

The logo for R3-Mydas, featuring the text 'R3-MYDAS' in a bold, white, sans-serif font. The '3' is stylized with a blue and white geometric pattern. The background is a collage of images: a blue circular graphic on the left, a wind turbine in the center, and a person working on a large metal component on the right.

# R3-MYDAS

Project document

## Newsletter 5 Flender

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## **4.4. FLENDER continues development project in R3MYDAS project to exploit state-of-the-art remanufacturing technologies for high torque density journal bearing gearboxes**

Flender as part of the R3MYDAS project is developing and building a dynamic tester for the wind drivetrain application. Flender has over 40 years of experience in developing wind turbine drivetrain solutions and technology, upon which the R3MYDAS project dynamic tester is built. One goal of the project is also to examine the potential of new “remanufacture” service processes and methodologies – providing cost and environmental benefits to the industry.

As mentioned in the previous newsletter in 2024 the plan for that year was to complete three testing phases. The first phase, the iteration of the dynamic tester, was completed in April 2024. The first commissioning test was successfully completed in May 2024, which loaded bearings in nominal conditions. The second phase, the reference testing of generation 1 wind journal bearings is to find material fatigue limits, test hazardous conditions such as single blade installation and seizures, driving the components to failure. Phase three, testing of wind turbine journal bearings generation 2 or state-of-the-art testing, to begin in Q4/2024.

Initial results from phase II showed good results and testing prompted some potential to push the material to its limits. Thus, test program of phase 2 was extended with some additional loading conditions, such as dynamic stiction curve behavior analysis and testing to failure. After these steps are done, phase 3 tests will continue with current plan to start in Q2/2025.

To repeat from previous newsletter: After testing the damaged components will undergo a “remanufacture” process with state-of-the-art technology. The remanufactured components will undergo the same test procedures, where the benchmark results will be used to compare the characteristics of remanufactured versus new materials, The results of this will be used to benchmark new service processes potentially offering savings in materials, shorter lead times and lower repair costs for the customer. Since then, the remanufacturing process has been discussed and a proposal of repair made. Tests we estimate to be done in Q4/2025.

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Additional investigations have been done on enhanced coatings for robust journal bearing material. Two different solutions against single blade installation and similar loading conditions will be tested. Currently, the coatings are being tested by different applying methods, which are followed by journal bearing testing in Q2/2025.



Figure 1. Enhanced coating solution testing for increased robustness in wind turbine journal bearings