R3-MYDAS

Remanufacturing, Repurposing and Recycling Energy Goods through advanced Mechatronic and Digital technologies

OIL & GAS Components

Automated Crankshaft Remanufacturing

Using 3D scanning, robotic path planning and laser cladding to make crankshaft repair more precise, repeatable and sustainable

THE CHALLENGE

Although repair is possible, current processes rely heavily on manual inspection, expert input and component-specific robot programming, making them slow, difficult to scale and inconsistent.

Oil & Gas crankshafts operate under extreme mechanical stress, making them prone to wear and surface damage that cause costly repairs, downtime and reduced efficiency.

Scraping worn crankshafts also wastes valuable materials and increases environmental impact.

The challenge is to enable more automated, reliable and traceable repair processes that support circular use of high-value components.

THE R3-MYDAS SOLUTION

R3-Mydas introduces a scanner-driven repair workflow that connects inspection, digital modelling and robotic laser cladding into a more automated remanufacturing process.

- 3D scanning of the worn component
- Digital modelling of the repair area
- Automated robotic path planning
- Virtual validation before repair
- Robotic laser cladding

By linking 3D inspection data directly with robotic repair actions, R3-Mydas supports a more efficient and scalable approach to crankshaft remanufacturing.

KPIS ACHIEVED

By digitalising and automating key steps of the crankshaft repair process, R3-Mydas improves programming efficiency, repair quality and process repeatability in the Oil & Gas demo case:

Reduction in programming time

Increase in product quality

Reduction in rework

SUSTAINABILITY

R3-Mydas supports a circular alternative to the traditional "scrap and replace" model for worn crankshafts. Instead of discarding the component and manufacturing a new one, the Oil & Gas demo case explores how laser-cladding repair can give the crankshaft a second life.

More than 25% carbon footprint reduction

Reduced need for new manufacturing

Lower material and cost impact

Hotspots identified for further optimisation

Aligned with Current ISO/CEN Standards

USE CASE LEAD

This use case is led by TMCOMAS, specialised in rotating machinery repair, laser cladding, thermal spray and precision machining.

TMCOMAS: tmcomas.com

CONTACT PERSON: Jaume Nin
jnin@tmcomas.com

MORE ABOUT THE CASE STUDY

r3-mydas.eu/rmydas-demo-cases-oilgas

Partners

Netcompany · aimen · AVL · csem · deepblue · eit Manufacturing · EWF · FLENDER · Harokopio University of Athens · ikerlan · itml innovation applied · LUT University · SPIN Robotics · TMCOMAS · ziknes

R3-MYDAS

r3-mydas.eu · /company/r3-mydas/ · /@r3mydas

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Health and Digital Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.