

The Role of Lubrication in Wind turbine

Wind-turbine lubricants play a critical role in equipment operation, maintenance and reliability of a wind farm. There are a number of lubrication points which require various lubricants in a wind turbine, including Gear-box, Open gears, Pitch and Yaw gear, Pitch and Yaw bearing, Rotor Main Shaft bearing, Hydraulic systems, and generator bearing.

Powermaxx Lube India is developing high-performance lubricants & greases with maintenance strategies for this extreme and critical application that provide uninterrupted and long service life lubrication in Wind turbines the way for a new standard in gear and bearing lubrication.

Main critical applications of onshore & offshore wind turbine

- Gear & Hydraulic Oil: Gearbox, Rotor Breaks, Locks & Hydraulic Power Units.
- Grease: Main Shaft bearing, Yaw & Pitch bearing, Generator bearing, Yaw & Pitch open tooth gear.

Nind turbine are exposed to some of the harshest conditions in heavy industry:

- Extreme temperatures Heavy and varying high shock loads
- Strong winds
- Exposure to water contamination

With the latest trend of offshore wind turbine application, accessibility is even more difficult than on land onshore, so proactive prediction of the useful life of lubricants becomes the new maintenance strategy rather than the reactive strategy based on measuring acid number and viscosity. In these conditions, lubricants are the first line of defence.

Factors in wind turbine gearbox & bearing failure

Structural and mechanical failures (which can result in a tower collapse) are primarily due to control system errors and lack of effective maintenance.

- Premature bearing failures occurs by poor lubrication grease cause about 36% of all
- The bearings in the wind turbine gearbox must take extremely high-load/low-speed conditions that arise when winds are light can possibly lead to the breakdown of the lubricating film that is normally required for a long bearing life.
- Premature gearbox failure occurs by poor gear oil, the downtime can be as high as 55.2% of the annual total and energy loss as high as 52% of annual production.
- Many field-operating failures are a consequence of gearbox bearing failure. This type of failure is believed to be directly related to poor lubrication and lack of routine maintenance.

Nind turbine routine maintenance to ensure cost cutting & minimize maintenance

1. Advanced Monitoring

- 2. Regular servicing 3. Smart Oil & Grease
- 4. Routine change lubricants 5. Used oil analysis

A small change can make a big difference, Lubrication as a first line of defence & essential parts of preventive maintenance.

Oil & grease drain intervals have rested between 8 and 12 months, Switch to Powermaxx lubricants just extending its interval 15 to 18 months following a 6 years' field evaluation of lubricants. The expectations for new generation oils for Onshore & Offshore applications could be a drain interval of up to 3 to 4 years.

About Us

We "Powermaxx Lube India" with vears of grease manufacturing experience introduce ourselves as leading manufacturer & exporter in all kinds of Wind Turbine Mill & Renewable Energy, Power generation, Sugar Industry, Automotive, Industrial, Construction, Mining, Quarry, Marine, Steel, and Specialty Lubricants & Greases. We are focused to upgrade ourselves continuously. Our company's pricing policy is as transparent as alass.

Quality Policy

Lube India" are being manufactured under supervision of highly experienced engineer's and professional technicians who uses latest chemistries and additive technologies which helps in manufacturing the products to be more economical cost for the buyer under the advanced tribological and testing facilities for the machinery, engine and all other equipment's.



non-toxic, biodegradable, environmentally friendly renewable lubricants based on esters or fatty oils for wind turbines to find the most suitable components to reach energy efficiency through formulations designed in our research laboratory.



POWERMAXX LUBE INDIA

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The Products of "Powermaxx

Customized Private Labelling & Personal Branding

 We provide customized private labelling of the Client's brand name for all the products. • Our specialty is to manufacture customized tailor-made greases and specialty Lubricants as per the customer's requirement and demand We ensure not to compete with our clients.



- Product Development Logistical Management
- Technical Support and Services
- Marketing and Sales Support



High Performance Innovative Specialised Lubricating Solution for Wind Turbine Machinery

"Green Lubricants for Green Power" (Non-toxic, Biodegradable, environmentally friendly renewable lubricants based on esters or fatty oils & economical cost for Wind Turbines)



ting Range	nge Product Benefit & Features						
th Gear grease & oil							
C to 160°C	• Low consumption & Immediate monetary savings.						
to >180°C	 Extends bearings life and longer relubrication intervals. Can withstand under vibrations and high shock loads, and minimizin 						
C to 160°C	 Loss from friction and makes tooth gears function smoothly, uniformly & silently with low noise. High corrosion protection against seizure and wear, Low noise, avoiding expensive repairs. Excellent flow and pump-ability for automatic centralized and Individualized systems. 						
00% fully synthetic greases)							
C to 160°C	• Extends bearings life and longer relubrication intervals.						
C to 160°C	 Excellent thermal & oxidation stability, rust, corrosion, wear and extreme pressure protection. 						
to >180°C							

- gh vibration & high shock load-carrying capacity & minimizing metal t metal contact and avoiding expensive repairs. • High corrosion protection against seizure and wear, Low noise, • Very good for low and medium speed & temperature, compatibility with

ROTOR BREAKS, LOCKS 8

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sealing and Excellent lubricating film stability
Loss from friction and makes bearing function smoothly, uniformly & silently with low noise.

	Rec	commended Powermaxx Products	Thickener & NLGI grade & Viscosity	Operating Range	Product Benefit & Features			
		5.) Yaw & Pitch Bearing grease (100% fully synthetic greases)						
		SYNTH HT LCX-2 150 WT 🚖	Lithium-complex- 2 & 100 to 220 Cst	-40°C to 160°C	• Excellent thermal & oxidation stability, rust, corrosion, wear and extreme			
9		SYNTH CS HTXX-2 150 HD WT 🄶	Calcium Sulfonate Complex - 2 & 220 Cst	-40°C to >180°C	 Pressure protection. High vibration & high shock load-carrying capacity & minimizing metal to metal contact 			
e, d					 Very good for high, low and medium speed & temperature behaviour Extends bearings life and longer relubrication intervals, Very good pumpability. Remarkable limitation of friction coefficient and makes bearing function smoothly, uniformly & silently with low noise. 			
		6.) Generator Bearing grease (100% fully synthetic greases)						
		SYNTH POLYTHERM-2 150 WT 🛧	Polyurea - 2 & 100 to 220 Cst	-40°C to 160°C	• Excellent thermal & oxidation stability, rust, corrosion, wear and extreme			
				4000 += 10000	pressure protection.			

Excellent high speed & high temperature performance, high loadcarrying capacity • Extends bearings life and longer relubrication intervals. Loss from friction and makes bearing function smoothly, uniformly 8 silently with low noise.

Powermaxx Advanced Lubricants & Greases Benefits

- 1.) 5 Key Elements for choosing Powermaxx synthetic gearbox oil designed for long life lubrication in wind turbines
- 1. Extend long drain interval more than 7 years and improve the reliability of your gearboxes.
- 2. Excellent water resistance, oxidation & protection against wear by micropitting.
- 3. Highly resistance to the formation of foam and water emulsions.
- 4. High anti-corrosive & anti-rust power in the presence of humidity.
- 5. High vibration & high shock load-carrying capacity, minimize metal to metal contact and avoiding expensive repairs.
- 2.) 5 Key elements for choosing Powermaxx synthetic bearing grease designed for performance in harsh conditions of wind turbines
 - 1. Excellent performance in severe low- temperature conditions (to ensure sufficient flow and facilitate start-up).
- 2. High vibration & high shock load-carrying capacity, minimize metal to metal contact and avoiding expensive repairs.
- 3. Excellent water resistance activity on bearings in aggressive process.
- 4. Extend long drain intervals & gives longer re-lubrication.
- 5. Excellent pumpability for centralized lubrication systems.





Green Lubricants for Green Power

(Non-toxic, Biodegradable, environmentally friendly renewable lubricants based on esters or fatty oils & economical cost for Wind Turbines)

The benefits of synthetic biodegradable eco-friendly lubricants for wind turbines

- Lubricants used in the wind-power industry are fully synthetic PAO (Poly Alpha Olefir based products. Synthetic lubricants are estimated to account for more than 80% consumption of total lubricants used within the wind turbine industry and gear oil which accounts for 70% of lubricant consumption in wind turbine.
- Synthetic lubricants reduce friction and allow for easier start-up in low temperatures. They also increase the oil's life span at high temperatures. They entail less wear on components and lower maintenance costs.
- Tried and tested, long-lasting gear oils mean a longer drain interval and lowe environmental impact.
- Biodegradable hydraulic oils with a wide temperature range mean reliable operation. If the oil should leak into the surroundings, it is broken down and will not contaminate land or water sources.





