

Taking A Balanced Approach To Lubricant Formulation

Written by Jane Alexander, Editor
Friday, 23 March 2012 10:21



Lubrication is not only a vital component in an effective preventive maintenance program, it offers a quick and effective pathway to efficiency improvements in industrial equipment. In this Q&A, we learn how one leading supplier is working to support your efforts.

Today, companies across all industry sectors are under significant pressure to maximize productivity and stay ahead of their competition. At the same time, they're seeking new ways to enhance their overall energy efficiency, reduce energy costs and demonstrate to partners and customers that they are committed to sustainable practices.

To help strike this operating balance, companies are assessing many promising avenues, including evaluating and improving equipment performance and reliability with the use of high-performance lubricants.

Here, *Maintenance Technology* catches up with Dr. Angela Galiano-Roth, Industrial Lubricants Technology Program Leader, ExxonMobil Research & Engineering, to learn more about the latest lubricant trends in the industrial arena. She shares how advances in equipment design have led operations to rely more on synthetic oils to help enhance performance, and discusses the benefits of ExxonMobil's "balanced approach" to formulation.

MT: *What do you see as the key challenges faced by industrial operations today?*

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Galiano-Roth: Increasing competition and maintaining an edge on your competitors are paramount concerns in today's global marketplace. That's why, in every market we serve, ExxonMobil's research efforts are focused on ensuring that we remain at the forefront of lubrication technology so we can help our customers achieve their operational goals. By so doing, we can offer our customers advanced technology and the highest level of application expertise and be sure that our Mobil-branded industrial lubricants consistently deliver exceptional performance. Combined, these help them maximize their productivity and stay ahead of their competitors.

Along with increased global competition, manufacturing companies must also deal with the maintenance challenges that are often associated with today's industrial machinery. Over the past 10 to 15 years, manufacturers have developed equipment that's more compact and efficient and delivers high load capacity with a smaller footprint than ever before. Although these newer units deliver better performance and increased productivity, they can be more difficult to maintain, as they typically run hotter and faster than their predecessors—*putting more stress on a smaller volume of lubricant*.

That, in turn, calls for high-performance oils and greases that can deliver extended protection.

Today's successful companies view preventive and predictive maintenance and high-performance lubricants as investments to help ensure long-term success. They recognize that conventional, mineral-based lubricants are limited in their capabilities, especially when compared with advanced-technology synthetics.

MT: *You've explained the rationale for using high-performance synthetics. How does ExxonMobil approach the process of developing the right lubricants for its customers' needs?*

Galiano-Roth: The traditional lubricant-manufacturing method centers on blending conventional base stock with an off-the-shelf additive package to create a product that meets basic industry specs. As a company that helped pioneer synthetic lubricant technology, we devote significant resources to product research and development. We use an advanced, scientifically engineered approach that helps leverage our leading technology and application expertise to deliver lubricants that are optimized for the intended applications. We call this "ExxonMobil's Balanced Formulation Approach." Our comprehensive process enables us to develop lubricants that deliver exceptional performance across all critical areas for each application—*such as oxidative stability, component wear protection, corrosion*

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control, filterability, water tolerance, shear stability and extreme-temperature performance.

From the outset, our scientists select advanced-technology base stocks and carefully design additive systems to complement the excellent lubrication properties of the base fluids. We then put our technology-driven lubricant candidate through a comprehensive range of industry-standard laboratory tests. Some lubricant-development programs would end at this point, but ExxonMobil goes further.

We supplement industry-standard testing with our full-scale, dynamic testing on industrial equipment. These proprietary rig tests are designed to stress the lubricant candidate under conditions even more demanding than it is likely to experience in severe operating environments. Finally, we follow in-service testing protocols to validate the performance of our candidate in field demonstrations.

Throughout the entire process, we collaborate with equipment manufacturers and our customers to ensure that we optimize the performance of our lubricants so they are ready to take on both the specific lubrication requirements of today's industrial machinery and the operational challenges of a manufacturing plant. Only after successful completion of all of these testing protocols will we designate a lubricant fit to become part of our Mobil SHC family.

Some companies may formulate lubricants to deliver exceptional results solely for one or two criteria. But we know that if you focus on maximizing performance in just one area, the process may negatively impact other critical performance areas. Thus, we don't develop lubricants with the sole purpose of being able to claim a high number in terms of energy efficiency or any other single attribute. Using our comprehensive "Balanced Formulation Approach," we look at all critical factors of performance and focus on formulating our lubricants to deliver optimized performance for specific applications.

MT: *You've brought up energy efficiency. How important is it now for your products to not only deliver exceptional performance, but also help generate energy-efficiency benefits?*

Galiano-Roth: Energy efficiency is a key issue for companies in the manufacturing sector. Obviously, from an operating and financial perspective, reducing energy usage can have a

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positive impact on a company's bottom line. Also, minimizing energy consumption can help companies demonstrate to their partners and customers that they are committed to sustainable practices.

I'm proud to say that the latest additions to our flagship Mobil SHC line of synthetic industrial lubricants not only deliver exceptional, long-lasting performance and protection, they also feature valuable energy-efficiency benefits. ([See Sidebar](#) .)

MT: *In addition to choosing the right lubricants, what are some other key lube-related components of a successful preventive maintenance program?*

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Galiano-Roth: I can't overemphasize that choosing the correct lubricants is the most fundamental component of a successful preventive maintenance program. To help our customers with this process, we recently introduced Looble, our advanced online industrial lubricant selector. Looble is a user-friendly tool that delivers targeted Mobil-branded lubricant recommendations, based upon users' specific industries, equipment and application conditions.

Beyond selecting the optimum lubricant, implementing a comprehensive oil-analysis program is another vital component of a successful PM program. ExxonMobil has a solution for companies that want to enhance their oil-analysis monitoring efforts in an efficient and cost-effective way. Our proprietary Signum Oil Analysis Program is a state-of-the-art, Web-based offering specifically tailored to monitor the condition of in-service oil and equipment components, based on leading equipment-builder specifications, international standards and our application expertise. It lets us take oil analysis to the next level, making it easier for maintenance professionals to ensure the long life and productivity of the equipment.

Our engineers work closely with customers to create a turnkey program through the following:

- Establishing representative sampling points and intervals
- Identifying subtle trends that could contribute to sub-optimal performance
- Documenting recommendations and confirmation of benefits that are achieved through reductions in unscheduled downtime, machine replacement parts, oil consumption and labor costs
- Conducting onsite training to create lubrication awareness

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By leveraging Signum Oil Analysis with the application expertise of our engineers, plant end-users always have, at their fingertips, a wealth of valuable information that can help them make informed maintenance decisions. **MT**

Angela Galiano-Roth has worked for ExxonMobil Research and Engineering for more than 20 years, applying her world-class expertise in lubricant base stock and additive technologies to the development of industrial lubricants under the Mobil SHC and Mobil Industrial Lubricants brands. As Industrial Lubricant Technology Program Leader, in ExxonMobil's Products Research and Technology Department, she is responsible for the development, testing and support of the company's industry-leading, industrial lubricants. Dr. Galiano-Roth holds a Ph.D. in chemistry from Cornell University and is a member of The Society of Tribologists and Lubrication Engineers, American Chemical Society and American Gear Manufacturers Association. She has also authored numerous technical publications that highlight the benefits of synthetic lubricants and gear technology; and is an inventor for 12 lubricant-technology patents or applications.

With An Eye On Energy Efficiency* The Mobil SHC Family Grows And Delivers



Recent additions to the Mobil SHC family include the next generation of the Mobil SHC 600 Series of synthetic, circulating lubricants, and the Mobil SHC Gear Series, a family of supreme-performance synthetic, industrial gear oils. According to ExxonMobil, in controlled laboratory gearbox testing and statistically validated field tests at customer locations, these Mobil SHC synthetic lubricants were shown to deliver energy savings of up to 3.6% when compared with conventional oils. Based on such results, these oils have earned ExxonMobil Lubricants and Petroleum Specialties Company's official designation for "Energy Efficient" industrial lubricants. They will now feature ExxonMobil Lubricants and Petroleum Specialties Company's proprietary "Energy Efficiency" logo on product packaging. Visit www.mobilindustrial.com for details.

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**Energy efficiency relates solely to the fluid performance when compared with conventional reference oils of the same viscosity grade in gear applications. The technology used allows up to 3.6% efficiency compared with the reference when tested in a worm gearbox under controlled conditions. Efficiency improvements will vary based on operating conditions and application.*

For more info, enter 01 at www.MT-freeinfo.com