



# WindEnergy

NETWORK

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COMMUNICATION HUB FOR THE WIND ENERGY INDUSTRY

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## INDUSTRY SKILLS GAP

*HYDRAULICS*

**MARKETING AND  
BRANDING**

**CABLE  
PROTECTION**

INNOVATION AND  
NEW TECHNOLOGY

# MAXIMISING HYDRAULIC SYSTEM PERFORMANCE

## CHOOSING THE RIGHT HYDRAULIC OIL AND OIL ANALYSIS PROGRAMME IS KEY TO MAXIMISING THE HYDRAULIC SYSTEM PERFORMANCE OF WIND TURBINES

Today's wind turbines comprise a significant number of diverse and complex operations. Each operation requires specific attention and there is no 'one size fits all' approach for such advanced equipment, particularly when it comes to lubrication. Hydraulic systems within a turbine are good examples of this. Best known for the pitch control of rotor blades and braking systems, some wind turbines are now also being designed with a hydraulic transmission system. All of these require specific hydraulic oils to maintain optimum performance.

### CAREFUL SELECTION

Operators need to carefully select the correct hydraulic oil for each application, assessing its viscosity, and performance capabilities. Temperature changes can range considerably and conditions can be variable. The use of the correct oil will not only reduce wear and minimise maintenance costs, it can also bring hydraulic efficiency benefits increasing machine productivity.

### MAKING INFORMED DECISIONS

By following the tips below, operators can make informed decisions when it comes to selecting the correct hydraulic oil and system maintenance plan to help ensure their operations are as efficient and as reliable as possible.

### WHAT TO LOOK FOR IN A HYDRAULIC FLUID?

- **Correct specifications**

One starting point for selecting a hydraulic oil is the original equipment manufacturers' (OEMs) recommendation. This may be specific to the machine manufacturer or the hydraulic component manufacturer. The OEM's recommendation may provide the appropriate viscosity grade for the expected operating temperature range as well as a minimum level of specifications and performance if specific particular branded hydraulic oils are not stated.

- **Right viscosity**

Viscosity is the most critical factor when selecting a hydraulic fluid. It is important to match the appropriate viscosity grade to operating temperatures and load conditions that a hydraulic system may undergo on a daily basis. Without the correct viscosity, the system will not operate as designed and the system is unlikely to ever reach its peak efficiency. For equipment that is subjected to both hot and cold extremes, then a high viscosity index hydraulic oil is beneficial and typically recommended.

- **Strong performance attributes**

Due to the operational demands on hydraulics systems, hydraulic fluids must do more than simply satisfy the correct viscosity and OEM specification. Utilising technologically advanced, synthetic hydraulics oils can maximise wind turbine productivity and help combat the demanding conditions of increased system pressures and temperatures. ExxonMobil's range of proven synthetic oils features Mobil SHC 524, which has a balanced proprietary formulation of performance additives blended with fully synthetic base stocks.

The balanced formulation of Mobil SHC 524 provides oxidative and thermal stability which helps reduce degradation and deposits, maintains system cleanliness and increases oil change intervals. In addition there is a high level of wear protection, excellent filterability and outstanding air release and anti-foam performance that out-performs conventional mineral oils.

## BEST PRACTICES FOR HYDRAULIC SYSTEM MAINTENANCE

### USED OIL ANALYSIS (UOA)

As part of a routine maintenance programme to detect equipment wear and optimise hydraulic oil life and performance, the hydraulic oil should be regularly sampled and analysed. It is advised that maintenance professionals undertake hydraulic oil sampling at least every year but may even consider taking samples every six months to coincide with gearbox oil sampling as this can be cost effective. Regularly monitoring patterns of the oil analysis data over time, which is known as 'trending', can play a major role in the early identification of any operational issues or unnecessary equipment wear before they become problems.

For plant managers and equipment maintenance professionals who want an effective oil analysis programme that can also save time and money, there is ExxonMobil's proprietary online Signum oil analysis programme. It offers engineers immediate access and direct control of their lubricant and hydraulic oil sampling programme.

### MAXIMISING HYDRAULIC SYSTEM PERFORMANCE

Today's hydraulic systems for wind turbines are far more sophisticated than ever before. By following the tips provided and using Mobil SHC hydraulic oils and lubricants, wind farm operators and equipment maintenance professionals can make informed decisions that will help them to boost productivity levels with a potential to minimise maintenance costs.



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