

### Primary Metals Steel Mill

#### The Challenge

As ACIPCO's (American Cast Iron Pipe Co) production machinery aged, the company faced increasing maintenance costs and downtime. The machine shop, located in Birmingham, Alabama, produces spare parts to repair production machinery for all of ACIPCO's facilities. In their evaluation, the company compared the cost of rebuilding versus purchasing new equipment.



#### Part Specifications

The steel pipe mill roll is one of over 100 different parts produced on the Giddings & Lewis VTC 1600. The pipe mill roll is used to form a round pipe from hot rolled steel. The pipes, which are made of D2 steel, measure up to 100 ft long with diameters to 24 inches. D2 steel is considered difficult to cut because of the hardness.

The VTC 1600 machines the OD and ID of the 2000 lb steel pipe mill roll. Operations include facing, boring and turning. Part tolerances are approximately 0.001 in. on the bearing fit. Typically, other part materials include carbon steel, brass, cast iron, stainless steel.

#### Fives Giddings & Lewis

142 Doty Street  
Fond du Lac, WI 54935  
Tel: 920 921 9400, Fax: 920 906 2522  
fivesmsi-sales@fivesgroup.com  
www.fivesgroup.com

### Steel Pipe Mill Roll

#### The Solution

After evaluating rebuild versus new equipment, ACIPCO decided to replace four boring mills with two Giddings & Lewis vertical turning centers. As the machine shop for all ACIPCO facilities, Machine Shop Number One often bids against outside machine shops for the company business. Time is also a factor, since the cost of downtime on a production machine can be expensive. "We need to be competitive," said Tommy Blackerby. "The VTC 1600 gave us the state-of-the art technology and the ability to respond quickly."

"We've replaced four machine tools with two, including the Giddings & Lewis VTC 1600. We've reduced cycle time, factory floor space and our maintenance costs. The VTC 1600 has performed well, making us even more competitive in the market place."

Tommy Blackerby  
Assistant Superintendent Machine Shops



#### Giddings & Lewis VTC 1600 Specifications

- 1800 mm (79.9 in) table
- 100 hp table drive
- WedgeLock tooling system which handles standard modular tooling. Tools as long as 27.6 inches may be used.
- 20 m/min (787 ipm) rapid traverse
- Large 250 mm (9.8 in) ram
- Standard linear scales
- Fanuc 160i control with remote pendant and table jog
- Tool probe

### VTC 1600 Vertical Turning Center

#### The Results

- Four machine tools were replaced with two giddings & Lewis vertical turning centers.
- The VTC's faster traverse rates, tool changes and table speeds allow the customer to reduce cycle times on some parts by more than 60 percent.
- Giddings & Lewis vertical turning centers are noted for their rigid design. This rigidity in the machine and tooling system allows ACIPCO to do interrupted cuts on rough castings.
- The enclosure and chip conveyor designs have reduced cleanup requirements and results in a cleaner shop.



- The ability to hold tight tolerances has improved with the new machines.
- The remote pendant with table jog makes it easier for the operator to set up the part and find the zero position.
- The tool probe has saved 30-35 percent on setup time. This is particularly helpful when emergency spare parts are needed.
- The duty cycle on the four old machine tools was 24 hours, six days a week. The new VTCs are run 24 hours, five days a week and still offer extra capacity.
- Replacing four machine tools with two has created more space in the machine shop.