

First Boring Mill with Integrated Contouring Head

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Redefining large-part machining efficiency with dual-spindle heavy milling

Production Machine & Tool in Wichita Falls, Tex., is graduating to the "mega-part" class of machine shops thanks to its acquisition of a first-in-the-industry boring mill design by MAG Americas, one that combines a powerful milling spindle and contouring head.

"We built our business by offering capabilities other shops in our market typically do not, and this acquisition fits our business strategy perfectly," according to Mark McMullen, the shop's president. "There's nothing else that can match the capability and versatility of this machine for large-part metalcutting. It is the first, 'no compromise' design that delivers the full reach and power of a boring mill, while integrating a U-axis contouring spindle that uses standard tools with automatic toolchanging.

"This machine will accommodate parts up to 60,000 lb, which is 15 times greater than anything we've done before, allowing us to tackle the industry's largest workpieces, such as blowout preventers, complete fluid ends and pump cases, to name a few examples. Naturally, we are expanding our facility and adding crane capacity to accommodate this growth."



The Giddings & Lewis RT 1250 U rotary-table horizontal boring mill has a massive table capacity and powers both spindles via a single

motor rated at 56 kW (75 hp). The milling spindle's 1,000-mm (39.37-in.) Z-axis reach is complemented with 2,500-mm (98.4-in.) W-axis travel in the table, which is backed by 30,000-N (6,744-lb) continuous feed thrust.

Unmatched Metal Removal

"The large parts we are aiming for require about 90 percent milling and 10 percent contouring," McMullen explained, "and the boring mill platform gives us unmatched metal-removal muscle.

"Currently, there is no single-platform solution that can match the milling capability of this machine and still do contouring with an integrated spindle that employs standard tools," he continued. "In addition, the live boring spindle can use 50-taper tools up to 750 mm (29.5 in) long, as well as programmable boring bars. We believe this machine's unique capabilities will be the wave of the future for large-part machining, cutting the cycle time and improving the quality."

The RT 1250 U has a contouring head slide stroke that makes it possible to turn features up to 540 mm (21.3 in) diameter without head changing or manual intervention, so complex features can be machined in one setup with greatly reduced cycle time and labor.

A novel design detail -- one-of-a-kind in machine tool design, according to MAG -- is the contouring spindle's standard Sandvik Coromant[®] Capto C8 tool interface, which reduces tooling costs, and loads tools via the machine's automatic toolchanger for faster processing without operator involvement. Coolant through the contouring spindle at 20 Bar (300 psi) maximum pressure eliminates manual intervention and ensures maximum tool life.

The contouring head can produce features like bottle bores, valve seats, seal faces, phonographic sealing surfaces, O-ring grooves, straight/tapered threads, chamfers, external profiles and others. It is located immediately above the machine's main spindle.

Another feature included on the Production Machine & Tool boring mill, unique to Giddings & Lewis, is a secondary Renishaw part probe mounted on a motorized arm. It allows part probing without removing the tool from the machine's spindle.

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