Customized Bearing Lubricants—Key To Performance & Uptime

Small as they some times are, bearings are certainly among the workhorses of industry. Without properly performing bearings, premature failure will result in disruptions and even catastrophic damage to many types of processes and procedures.

The service life of bearings, and often the equipment they support, is dependent on the correct bearing lubricant. This calls for application analysis and development of a custom lubricant.

Yet, an often overlooked key to bearing performance and reliability-and thereby the bearing's application-is in the suitability and integrity of the lubricant that provides for bearing movement.

Just as bearings are integral components of many types of equipment, the lubricant contained in a bearing is inherently vital to its performance and lifespan. And the proper selection of a lubricant, like the bearing it supports, requires engineering expertise with a thorough understanding of the operating conditions of its application.
"Getting bearings of the correct design and construction is vital to the quality of our products," says Vern Gulley, Purchasing Manager for Anspach, a manufacturer of high-speed power instrumentation and attachments. "Achieving that end requires that we work closely with our bearing supplier to ensure that the bearings in our surgical tools not only withstand our customers' relatively harsh environments, but also that the bearing lubricants will endure the severe heat of required autoclave (steam) sterilization."

Customized Bearings For A Perfect Fit

So, providing manufacturers and their customers with complete bearing technology involves a number of capabilities beyond the bearings themselves. For that reason companies like Anspach are increasingly turning to suppliers who can provide them with the correct bearing and lubricant combination, as well as a number of related value-added services.

Such services are available from more advanced bearing distributors who purchase their products dry (without lubrication) from bearing manufacturers, then add the appropriate lube material when the bearings are sold to the user.

Among the most important distributor services, from Intercontinental Bearing Supply Co. [1] (IBSCO) President Jack O'Donnell's perspective, is the ability to integrate bearing and lubrication solutions with a cluster of related services. For

example, IBSCO consults with Anspach to develop bearing specifications for specific applications, and then provides those bearings along with customized lubrication on an as-needed basis.

"Our engineers work with Anspach engineers to develop the best bearing solution for specific applications, including the most appropriate lube for the conditions inherent to those applications. For example, their hand tools are high speed, and therefore have certain bearing and lube requirements. At the same time, the tools have to be sterilized by autoclaving after each procedure. That introduces another variable-high heat. So, we had to adapt the lube spec to allow for both. There can be a lot of such trade-offs in many applications."

Equally important is the ability to analyze bearing failures and determine where adjustments to lubricants can solve the problem. IBSCO, for instance, can mix lubricants with specialized properties to meet very specific needs, such as novel aerospace requirements.
O'Donnell says his firm is working with NASA's Jet Propulsion Laboratory to provide the bearings for the next Mars Rover camera. Of course, this capability introduces a number of other capabilities, such as the need for a Class 100 clean room.

"This clean room capability and our ISO-9001:2001 certification and aircraft re-lubrication certification also recently led to work with NASA's Starsys Group on bearings for some different robotic arms," O'Donnell says. "They needed some bearings and we had them duplexed. In the process we were also able to significantly cut the lead time for preliminary testing."

The ability to provide customized bearing solutions, including specialized lubricants, can lead to other value-added relationships. In the case of Anspach, its tools are used for surgeries in which blood, bone and other tissue may get bound up in the bearing. To avoid bearing failure, O'Donnell's engineers worked with Anspach and New Hampshire Ball Bearing (NHBB) to incorporate a larger external seal into the tool, thereby maximizing bearing protection and longer product service life.

Retracing Your Bearing Steps

Another important ingredient to customized bearing solutions is traceability. Traceability is important because if there's a failure in the field, ball bearing experts will be able to isolate those failures to a given stock number and then take the necessary precautions. This applies to lubricants as well as bearings. If a bearing is stored containing lubricant that exceeds shelf life, IBSCO will remove the lubricant and replace it before the bearing is sold.

"Traceability is important to everything we do," concurs Gulley. "That applies to the bearings, lubricants, packaging-everything. We try to have traceability all the way back to the raw material if possible. Such traceability helps us avoid repeated problems and also be more accountable to our customers."

To maintain its credentials in custom bearing lubrication, IBSCO is an authorized re-lubrication center for NHBB. That status is subject to process inspection and approval by NHBB, which is critical to maintaining the factory warranty.

For more than 15 years, IBSCO has maintained a sufficient inventory of the bearings and lubricants used by Anspach and many other customers, enabling them to depend on timely deliveries that will prevent disruptions in their own production schedules.

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