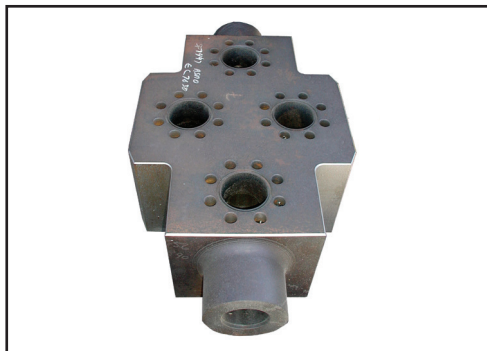


### Oilfield Equipment

#### The Challenge

The need for oilfield equipment is at an all time high. Manufacturers such as Energy Equipment Corporation (EEC) of Houston are running full-tilt to meet demands. The company wanted to extend the size valves they offer and needed a boring mill capable of handling large parts.



#### Part Specifications

Two of the primary products offered by EEC include choke valves used inline to vary oil flow rates out of a well and block valves which are high pressure valves. Some valves weigh in excess of 25,000 pounds.

One of the larger classes of block valves is a prismatic part measuring 24 x 24 x 36, made of 4130 steel with an inconel clad ring groove and interior seat pockets. Operations on this part include face milling with an eight-inch diameter tool, drilling, and milling a seven-inch bore with a ring groove and machining the seat pockets with a programmable feedout tool.

The seven-inch bore is machined from solid with a 6.5 inch tool.

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### Valves

#### The Solution

Known for their modular design, Giddings & Lewis boring mills are configurable to a customer's requirements. Energy Equipment Corp chose an RT 1250 with a six-inch four-speed spindle and extended W-axis travel. Adding a programmable boring bar to the HBM, EEC is able to use the live spindle to produce bores of varying diameters with one tool.

*"We wanted to take advantage of the favorable business conditions and quick delivery was a big factor in our decision to buy a Giddings & Lewis boring mill. Installation began just over four months after the order was placed."*

Kevin Goss  
Manager of Manufacturing Engineering



#### RT 1250 Specifications

- 1250 x 1600 mm (49 x 63 in) built-in contouring rotary table
- Four-speed, six-inch spindle headstock with a 56 kW (75 hp) spindle motor, 7695 Nm (5676 ft lb) torque and 3500 rpm. The four-speed headstock has high torque at low speeds for heavy-duty metal removal.
- Extended W axis or saddle travel was chosen to accommodate the 6 foot extension of the programmable boring bar.
- 25 m/min (984 ipm) rapid traverse
- Part probe

### RT 1250 Rotary Table Horizontal Boring Mill

#### The Results

- Cycle time on the large block valves has been reduced by 10 percent with the RT 1250.
- Multi-tasking capabilities were added with the live spindle and programmable boring bar.
- Use of a feedout tool such as a programmable boring bar reduces the number of tools required to produce a wide range of bore diameters.
- Giddings & Lewis boring mills are noted for their robust design which they achieve with features such as X-braced columns, large preloaded ballscrews and wide way spreads. A rigid machining platform is required when using the long (6 feet extended) boring bars.



- Taking a .375 inch depth of cut with an eight-inch face mill required significant horsepower. EEC chose a six-inch headstock with 75 hp. The rigidity and cutting ability of the headstock is further improved with the Hydra-Rib variable preloaded taper roller bearings. This added rigidity at low speeds is useful in cutting the hard inconel clad seat pockets and ring groove.
- The helical interpolation operation is a faster method for generating a bore and produces a flat bore bottom. The standard high-pressure through-the-spindle coolant helps remove chips from the hole. By maintaining a more uniform depth of cut and chip load, helical interpolation can achieve better roundness and straightness.
- The part probing option is saving 30 minutes per part. "We used to have to line up each part twice on the machining center. On the RT 1250 we probe once and hit cycle start. The machine finds the position and goes." Goss stated.