

Bearings Education: A Lot to Learn

Jack McGuinn, Senior Editor

Bearings ain't beanbag. They are complicated. They are big-business. They are often counterfeited. They are used in virtually anything that moves.

But it is the "complicated" part that challenges OEMs, job shops and other operations, and, most of all—their employees. Add to that the countless other entities around the world that are intimately involved with bearings and you can arrive at a semblance of an idea of just how important these precious orbs can be to a successful operation.

So is it any wonder that the bearing companies of the world—particularly the big boys—have made it a part of their doing business to provide quality, comprehensive education courses addressing bearings and just about anything else that bearings come in contact with? Yes, they educate "students" regarding each and every kind of bearing that exists and their attendant applications. But were you aware they also typically present training/education modules addressing tough topics such as condition monitoring, continuous improvement, phase analysis, bearing fault detection and analysis?

But this knowledge does not come cheaply. Depending on the provider, courses—especially on-site instruction—can run several thousand dollars per person—more than \$10,000 for groups. Whether the cost is worth it has two answers. The training is undoubtedly something that a customer's employees cannot easily find anywhere else. As for the training providers, chalk it up to the cost of doing business. Think of it as hotel room service in that it is not a money-maker for the bearing companies, but it is something that customers have come to expect.

(Timken policy does not provide online course fees information, requiring interested parties to contact them directly.)

As David A. Novak Jr., Timken director of service engineering & strategic projects, puts it, "While some nominal



Most companies no longer provide internal apprenticeship (training) programs and have chosen to outsource training for maintenance skills (courtesy SKF USA Inc.).

fees can apply, our efforts are largely designed to help improve the operating outcomes for customers and end user operators. (Customers) tell us that they find the training to be very useful, often allowing them to recoup their investment in training many times over in improved maintenance practices or faster set-up and operational efficiencies."

At SKF, "Our program is expected to cover our own costs, including enough to reinvest in our training business for continuous improvement," says Joseph Bruno, director, training & development for SKF USA Inc. "We make sure to maintain the integrity of our training programs by not turning them into sales events. We've been successful by providing high-quality training and focusing on competencies and skills growth. We determine our tuition rates based on our own costs and we are not influenced by other training organizations."

When you consider the cost outlay, time and expert personnel (when expert personnel are in short supply) needed to conduct these programs, their very existence is somewhat surprising.

"Most companies no longer provide internal apprenticeship programs and have chosen to outsource training for maintenance skills," Bruno points out.

"SKF has decided to participate in providing skill training by bringing over 100 years of experience into the classroom. SKF expertise includes knowledge in bearing technology, condition monitoring and precision maintenance skills."

But a trained customer is typically a happy customer, as Timken's Novak points out.

"The Timken Company trains thousands of customers each year in formal training at our own facilities and onsite at their locations. Our knowledge of metallurgy, friction management and mechanical power transmission means we are well-qualified to provide both theoretical and practical customer education in the field or the classroom. Our customers demand longer life from their equipment, while using it at higher utilization levels, so our training is designed to help them solve problems more quickly and apply their new knowledge to make even more effective business and operating decisions.

"For example, Timken training programs teach customers about the merits of bearing remanufacturing and repair, which can result in significant cost and time savings compared to purchasing new bearings. Another focuses on

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detecting modes of damage so that costly downtime can be proactively addressed.”

As for the instructors themselves, Timken and SKF take different approaches to reach the same result. The former’s trainers hold other positions in the company while SKF chooses to have dedicated trainers.

SKF’s Bruno puts it this way: “We have decided to take the right people and make them dedicated trainers. There are a lot of people with subject matter knowledge, but that doesn’t mean they are good trainers. Full-time positions mean we can identify subject matter experts with good training skills; then we can focus on honing those training skills and helping them become great teachers.”

While over at Timken, “Timken associates deliver training based on their expertise in a functional area, and their roles in educating are in addition to their other job responsibilities,” says Novak. “With this kind of model, Timken experts can offer training based on their most current and relevant working knowledge.”

Given the different approaches, a natural next question is what kind of experience does each of these two companies expect from their instructors?

“Across our company, more than 40 percent of our salaried force is engineers by trade or training,” Novak explains. “Beyond their formal training, Timken associates gain further knowledge from their years of experience in engineering, service, research and product development. They then share their knowledge and experiences as part of our comprehensive customer and end-user training.”

“Our trainers have several years’ experience in their field and a broad range of experience in a variety of industries and applications,” says Bruno.

Another unavoidable thought regarding instructors’ levels of expertise—and their availability—is that it must be difficult to identify, hire and retain people who can present the coursework capably.

“Certainly knowledge sharing is a concern for our industry, as we experience attrition and deal with fewer and fewer candidates coming into the labor force who have practical hands-on expe-

rience,” Novak allows. “You just don’t find as many who have rebuilt a transmission, torn apart a tractor or even replaced bearings in their trailer. And these days electronics plays a larger role as well. So at Timken, we help them further develop those applied skills. We employ those who have a passion for their craft and natural curiosity in the mechanical world, and find them eager to learn and share what they know.”

Also in play is the steady advance of technology in the bearings and related industries, meaning that training personnel must work to keep pace in order to remain relevant and at the top of their game.

Indeed, “Our program has grown because of the needs in the marketplace,” Bruno says. “We listen to our customers’ needs and when we feel there is a match with our knowledge and capabilities, we will provide the appropriate competency training.”

Novak agrees in that “Technical advances and customized solutions create a need for our customers to increase their understanding of a product or sys-

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tem. Timken expertise supports the growth in training services.”

And with all this technical expansion and customer need, SKF, for example, has continued to expand its training force.

“We started with one person and have grown to several trainers in over 70 countries with a globally standard course portfolio,” Bruno says. “We have a team that coordinates the program globally and each country manages their training staff locally.”

As stated at the outset, bearings can be extremely complicated. Is there a particular area that is most problematic for instructors?

Bruno maintains that “One of the more challenging areas is analyzing bearings that have failed or become damaged in operation. Determining the root cause of these conditions can provide solutions to keeping machines running longer and increasing productivity.



Timken customers find bearings training to be very useful, often allowing them to recoup their investment in training many times over in improved maintenance practices or faster set-up and operational efficiencies (courtesy The Timken Company).

“This (training) all adds up to a bigger picture of effectively managing production assets. The skills and competency training we provide is designed around our philosophy of ‘asset efficiency optimization.’”

Joseph Bruno, SKF USA

“But analyzing a damaged bearing is a complex and complicated process. Teaching these skills requires a highly competent and experienced instructor. We’ve dedicated a tremendous amount of time, resources and development in a course that can guide the student through the process of successfully using visual distress and standard terminology to find the true root cause.”

And then of course there is the training provided to bearing companies partners—bearing distributorships. As you might expect, the training approach is somewhat different.

“It’s a matter of their needs and focus,” Bruno points out. “Our distributors need to understand the products’ capabilities so they can match their customers’ needs to the best solution. Then our customers’ needs become how to install, maintain, monitor and prolong the life of the product.”

At Timken the distinction is narrower.

“Although distributor partners want more commercial training, we offer similar technical training to both groups,” says Novak. “Our distributor partners desire the same technical knowledge to best serve their customers.”

At the end of the day, these training programs are just a part—albeit an important part—of what is required to be a valued supplier. If the proper

training is provided, the customer personnel being trained—and the company they work for—are all the better for it.

“As our customers fine-tune their operations and increase their need to understand bearing care and maintenance, the demand for our training also increases. We provide value to our customers through focused training that is designed to help them perform their jobs better and solve problems quicker,” says Novak.

SKF’s Bruno adds that “This (training) all adds up to a bigger picture of effectively managing production assets. The skills and competency training we provide is designed around our philosophy of ‘asset efficiency optimization.’ This is a structured process where we start with a focus on maintenance strategy, then identifying what work needs to be done, putting controls around that work and finally executing the work. Then we begin a follow up process to bring things full-circle for continuous improvement. Providing training to our customers and distributors is an intense but rewarding career.”

For more information:

SKF USA Inc.
P.O. Box 352
890 Forty Foot Road
Lansdale, PA 19446
Phone: (717) 495-0661
skf.com

The Timken Company
Global Headquarters
1835 Dueber Ave., SW
Canton, Ohio 44706-2798
timken.com