

# Wanted: Custom-Made Machine Tools

## Quality, productivity, service and support required

Matthew Jaster, Senior Editor

*Is the customer always right?* Is this phrase as relevant today as it was when it was championed as a slogan for Marshall Field's in Chicago or London's Selfridges store in the early 20<sup>th</sup> century? Nobody on the planet is right 100 percent of the time, are they? It doesn't matter what they're buying. In reality, the phrase *if we don't take care of our customers, someone else will*, seems to make much more sense.

The machine tool industry is as competitive as ever. New machine technologies, materials, coatings and software upgrades are changing the way gears are being manufactured. Companies like Gleason, Liebherr, Kapp/Niles and DMG/Mori Seiki spend plenty of time and resources on R&D to develop the best products for the gear market. More importantly, these companies engage with (and listen to) customer requests.

What can be done to make their products better? How can they increase quality? How important is service and support? With these questions in mind, it seems appropriate that both the upcoming EMO and Gear Expo trade shows offer machine tool manufacturers an opportunity to reach out to their customer bases and find out what they actu-



Gleason is expanding its inspection systems with the 300GMS (courtesy of Gleason).



Liebherr's LC500 will be demonstrated during Gear Expo 2013 (courtesy of Liebherr).

ally want and need heading into 2014. If you take care of your customers, nine times out of ten, they'll take care of you.

### Gleason Maintains Continuous Improvement Philosophy

Known for developing, manufacturing and selling machines for all aspects of the gear industry, Gleason Corporation has spent 2013 demonstrating their latest gear capabilities including new metrology solutions, profile grinding options, power skiving technology and the newest version of GAMA software (GAMA 3.0). The company plans to introduce the 300GMS, the latest addition to its GMS Series, at Gear Expo 2013.

Alan R. Finegan, director, marketing at Gleason Corporation, believes that suppliers of gear technologies are facing the same challenges of other manufacturers in 2013. "Customers demand and expect superior productivity, quality, on-time delivery and responsiveness with a lower total cost of ownership. Those suppliers who can meet those demands on the global stage will be the winners," Finegan said. "In terms of machine tool production, the United States has fallen

to 7th in the world but is still 4th in consumption of machine tools behind only China, Germany and Japan, so it is still a significant market. For Gleason, the U.S. market has been fairly healthy during the post-recession years as customers continue to invest in manufacturing technology."

According to Finegan, the latest trends that will impact the gear industry the most include greater growth in emerging markets, alternative energy, design concepts to conserve energy (8-9-10-speed transmissions, CVTs, etc.), additive manufacturing, new materials and new coatings. "The list could go on and on. We monitor the end-users of gears, the applications, the broader global trends, etc. on an on-going basis, and determine if and how those changes and trends impact the products and services we provide."

Gleason's goals and priorities are not limited to machine tools, but relate as well to providing total solutions to the market. "We will continue to develop machines, processes and tools that provide our customers with a competitive edge and do so by providing the highest

level of service and overall value in the market," Finegan said.

Service and support, for example, are playing an increasing role in the competitiveness of machine tool sales. "Customers want to know how well we can support them over their product's life, and we know we must differentiate ourselves to win customer confidence. How? With a global, connected, continually trained workforce supported by robust processes, strategies and systems to rapidly respond to customer needs. Gleason has purposefully invested over the past five years to maintain a continuous improvement philosophy to be the best at what we do and to continually adjust to ever-changing market demands. Our business metrics trend our improvements, but more importantly customer feedback has been very positive."

The dialogue between customer and supplier is vital in the gear industry today. "We routinely receive requests from customers for specific functions, features and capabilities," Finegan said. "But our R&D efforts include investment not only in machine tool technology, but in gear and process technology. Aside from specific requests, however, it is important to continuously monitor the broader trends in manufacturing that are occurring in our end markets and to respond accordingly."

Trends that include the multifunctional platform, a logical extension of a trend in the broader metalworking market, according to Finegan.

"Technology has allowed machine producers to respond to market needs for reduced costs and higher quality. Gleason has responded with Agilus, our own multi-functional platform, as well as adding integrated chamfering and deburring, on-machine inspection and other features to some of our products," Finegan said. "While more conventional gear manufacturing equipment will continue to dominate, the multifunctional machine concept has its place in the gear industry, and is especially applicable to certain part configurations and sizes, and certain production volumes."

### Liebherr R&D Efforts Pay Off

Liebherr Gear Technology Inc. announced a new partnership earlier this year with Wenzel America to exclusively represent the GearTec product line in the United States and Canada. Additionally, many of the company's new technologies and solutions will debut at EMO Hannover and Gear Expo 2013 thanks to an emphasis on R&D during the latest economic slowdown.

"For this market, I think the slowdown after two very successful years has been a real challenge," said Peter Wiedemann, president of Liebherr Gear Technology, Inc. "After the crisis in 2009, the U.S. industry really overwhelmed the suppliers with orders and now machinery and equipment is slowing down significantly. It's the same in Europe and in China as well. The very slow market needs to bounce back. Fortunately, we put a lot of effort into R&D during this time and



The LC500 is available in both automatic and manual operation modes (courtesy of Liebherr).

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we have plenty of new products and technologies to show at EMO. The economic slowdown helped us in a certain way because it gave us time to focus on internal process optimization. Our lead times needed improvement as well as our throughput. We also focused more on the high level of customization of our machine tools. All of this goes hand-in-hand.”

Custom requests and advanced machining solutions have really made it difficult to sell standard machines anymore in the gear industry, according to Alois Mundt, managing director at Liebherr Verzahntechnik GmbH. “Many of our technologies and solutions (60 percent) come directly from our customers,” Mundt said. “It takes a tremendous effort from everyone involved to design our machine tools. Selling standard machines would help us move forward as a company, but it would not help our customers. Our priority is to show them how we can make a gear faster, cheaper and at a much higher quality.”

“A good example of addressing the needs of our customers has to do with integrating our own gear cutting machines with our automation capabilities,” added Wiedemann. “Many customers want to run these machines during night shifts so we have to integrate measuring, ensure corrections are done automatically, etc. It presents a whole new set of challenges. When our customers have specific requests it forces us to go to the next level to make our machine tools smarter.”

In addition to automation, Liebherr has increased its service and support capabilities to ease customer requests. “Machine tools are very expensive. They have to work 24/7 and service has to be available if something goes wrong. You need a strong presence in the market to ensure that your customers are getting everything they need when they need it. With the variety of products that Liebherr offers, service and support can be a challenge,” Mundt said, “but we’ve done a great job adapting to the global marketplace.”

“We’ve implemented remote diagnosis from our Saline, Michigan location, for example. This gives us greater flexibility in this market. The time difference becomes less a factor,” Wiedemann

added. “Now we can dial-in and resolve any issues right after a machine is delivered. This can be minor repairs, training questions or just standard control issues that frequently come up.”

“We’ve been doing these remote diagnostics from Germany since 1989,” said Mundt. “But in 2011, we began to focus on the North and South American markets and realized there was a need to increase our service and support efforts.”

While the industry continues to evolve into multifunctional machining technologies, Liebherr is focusing its efforts on modular setups that have worked so well within the automotive industry. “There are obviously limitations for these multifunctional machines outside of special parts,” Mundt said. “Our philosophy is to keep it as simple as possible. With automation and separate machine units working together there is absolutely no contact with people between the various gear processes. We’re trying to accomplish the same thing that has been so successful with engine lines. Automation in combination with aligned dedicated machines is the direction we feel this is going.”

### **Star SU Expands Integration Solutions**

Star SU will feature a video presentation of the Samputensili G250 Vertical CNC Grinder (for automotive and high production applications at Gear Expo 2013. David Goodfellow, president, Star SU LLC, hopes to achieve “a balance of providing awareness of the latest products and technology at Gear Expo along with making an impact at EMO Hannover during the same week.”

Customer requests play a large role in the solutions Star SU and its partners provide. “The company regularly receives requests to integrate other processes on machines including gaging, chamfering/deburring, drilling, etc.”

Goodfellow sees a trend in increased productivity and quality requirements in the gear industry and plans to expand Star SU’s role as an integration solutions expert for machine tools, including workpiece holding, perishable tooling, gaging and automation —which go beyond selling a stand-alone machine. “We’ve aligned with excellent partners and solutions providers to be able





**The Sambutensili G 250 has been developed for very low cycle times and for top-quality and efficient mass production of gears (courtesy of Star SU).**

to support total integrated systems,” he added.

Today Star SU is enjoying the opportunities available in the domestic automotive market. “North America is still performing well especially in the automotive sector where vehicle production has continued to increase,” Goodfellow said.

Support is one area that is providing challenges for Star SU in 2013.

“We are challenged to supply a broad range of support activities within customer facilities,” Goodfellow said. “We’re managing this by extending full product and manufacturing support activities with Star SU onsite engineers.”

Star SU is looking forward to both EMO and Gear Expo and the opportunities these trade shows provide to the machine tool market; EMO for its depth and global reach and Gear Expo for its emphasis on gear manufacturing. “The single biggest advantage of Gear Expo is that this focused trade show carries with it a focused customer base,” Goodfellow said.

### **Kapp/Niles Shorten Lead Times**

The Kapp Group offers gear machines, tools and processes for the special requirements of its customer base. Highlights at this year’s Gear Expo include the Kapp/Niles ZE series with advancements in abrasive technology and grinding speeds. Additionally, R&P

Metrology, a company now represented by Kapp in the United States, will show the RPC PM 750/1000 portable gear inspection machine. “This technology has never been shown in North America before,” said Bill Miller, vice president sales, Kapp Technologies.

In 2013, Kapp Niles continues to grow organically by adding capabilities to its machines and services. “We offer the broadest range of grinding machines in the market and serve a diverse group of market segments,” Miller said. “The culture of our company is based on developments to solve our customers’



**Kapp will highlight its ZE series with advancements in abrasive technology and grinding speeds during Gear Expo (courtesy of Kapp).**

unique challenges. Our product development team seeks to anticipate new challenges to be ready when the opportunity arises.”

According to Miller, the North American market exhibits a consistent demand for innovation as well as value-based machines. “Markets outside North America consume the lion’s share of machinery; however there is more volatility in regional demand,” he added.

Challenges in 2013 include delivery requirements. “To this end, we make consolidated forecasts in order to fill the pipeline with machines and shorten lead times for our customer-partners. This has proved to be very successful for us,” Miller said.

Kapp has been following gear machine integration since the early days. “Multifunctional machines are not new. The technologies of CNC, live spindles and automatic tool changers have been progressing for 30 years. Computing power, application-specific software, and flexible clamping system development further increase the market. Our experts must be knowledgeable about the diverse processes on these machines to grow the market even more. And in order to leverage resources, cooperation between companies is necessary,” said Miller.

The long term service and support Kapp/Niles provides is another element of its staying power in the gear industry. “The real measure of success is the productive longevity of our machines. The absence of our machines on the used market

and the high value placed on those that are available, is an indicator of this. We have a customer that has been running a Kapp VIG machine for around thirty years who said he would not trade in his Kapp for any machine on the market, even a newer model. The cycle-times continue to impress him, and except for regular maintenance the machine never needs servicing."

Moving forward, Kapp/Niles will continue to grow organically by adding capabilities to its line of machine tools. "We offer the broadest range of grinding machines in the market, and serve a very diverse group of market segments," added Miller. "Serving all market segments equally well continues to be our priority."

### DMG/Mori Seiki Increases Market Presence

If you weren't sure DMG/Mori Seiki had more than a passing interest in the gear manufacturing industry, the company held its record-breaking Innovation Days (Hoffman Estates, Illinois in May 2013) with an entire day dedicated to gears. By expanding their portfolio of gear technologies, DMG/Mori Seiki continues to acquire more business in the gear market.

DMG/Mori Seiki Manager, Advanced Solution Development Nitin Chaphalkar, and Nicklas Byland, InvoMilling project manager at Sandvik Coromant, presented the InvoMilling process during the show. InvoMilling is a machining technique that allows faster, more efficient

production of spur and helical gears on multitask machines and machining centers. The new technology was a highlight for many attendees as the need for flexible manufacturing increases, according to show organizers.

"DMG originally focused on large gears that were complex and difficult to do," said Chaphalkar. "With InvoMilling as well as our DMG gearMILL software, we're able to show our customers that our machines are capable of doing many different things. It's a two-way process, a customer tells us what they'd like to see in a machine tool and then we try to solve the problem. Once they see they can make different types of gears on one of our machines, they begin to ask about additional gear types and sizes."

Some recent developments from DMG/Mori Seiki include worm gear grinding using CBN wheels and a hybrid process that combines hobbing and InvoMilling on the NT5400. "With InvoMilling, you're getting a much nicer surface finish and the hobbing process offers significantly improved cycle times. This process combines the best characteristics of both solutions and gives the customer versatility," said Chaphalkar.

So where can the multifunctional machine tool offer the greatest advantage to the gear customer? "I think the universal gear cutting machine is one area that offers huge advantages in the gear industry," said Chaphalkar. "This is where customer reactions really come into play. Instead of being locked into a traditional solution, this universal

machine can be optimized and customized to fit your individual needs. Here you can make a part with a gear and not just the gear itself. The customer doesn't need to install three machines to make a single part, it's basically one and done. As our tooling, software and machines continue to advance, so will our capabilities in the gear market."

Gear measurement is one area that DMG/Mori Seiki is continuing to examine with leaders in the inspection industry. "Gear measurement is a huge challenge in 2013. There are significant benefits for the larger parts if we don't have to take them out of the machine for measurements. We're aggressively working with inspection companies to come up with advanced solutions that will give our machine tools even more flexibility," said Chaphalkar.

Another area that is getting much attention in 2013 is training both internally and externally. "We're putting together an intensive training program to support our employees and our customers. We'll be rolling out some new training initiatives in the near future. Many of these techniques will be applied toward the gear industry," said Chaphalkar.

In the future, DMG/Mori Seiki will continue to develop new solutions and custom machine tools where they are needed. "This gives our customers more control over the equipment they're investing in," Chaphalkar said. "The integration of operations can significantly impact the workflow and it can reduce the overall time a part spends on the factory floor. We're really starting to see the impact this can have on our customers within the gear industry." ⚙️

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