

Syn-Tech Ltd.



As a highly technical specialty lubricants formulator and manufacturer, Syn-Tech Ltd. evaluates each application as a unique set of parameters for a correct lubricant match, earning the respect of many longtime customers.

By Molly J. Rogers

SYN-TECH LTD. IS A PRIVATELY HELD COMPANY founded in 1968 by Reginald S. “Reggie” Shearer. Cutting his teeth early on as a chemistry and physics major in college, Shearer was an innovator from the start, focusing on extreme environments and difficult applications. As a young chemist, he sold some of the first synthetic oils in the United States in the cold, harsh conditions of northern Alaska to airplane pilots due to extreme low-temp engine turnover problems.

Dedicated to pushing design limits and creating innovative lubricant formulas to solve problems for design engineers, Shearer also formulated and manufactured extreme aircraft lubricants for gearboxes in helicopters and other aerospace applications that are still on the cutting edge of lubrication abilities.

Today, Syn-Tech Ltd. continues to be committed to innovation and problem-solving by second- and third-generation Shearers. Headquartered in Addison, Illinois, Syn-Tech is ISO 9001:2008 registered and has facilities that include administrative offices, R&D, manufacturing, quality testing, and packaging.

Research and creative thinking are at the core of all Syn-Tech Ltd. sales engineers and R&D chemists and technicians. Syn-Tech Ltd. approaches each customer’s application with the need to understand all parameters. Although the company has over 3,000 lubricant formulations and may have an existing formulation as a viable lubricant solution, the process stays the same — research the application thoroughly and then either formulate a



Quality manager, Jackie Shearer Feeley (far left); R&D manager, Skip Shearer (back center); marketing director, Cindy Shearer Galloway (sitting in front); and internal financial director, Pam Shearer (sitting on right)

new product or provide an existing lubricant formulation.

“Our hands-on approach with the design engineer to formulate and develop a lubricant that meets or exceeds the requirements for the application creates lasting relationships with our customers,” said Skip Shearer, R&D manager at Syn-Tech Ltd. “Generally, through the process of working closely with our customers, we succeed with a lubricant match the first time. In some instances, we can create a prototype of the customers apparatus and run parallel testing in our state-of-the-art research and development laboratory.”

Syn-Tech Ltd. recently completed a new research and development laboratory to keep the company at the forefront of lubricant formulation. Its testing ability allows new technologies and techniques to be created for the benefit of its customers. The result is a large family of lubricants that meets customer needs without using a one-product-meets-all approach.

While Syn-Tech Ltd.’s primary focus is the automotive industry, the company also specializes in lubricants for the aerospace, defense, industrial, medical, and commercial industries. In addition to formulating for individual applications, Syn-Tech Ltd. manufactures lines of lubricants with varying viscosities, thickeners, and base fluids including H-1 and H-2 food grade lubricants. Every lubricant is developed in the company’s research laboratory.

Syn-Tech Ltd.’s products are based on a full range of synthetic chemistries including PAO, ester, glycol, silicone, PFPE, and ionic liquid-based products, among others. The company works closely with top lubricant component manufacturers for design and field trials. In addition, Syn-Tech Ltd.’s mechanical and electrical engi-



neers work closely with product formulators to ensure that products are being developed properly the first time to reduce testing burden at the OEM. Its engineers have the ability to design test stands in-house to run parallel testing with the customer. And as a service to its customers, Syn-Tech Ltd. runs plastics and elastomer compatibility screening at no charge.

For gear applications, Syn-Tech Ltd. offers lubricants that can dramatically increase the performance of a mechanism by providing longer lasting, quieter operation over a wider operating temperature range.

“Our formulations could possibly eliminate the need for special seals and provide the design engineer with the option to use less expensive gear materials or manufacturing processes, which can lead to significant cost savings,” said Shearer. “Longer lubricant life due to increased oxidation resistance will reduce downtime for maintenance, leading to overall cost savings.”

From steel mill gear reducers, critical helicopter transmission gears to miniature geared actuators, Syn-Tech Ltd.’s lubricants serve to reduce wear and noise while increasing gear train efficiency. According to Marketing Director Cindy Shearer Galloway, Syn-Tech Ltd. has the knowledge and experience to formulate lubricants for the harshest, most demanding gear applications.

For example, its NS-3913-G was developed specifically for gear couplings for high PV applications — formulated for both high loads and at high speeds, as well as low speed and low loads. This synthetic grease can be used for all coupling applications. It has a very high viscosity index, exhibiting high film strength, good metal wetting, low coefficient of friction, and low wear rates.

Syn-Tech Ltd. has also developed NS-4405-FG, a high-capacity semi-fluid grease designed for helicopter rotor drive trains. This wide



(from left to right) Sales engineer, Sean Feeley; R&D lab tech, Heath Barker; R&D manager, Skip Shearer; and sales engineer, Tim Frank

operating temperature lubricant has extreme pressure and antiwear additives, as well as high stability under high centrifugal and rotational speed conditions. Possible applications include couplings, gearboxes, and bearings. In addition, its NS-1008-FG synthetic semi-fluid gear lubricant is an EP/antiwear fluid grease with extremely low oil separation for use in gearboxes with marginal seals. This product is formulated with a unique thickener that flows like an oil, but resists leaking out of poor case seals on gearboxes originally designed for a grease. It’s used on steel, bronze, or plastic gears, and it provides excellent lubrication for worm gears.

Syn-Tech Ltd.’s NS-4405-FG is the only lubricant approved by McDonnell Douglas for use on the intermediate and tail rotor gearboxes on the AH-64 Apache helicopter gun ship.

Another gear lubricant developed by Syn-Tech Ltd., NS-6111-G, was formulated for latch actuators with gearboxes mounted over the drive motor where oil migration can cause motor failure, and it has an operating temperature range of -45°C to +140°C. This lubricant was developed to address a Syn-Tech Ltd. customer’s issue with their current production gearbox that was mounted above the drive motor. The customer was seeing motor failures due to a competitor’s grease allowing oil migration that was leaking past the gearbox seals. Using NS-6111-G in the gearbox eliminated motor failures due to the migration of oil. They also tested the grease by completely coating their drive motor and cycling at 85°C for an extended duration with no oil induced failures.

NS-6111-G is part of Syn-Tech Ltd.’s line of zero migration lubricants, which the company is exhibiting at the Society of Automotive Engineers (SAE)’s prestigious 2016 World Congress Innovators Challenge on May 1-3 in Detroit. Syn-Tech Ltd. was chosen by a panel in the automotive industry for the exhibition based on its entry on zero migration lubricants.

The future is promising for Syn-Tech Ltd., as it strives to constantly analyze new materials and stay on the cutting edge of lubricant technology.

“Our tireless efforts to solve problems for engineers allow us to work with them on projects well before the marketplace as a whole knows they exist,” said Galloway. 📧

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