

SKF WindLub Upgrade Program

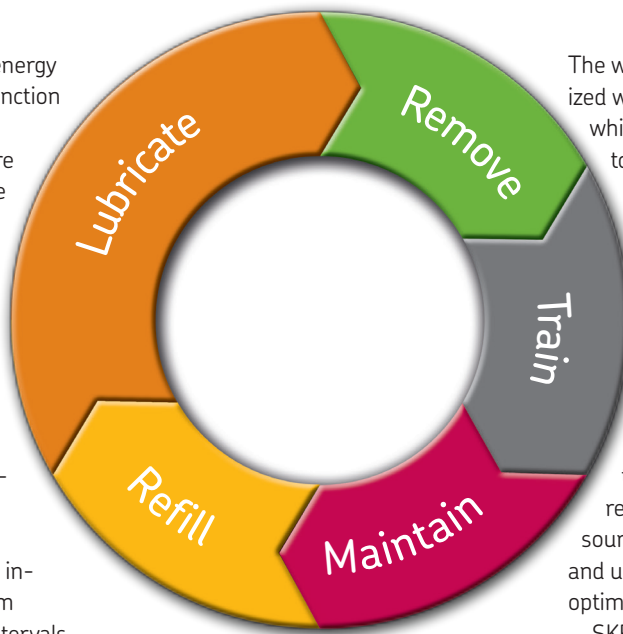
Lubrication service solutions for the wind aftermarket

Like any mechanical system, a wind energy system needs proper lubrication to function optimally. Vibration, high mechanical loads, contamination and moisture are all threats to bearing and gear service life. However, wind turbines can be challenging and expensive to service.

The effort required for manual lubrication in turbines may be significant. Pitch bearings and gears, yaw bearings and gears, generators and main bearings are areas where automatic lubrication systems are being used and have been proven successful.

They can provide a quick return on investment by increasing turbine system availability, extending maintenance intervals and preventing failures of major components. Additional savings can be achieved through proper lubricant handling and consumption.

SKF and Lincoln automatic lubrication systems are unmatched in their ability to deliver these benefits and many more.



The wind turbine aftermarket is characterized with older and/or smaller turbines which are getting upgraded now with up to date technique and equipment for strengthen the turbines life time. Service providers, operators, OEM service organizations and turbine owners are requesting solutions for lubricating, removing, training, maintaining and refilling options.

The WindLub Upgrade Program contributes by maximizing energy production and managing the operational costs. By utilizing precise and reliable lubrication from a central source, it helps to prevent bearing damage and unscheduled turbine downtime, while optimizing manpower resources.

SKF offers a comprehensive program for all aftermarket customers who want to participate in operational, cost, environmental and safety advantages.

The SKF WindLub Upgrade Program offers the full portfolio around automatic lubrication systems.

- **Lubricate**
Providing fresh lubricant automatically to all connected bearings
- **Remove**
Removing used lubricant from bearings
- **Train**
Providing knowledge on the SKF WindLub portfolio
- **Maintain**
Supporting installation and rework
- **Refill**
Filling and refilling lubrication pumps with fresh lubricant

Lubricate automatically with SKF WindLub lubrication systems

- Hand-held lubrication tools
- Automatic lubricators
- Single-line lubrication systems
- Progressive automatic lubrication systems
- Lubrication pinions
- Pre-assembled upgrade kits

SKF and Lincoln automatic lubrication systems deliver the exact quantity of the appropriate lubricant to the right place at the right time. Customized solutions, as well as complete kits, are available for pitch, yaw, main and generator bearings and open gear applications. In addition, hand-held lubrication tools help to ease the lubrication process.



Lubricate

Refill



Filling and refilling of lubrication pumps

- Electric-operated lubricant filling pumps

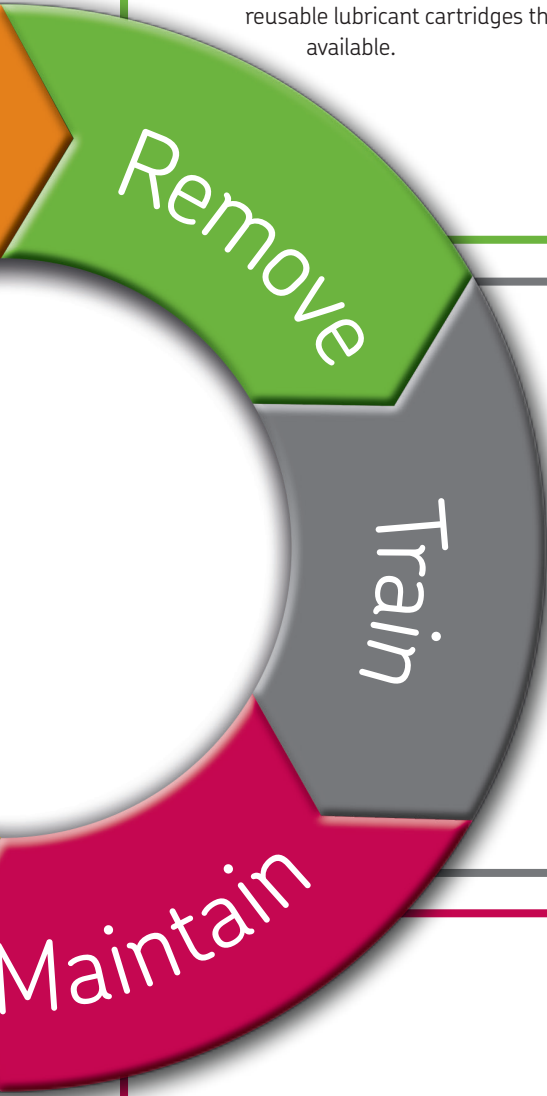
Whether you are filling lubricant reservoirs for the first time or refilling empty reservoirs, SKF offers electric-operated filling pump solutions. Providing a high delivery output, these filling pumps save time and effort and are suitable for stationary and mobile use. In addition, they are beneficial in service cars, as well as in the wind turbine itself.

Removal of used lubricant

- Automatic suction elements
- Lubricant containers
- Waste lubricant bottles

Removing the used lubricant reduces environmental impact and keeps the area around the bearing cleaner and safer.

Automatic suction elements extract the used lubricant and collect it in a separate, central container. This saves time and, therefore, money during maintenance efforts. Alternatively, reusable lubricant cartridges that can be mounted on every lubricant outlet also are available.



Training

- Product and application training
- Technical consultation
- In-house or on-site training

Train is led by experienced SKF employees and is supported by practical, hands-on sessions and live demonstrations.

Each training can focus on different topics. Service technicians, construction personnel, purchasing staff, product management and others will benefit from the conveyed knowledge.



Maintenance and repair

- Repair service
- Maintenance plans
- Installation service

Maintenance and repair services, as well as installations, offer the customer the ability to make adjustments to meet specific requirements.

SKF provides a complete installation service. Well-educated and trained technicians assemble and connect the components according to customer needs. Our technicians are certified for on-shore installations as well as for working in harsh environments. If repairs are needed, SKF's service department can provide fully reworked and precisely manufactured components.



The Power of Knowledge Engineering

Combining products, people, and application-specific knowledge, SKF delivers innovative solutions to equipment manufacturers and production facilities in every major industry worldwide. Having expertise in multiple competence areas supports SKF Life Cycle Management, a proven approach to improving equipment reliability, optimizing operational and energy efficiency and reducing total cost of ownership.

These competence areas include bearings and units, seals, lubrication systems, mechatronics, and a wide range of services, from 3-D computer modelling to cloud-based condition monitoring and asset management services.

SKF's global footprint provides SKF customers with uniform quality standards and worldwide product availability. Our local presence provides direct access to the experience, knowledge and ingenuity of SKF people.



SKF BeyondZero

SKF BeyondZero is more than our climate strategy for a sustainable environment: it is our mantra; a way of thinking, innovating and acting.

For us, SKF BeyondZero means that we will reduce the negative environmental impact from our own operations and at the same time, increase the positive environmental contribution by offering our customers the SKF BeyondZero portfolio of

products and services with enhanced environmental performance characteristics.

For inclusion in the SKF BeyondZero portfolio, a product, service or solution must deliver significant environmental benefits without serious environmental trade-offs.

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