Supply Chain Management Users Guide

Matthew Jaster, Senior Editor

First some quick definitions:

Procurement: The process of finding and agreeing to terms, and acquiring goods, services, or works from an external source, often via a tendering or competitive bidding process.

Pandemic: A global disease prevalent to a whole country or the world that can quickly remind gear manufacturers to take a good, hard look at their data processing, information systems, management strategies, and machine technology.

Perhaps the second definition isn't exactly word-for-word from Webster's, but it's safe to assume that many organizations learned a lot about their workflow in the last four months. The new enemy in 2020 isn't a health crisis, a political circus, or an ethics debate when we're strictly talking about manufacturing—it's a battle between being prepared and flying by the seat of your pants.

Case in point: Organizations that have an intricate supply chain mapping process in place have probably fared better in 2020 than those that do not. The companies that embrace technology, get the most out of their software/hardware tools, and put an emphasis on communication will continue to succeed no matter what supply chain disruptions occur. We asked a few suppliers to provide some insight to gear supply chain challenges during the pandemic.

"Ovako's specialized BQ- and IQ-Steels are a vital raw material for our customers in gear manufacturing, and we have managed reasonably well in maintaining a continuous supply to them. One of the main challenges has been in understanding what volumes to plan our production for, as this is critical to achieve the fine balance between customer satisfaction and effective cost management," said Göran Nyström, EVP Group Marketing and Technology, Ovako.

The most difficult part of getting machine-ready blanks into the hands of more gear manufacturers is awareness and education about the solution, according to Ben Belzer, president and COO at TCI Precision Metals.

"There is a fine line between supply and demand; you either have too much or not enough. TCI is a value-added materials distributor. As a distribution resource customer intimacy is important, especially during these uncertain times. Customer outreach has proven beneficial to maintaining expectations,

Forecasting precision is an essential indicator to help drive planning in the right direction. Photo courtesy of Ovako.

both for customers and for TCI. When things become difficult communications is important. Consideration and communication are a two-way street; it is important that both customers and vendors work together to the mutual benefit of each other and the end customer," Belzer said.

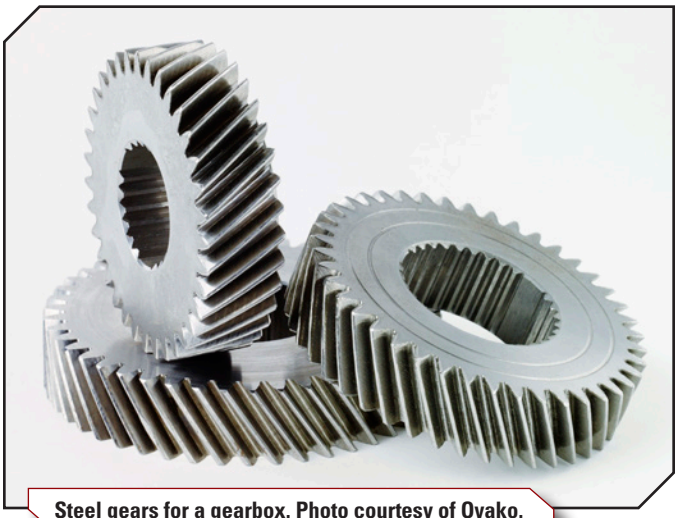
"We are fortunate that we have not encountered any material supply disruptions, the most difficult aspect has been forecasting demand for our product as many customers have been forced to curtail production as a result of decreased demand," said Evan Berlin, market manager, oil and gas, at Dura-Bar.

In the last four months, gear manufacturers and the entire metalworking industry have been carefully stepping through uncharted territory.

COVID-19 didn't wait for the paperwork to go through. There was no audit or training exercise prior to the entire planet shutting down. Navigating through a pandemic starts by "looking within." How can we do better as a supplier of materials to the gear industry? Have we looked at how automation and data-driven manufacturing can better prepare us for volatile periods in the future? How can we become more practical and deliver improvements to our customers down the road?

Putting action plans in place and addressing *internal* concerns prior to *external* concerns is how many organizations have begun the long climb out of all this uncertainty.

"At Ovako, we have taken precautions to limit any spread of the disease, and we have managed this very well. It is understood by everyone in our business that while we must stay safe, customer service remains paramount. And in these challenging and unprecedented customers we have been prepared to do whatever is necessary to maintain our supply chains to meet customer demands," Nyström said.



Steel gears for a gearbox. Photo courtesy of Ovako.

TCI Precision Metals is considered an essential business and has remained open throughout the COVID-19 pandemic supplying machine-ready materials to manufacturers, including companies producing ventilators in response to critical needs. "Throughout it all TCI has employed strict PPE policies to ensure a safe workplace environment during these uncertain times," Belzer said.

Key areas that TCI Precision Metals has put a greater

emphasis on in recent months include flexibility, innovation, a mutual management of expectations in the supplier/customer relationship, quality that can never be compromised, and never losing sight of what the organization is good at.

Dura-Bar has more than 35-million pounds of gray and ductile bar stock in inventory and continues to produce at near-normal rates to ensure it maintains inventory levels that meet the demand — now and in the future.

"Communication has been critical to our success during this time — we are in constant communication with our customers, machine shops/manufacturers, and have daily internal operation and production meetings to guarantee we are producing enough to support our customers when demand increases," Berlin said.

TCI: Machine-Ready Gear Blanks from TCI are made to order to near net shape. They are flat to within ±.002" with dimensional tolerances as close as ±.0005". A single PO can determine material, heat treating or other processes, and the finished blanks arrive deburred, clean, and packaged to prevent shipping damage, ready to go directly from receiving into the customers' machining center.

All the organizations interviewed in this article felt that technology improvements in recent years have helped weather the supply chain storm. The "new normal" is allowing companies to look at the global supply chain from a different perspective.

"By managing remote interactions both between our internal teams and our customers we are learning to become even more efficient in the future. Conferencing systems, file sharing and other digital tools are now a critical element of our business. It has not just been a question of getting these tools in place, we have placed a major emphasis on the training and support that is enabling our employees to use them effectively," Nyström said.

Berlin agreed, stating that Dura-Bar's recent Oracle implementation has been extremely valuable during the pandemic.

"We went live with an Oracle implementation just as the current situation began to take hold in the U.S. — we are now more efficient at meeting customer demands, processing invoices, altering shipments to meet customer needs, even as they change daily in some instances. In addition to frequent communication with customers regarding our continued production and operations," Berlin said.

During the COVID pandemic, TCI Precision has seen an increase in special requests, including special handling, and added processing. "The TCI ERP (Enterprise Resource Planning) platform is tied to all the company's business and manufacturing processes, from the front office to each work cell on the shop floor. TCI is a build-to-order supplier, with close tolerance specifications applied not only to the machine-ready blanks produced, but to every aspect of the customer relationship. When special circumstances arise, technology makes the request not only possible, but seamless," Belzer said.

Additionally, because machine-ready blanks are close tolerance and dimensionally consistent blank-to-blank, they support automation such as vacuum workholding, robotic loading and unloading, and integrated in-process inspection. These are all areas that will improve lead times and save on manufacturing costs.

The entire customer service team is committed to quality when it comes to its continuous cast iron bar stock. Photo courtesy of Dura-Bar.

While shop floor technology certainly helps, the need for remote services and advanced networking capabilities has been vital during plant shutdowns.

"Innovation and finding ways of doing business has been central to our approach. We have been particularly successful at handling customer interactions with modern conferencing tools," said Nyström. "And a good example of innovation is that we recently enabled a customer in India to carry out a virtual quality audit of one of our mills in Sweden, simply by using video conferencing on a mobile phone to enable them to tour the facility remotely."

The most important question in 2020

might be, "How can these organizations tighten the connection between supply and demand for their customers to meet their needs more effectively now and in the future?"

"This indeed is a million-dollar question. And central to this is being able to understand the various interactions within the value chain interaction and gaining transparency of the key figures across the different handover steps. Forecasting precision is an essential indicator to help drive planning in the right direction," Nyström said.

"Dura-Bar's commitment to quality is paramount and our customer service team has remained diligent in following-up and working with our customers as some have altered shipping/receiving hours as well as their operations," Berlin added. "Our entire customer service team remains working at normal capacity remotely at all divisions and we carefully coordinate with our customers to make sure they are fully taken care of and stress-free when it comes to working with Dura-Bar."

Everyone urges the gear manufacturing community to do the necessary research when working with a supplier.

"There are several methods of manufacturing gears and in most cases that decision has been made long before the part reaches the shop floor. Each method has its own set of processes and material requirements before you ever cut tooth one. At TCI Precision Metals we focus on providing value-added material specifically for gears manufactured from solid stock, including aluminum, stainless steel, carbon steel, and many other alloys," Belzer said.

Machine-ready blanks for gears, manufactured from solid material are a lean solution, Belzer added. Blanks can consolidate processes, eliminate material prep and the associated potential for bottlenecks, and reduce inventory with just-in-time delivery of material based on production scheduling. When considering these time saving variables, manufacturers typically realize an increase in production throughput of up to 25%.

"As with most sectors of manufacturing, the gear manufacturing space will feel the pressure of better, faster, cheaper over the coming years. OEM customers will demand more capabilities form suppliers with increased productivity, and shorter lead times. Individual production batches will shrink as manufacturers work to become more agile, driven by end customer demand for greater customization," Belzer said.

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