Taking on the challenge of grease lubrication in wind turbines

Have you ever stopped at a wind turbine and been impressed at the sheer scale of the engineering challenges of constructing such a large harvester of wind energy?

Developing and selecting the correct lubricant for these engineering monuments requires not only knowledge of lubrication solutions, but also a deep experience of the factors present in the turbine during the full range of operations. So why is correct grease selection so critical in tribological terms?

Recent moves to harsh environments and scaling up of the energy output puts every component under extreme operating conditions. Take the main bearing in the wind turbine for example. Large, heavy loaded, remote, high moisture atmospheres - none of these are new conditions, but wind turbines have proven to be extremely difficult to master from a lubrication viewpoint. With pressure to capture return on investment and safety being a top priority, getting grease lubrication right is essential for operators. Mobil Industrial Lubricants has sound experience in wind turbine lubrication since more than 15 years helping customers unleash productivity in the very competitive power generation market. That is why equipment builders and operators rely on Mobil SHC Grease 460 WT for wind grease applications.

Mobil SHC Grease 460 WT is recognised and appreciated for its innovation and outstanding technical performance around the world. A major factor in the product development is close contact with equipment builders to ensure that the product is designed to provide exceptional performance in continually evolving industrial equipment designs. The excellence of Mobil SHC Grease 460 WT is recognised by many builders of wind turbines and wind turbine components, and has become the first fill product of choice for main, yaw and pitch bearings.

Rely on Mobil SHC Grease 460 WT for increased productivity

Mobil SHC Grease 460 WT combines the unique features of synthesized hydrocarbon-based fluids with those of an advanced lithium-complex thickener, which help contribute to excellent low and high temperature performance, structural stability, and resistance to water. A carefully selected proprietary additive system helps provide outstanding features such as excellent wear protection, and rust and corrosion inhibition. The low internal friction and high natural viscosity index of the base fluids aim to offer the potential for low starting and running torque, and excellent low temperature pumpability. Additional benefits include contribution to enhanced grease and bearing life, a wide operating temperature range down to -40°C and the suitability for use with either manual or centralized greasing systems – with the overall aim of helping to reduce maintenance costs and improve profitability.

The slow speed main bearing is subject to high loads. The high base oil viscosity of Mobil SHC Grease 460 WT helps to maintain proper lubricant film thickness to protect the bearing from wear and the low internal friction of the base fluid offers the potential of reduced low temperature starting torque, features that are not present in most general multipurpose greases.

Pitch and yaw bearings move slowly through only a few degrees of rotation, hindering the development of a proper lubricant film. Furthermore, blade vibrations caused by the wind pressure waves are transferred to the pitch and yaw bearings, which makes false
brinelling protection the most important lubricant feature for this application. Mobil SHC Grease 460 WT meets industry test standards for fretting corrosion and false brinelling protection, along with excellent rust and corrosion protection.

Combining the challenges in one high performance grease makes economic and operational sense:

- Wide application temperature range
- Easy equipment start-up down to -40°C and excellent protection up to 150°C
- Excellent false brinelling protection
- Helps to improve bearing life by coping with additional stresses caused by vibration
- Outstanding structural stability in the presence of water
- Helps to retain excellent grease performance in hostile wet environments
- Excellent protection against rust, corrosion, and wear
- Aims to reduce downtime and maintenance costs for potentially higher productivity

**Conclusion**

Mobil SHC Grease 460 WT will permit consolidation of main, pitch and yaw bearing greases into one product, minimising the risk of re-lubricating with the wrong product and without introducing unnecessary operational risks. Mobil Industrial Lubricants consider the challenges seriously, and as more operators and equipment builders can testify, using this proven technology can increase productivity and help reduce maintenance cost. With Mobil SHC Grease 460WT being globally available it is the natural grease choice for wind turbines.

For more information on Mobil SHC Grease 460 WT and other Mobil industrial lubricants and services, please contact the Mobil Technical Helpdesk on TechDeskEurope@exxonmobil.com or visit our website at www.mobilindustrial.com

**Main characteristics**

<table>
<thead>
<tr>
<th>DIN 51825</th>
<th>Color</th>
<th>NLGI Grade / Viscosity Grade</th>
<th>Operating Temperature, °C*</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPHC1-2N-40</td>
<td>Red</td>
<td>1.5/460</td>
<td>-40 to 150</td>
<td>Main, pitch and yaw bearings</td>
</tr>
</tbody>
</table>

*Low-temperature claims based on DIN Low Temperature Flow Pressure results vs. maximum limits of 1,400 hPa at test temperature.