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VIEWPOINTS
INDUSTRY LEADER OPINION & ANALYSIS

Big Parts Need Swiss-Type Machines on Steroids

There was an editorial cartoon circling around social media recently by Steve Bernett in which a husband says to his wife, "Good and bad news. Gassed up the truck for $1.30 per gallon…but our stocks fell so far we can't afford to go anywhere."

That sentiment sums up what's happening in the oil industry for consumers and manufacturers alike. It's the reality of certain economic circumstances. What is a boon from one perspective is a bust for another. Part makers serving this industry are painfully aware that orders are down; there's very little production occurring in the US currently. Demand from oil and gas OEMs is virtually nonexistent.

On a positive note, however, the downturn in the oil and gas industry is encouraging innovation, as down cycles often do, in the way oil is being developed and produced. Innovation affects part design and, subsequently, the ways in which those parts are made. Presently, that means "in the most efficient way possible." In fact, that will likely be the dictate from here on out because it simply makes sense.

To that end, there are brand new machine designs that streamline the manufacturing process so that even the heaviest and bulkiest of parts can often be completely machined in one setup. While the "one and done" capability in machines is rather old news across the spectrum of manufacturing, in all industry sectors making precision parts, the multitasking machine design concept keeps improving as it is becoming more practical, affordable and successful on shop floors. Further, it's particularly interesting for oil and gas applications because these machines are like Swiss-type machines on steroids.

One of the newest machine configurations comes from You Ji in Taiwan specifically aimed at aerospace engine and oil and gas parts, such as large valve bodies. These multiaxis, multitasking machines combine a five-axis machining center with a vertical turning center. They have a large travel range in *X* and *Y* axes up to 1100 mm and a rugged 50-taper indexing *B*-axis vertical/horizontal milling head for true one setup machining. They complete all milling and turning operations on five sides of a workpiece—eliminating the need to transfer the workpiece to another machine for secondary operations.

With a single machine tool, manufacturers can, for example, turn the top of the valve body, bore the hole and then machine all the features along the sides with the milling capability. Hence, it's like a giant Swiss machine—just vertical and massive—offering 50 hp (37.3 kW) for turning and 20 hp (14.9 kW) for milling, along with the necessary rigid construction characteristics to produce parts that will be pounding through the earth's toughest layers. This machine is available now and will be officially launched in North America at IMTS 2016 this coming September in Chicago.

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In addition to the general need to make parts more efficiently, this machine design trend also aims to address the lack of skilled workers in the US. It takes special expertise to move parts from machine to machine without creating tolerance errors and scrap. Positioning has to be essentially perfect.

Like every industry, the oil and gas sector is cyclical. During the down times, the smart companies encourage creativity, engineering, invention, innovation and that's what's happening now. In whatever part we play in the industry, we can affect an outcome that makes us stronger, leaner, and even more resilient during the next cycles. Streamlining operations, making the business of making parts more efficient with new manufacturing technology is one way to do just that.