch and die are programmable, which allows punching, nibbling, cutting, forming, marking, bending, and tapping in just a single setup.

The punching process of this new technology combines servo-electric technology with mechanical power transmission, enabling strict punch control. A servomotor, together with a lead screw, moves a roll that in turn moves the ram by means of a guiding surface.

The punching mechanism is designed for two basic modes:

The E Series servo-electric press brake forms EEE's parts quicker and the increased precision dramatically reduces assembly time.

punching and forming. The punching and forming strokes are based on horizontal movement, made by a servo motor, which is converted into vertical ram movement and transmitted to a punching or forming tool. In the punching mode, the roll moves horizontally over the top of the guiding surface, producing a punching stroke during each movement. The punching stroke is generated by a servomotor-driven mechanism. The ram that moves the tool has numerically settable upper and lower limits (CNC-axis). For punching, the operator enters the tool length for each tool in the tool table. The CNC control determines the optimum stroke length according to tool length and sheet thickness. The stroke’s lower limit is based on the ram’s mechanical bottom position that is fixed in punching. In forming, the upper and lower limits of the ram are freely set from its bottom position upwards.

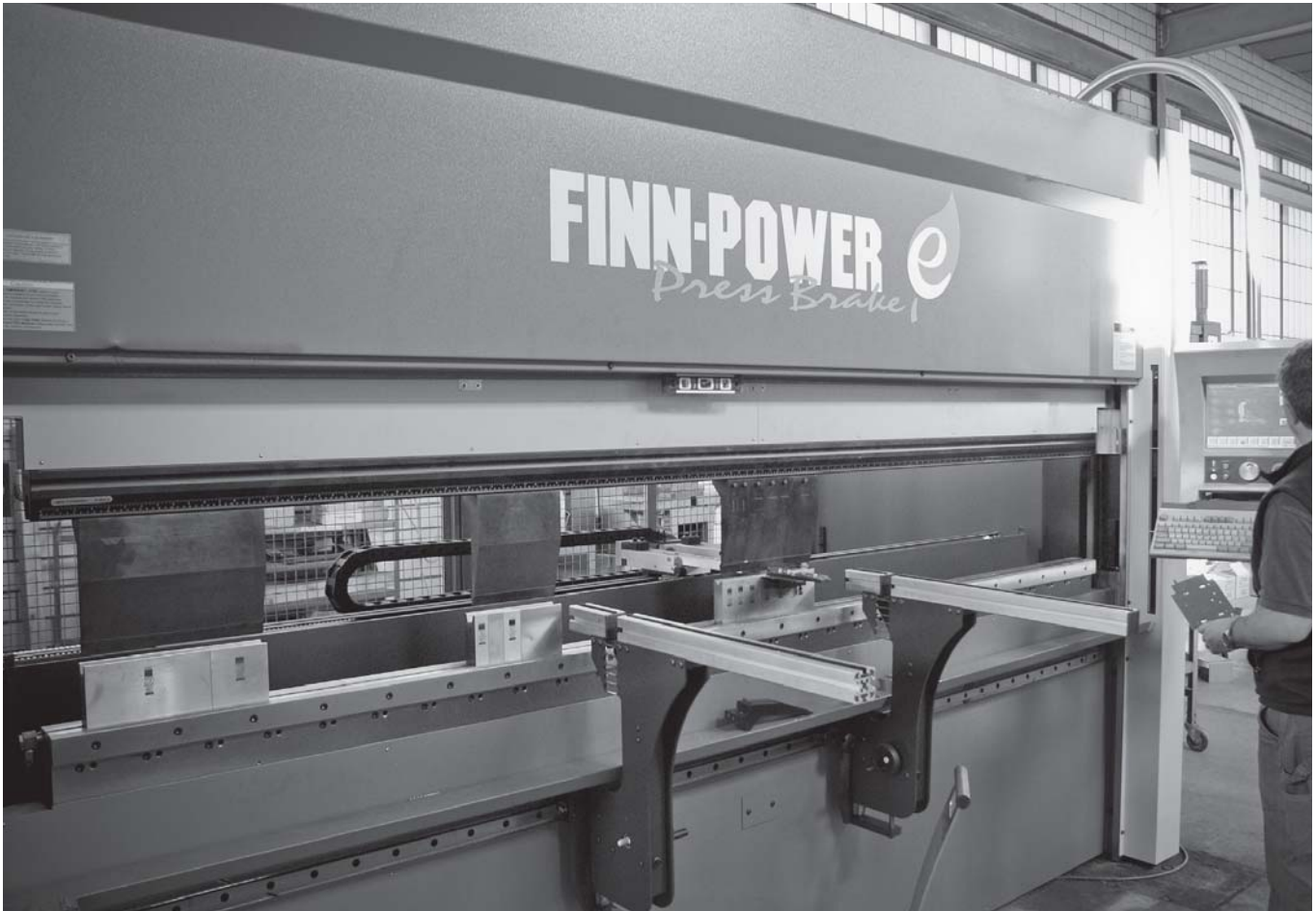
The punching stroke is numerically controlled by the CNC, which provides a very fast and optimal punching stroke. The stroke position and speed are controlled by the CNC. With forming tools, it’s possible to program a lower ram speed and use a lower forming speed and a positioning tolerance.

“We were surprised by the increased accuracy of the servo-driven punch,” says Greg Morroni. “We used to outsource the welding of a line of outdoor boxes, and their price tripled in 10 years. It is critical that the parts fit perfectly together because the box needs to be watertight. With the increased accuracy of the E Compact Express, we were able to redesign the boxes to eliminate welding. We now rivet the boxes together and the holes must match perfectly—and they do. Our cost of manufacturing these boxes has dropped 50%.”

Servo-electric Press Brake

The final piece of Finn-Power equipment that EEE installed was the E Series servo-electric press brake. This





The E press brake is a fast, accurate bending solution. This drive is based on the pulley principle resulting in a very even distribution of forces in the top beam, high accuracy, increased productivity, decreased energy consumption, and few maintenance requirements.

press brake is a fast, accurate bending solution. By applying mechanics and electronics, a unique, patented, mechatronic drive was developed. This drive is based on the pulley principle resulting in a very even distribution of forces in the top beam, high accuracy, increased productivity, decreased energy consumption, and few maintenance requirements. The frame concept makes it possible to utilize the back gauge system across the entire working length.

“The repeatable precision of the E brake is amazing,” says Greg Morroni. “It forms our parts quicker and the increased precision dramatically reduces assembly time.”

Future Growth

EEE management is optimistic about the future.

“Our outlook is pretty good,” concludes Greg Morroni. “The telecommunications marketplace has dwindled, with fewer customers and fewer vendors. However, there are plenty of doors open to us, due to our ability to innovate and our manufacture flexibly for tight deadlines.”

“Whatever comes down the pike,” adds Tim Morroni, “with our Finn-Power equipment we are not going to worry about our capacity to produce quality products. The Finn-Power machines have

given us the opportunity to integrate products in a way that our competitors either can’t do or won’t do. Our products are helping to improve our customers’ bottom line... and Finn-Power is helping us produce these products.” ■



The tapping feature of the E5 has also paid a large dividend to EEE. The company chose a six-station, servo-driven tapping unit.

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