

WIND POWER

perma lubrication systems in operation



Challenges

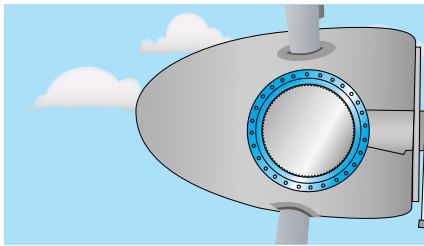
Wind turbines and wind energy plants are a permanent part of energy supply. It is therefore all the more important for turbines to operate efficiently. One crucial aspect is the optimal function and maintenance of the single components to ensure proper alignment of the turbine and blades, force transmission and power generation. Different sensors, drives and machine elements perform this task. perma offers special lubrication systems with the right lubricant for these drives and machine elements.

- Hard-to-reach and dangerous lubrication points
- High maintenance costs and staff shortage
- High stress loads and extreme temperature fluctuations



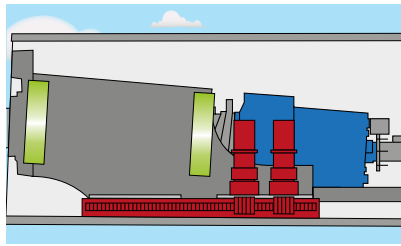
Lubrication points

1 | BLADE BEARING & BLADE GEAR TEETH



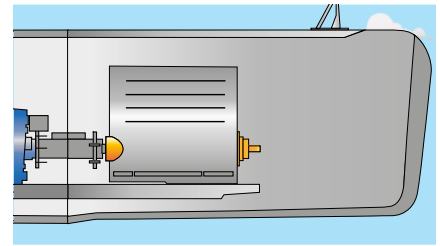
- **Pitch-control**
Blade bearing
- **Aligning**
Blade gear teeth

2 | MAIN BEARING & TURBINE ALIGNMENT



- **Force transmission**
Main bearing
- **Wind direction tracking**
Yaw bearing & yaw gear teeth

3 | POWER GENERATION



- **Generator**
Generator bearing



Blade bearing lubrication



Lubrication of main bearing



Automatic relubrication of generator bearing



Automatic relubrication of generator bearing



Lubrication of the blade gear teeth



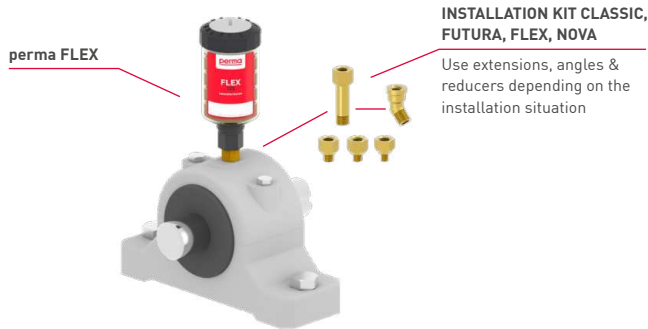
Blade bearing lubrication

Solutions

The selection of the ideal lubrication solution requires the consideration of various factors, including the specific type of application, operating speed and load of the machine, and the ambient temperature. Below are some proposed solutions:

Direct mounting | e.g. with perma FLEX

- Easy, quick mounting
- For lubrication points with little vibration | shocks
- For easy-to-reach and safe lubrication points



Remote mounting | e.g. with perma STAR VARIO

- For lubrication points with strong vibration | shocks (isolation of lubrication system)
- When workers' safety is at risk: Mounting in safe areas
- For hard-to-reach lubrication points



perma SERVICES

You have questions about our products or need assistance with the survey, system installation and maintenance of your equipment? The perma Services team has answers and is happy to assist!



Visit the perma website for an overview of our offerings.



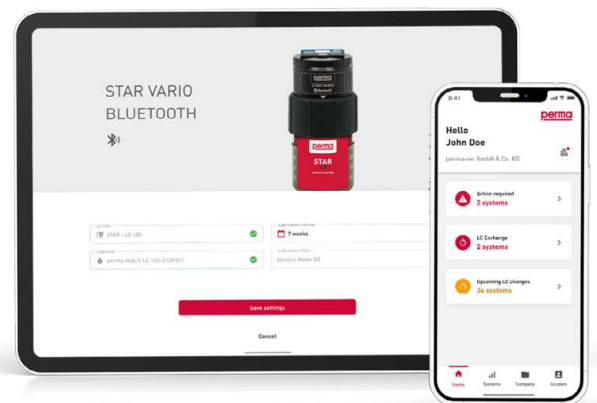
EASY. SMART. CONNECTED.

Create your own network

- Current overview of all lubrication points
- Coordination of upcoming maintenance work
- Reminders for pending exchanges
- Central management of lubrication points in the web application
- Recording of all on site maintenance and exchange tasks via the app

Get perma CONNECT now!

Download the app to your smartphone or open the web application at <https://perma-connect.com>



Find a variety of videos on the perma YouTube channel to get a deeper understanding of the perma CONNECT app.





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