



R3-MYDAS

Newsletter 3

R3-Mydas addresses quality and efficiency through cladding process optimization



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In the next step of the R3-Mydas project, we are kicking off the second task of our Oil & Gas crankshaft case study, aiming to optimize the cladding process to enhance product quality, sustainability, and efficiency. This phase marks a crucial turning point in our efforts to streamline repair processes in the industry while minimizing environmental impact and operational costs.

Optimizing the Cladding Process for Improved Performance

Our focus in this task is clear: enhance the quality of the deposited material, boost overall efficiency, and reduce the environmental footprint. To achieve these goals, we will follow a structured workflow, starting with the implementation of a Design of Experiments (DOE). This experimental framework will allow us to systematically explore how different process parameters such as power, speed, and temperature, affect the properties of the deposited material. By analysing the effects of these variables, we will identify the optimal conditions that lead to enhanced material performance and durability.

Selecting the Best Strategy

After establishing the optimal material parameters, we will explore different manufacturing strategies to minimize distortions and residual stresses, two key factors that can impact product integrity. Our approach includes real-time monitoring using infrared (IR) cameras to observe thermal gradients and stress development during the process. This data will enable us to fine-tune the cladding strategy, ensuring high-quality results without compromising efficiency.

Integrating into Z-CORE for a Comprehensive Repair Protocol

All the knowledge acquired through the DOE and the manufacturing strategy optimization will be integrated into Z-CORE, the software developed by ZIKNES. Z-CORE will command analyse this data to generate precise, collision-free robotic paths for both cladding and scanning processes. The integration of this data will create an optimized workflow, improving product quality, reducing material waste, and increasing sustainability.



Figure 1.Task Workflow

The project enters a new phase as AIMEN, TMCOMAS, and ZIKNES continue their collaboration. The emphasis is now on strengthening knowledge transfer between the partners to ensure that advancements in cladding process optimization drive further improvements in efficiency and quality within the Oil & Gas sector.