CASE STUDY

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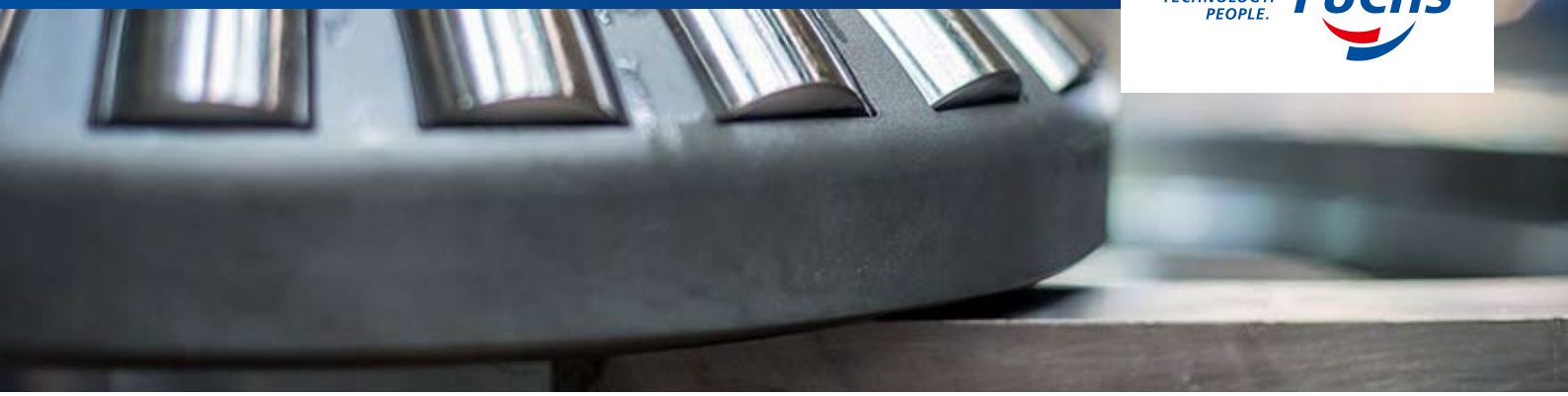

Technical Support for Spacecraft Bearing Lubrication

Application: High-speed, spacecraft gearbox bearings
Location: USA

Challenge

A longstanding customer approached us to understand why their lubricant was not meeting the performance standards outlined by the pre-validation data provided by the FUCHS team. RHEOLUBE 374B, a lithium-complex-thickened grease with wide temperature performance, was applied to a bearing within a high-speed, spacecraft gearbox. The lubricant was exposed to rapid acceleration and deceleration, high temperatures, high reversing thrust loads, and was expected to provide optimal performance over multiple cycles.

Advantages

- Engineering Expertise
- On-site support
- Validated Solutions

Based on the testing data provided by our Research & Development team, this lubricant should have met their operating requirements. In instances like these, it is important to work with a lubricant supplier who is an expert in lubrication solutions that comprise not only the chemistry of the lubricant, but also the characteristics of the mechanism for your specific application. FUCHS has more than 65 years of experience in the space industry. One of our Business Development Engineer's visited this customer's facility to take a closer look at their application and better understand the problem at hand.

Solution

When an application fails or underperforms, a lubricant is often blamed. Sometimes the lubricant is the problem, but just as often the lubricant may have been improperly selected, improperly applied, or there may be a flaw with the design of the application itself. In this case, our bearing lubrication expert identified an abnormal lubricant degradation phenomenon with corresponding suspect localized bearing friction-heat witness marks on the rollers and raceway. After further discussion and review with the customer, he was able to determine that there was a design issue with the bearing seats, which was causing structural deformation of the bearing raceway under high reversing thrust loads, leading to excessive roller edge loading, friction, heat generation, and premature lubricant degradation.

Once the customer addressed their bearing seat design issue, they retested the same bearings lubricated with RHEOLUBE 374B and together they demonstrated improved, consistent performance results.

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Results

Requalifying a grease can be expensive and time consuming. Any delays in the engineering stage can have a significant impact on delivery schedules. By identifying the issue, FUCHS was able to save the customer considerable time and money, keeping their production on track.

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