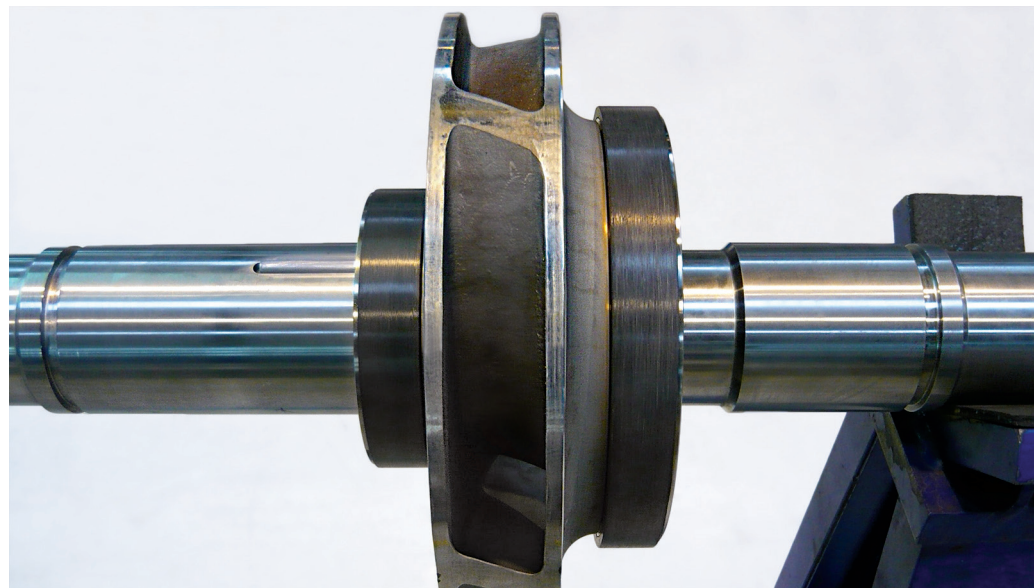


3P- Produits Plastiques Performants

# Plastic materials with enhanced abrasion resistance

3P's thermoplastic composite materials replace metal wear parts commonly used in pumps. These new materials are interesting in several aspects: weight saving, improved tribological properties and enhanced pump efficiency. Demonstration with Cetim's test bench.



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## OUR CUSTOMER

**Corporate name**  
3P - Produits Plastiques Performants

**Activity**  
From design to the final product, 3P develops high-performance plastic and composite material solutions (PTFE, PFA, FEP, PEEK, etc.) to meet the complex requirements of industrial manufacturers. For fluid management, the 3P forms its own Compounds to improve the service life and efficiency of pumps and valves for the petrochemical industry.

**Turnover**  
45 million euros

**Workforce**  
230 persons

**A**s Séverine Pujol, 3P Project Manager in Valencia (Spain), explains, *“The wear rings installed in pumps used in the petrochemical industry are usually made of metal. We know, through information feedback from the field, that our composite materials give better results and provide significant advantages such as energy gains, reduced vibration leading to longer component service life, reduced maintenance times, etc. As each application is specific, we were tried to find a standardised way to demonstrate this difference of results and we finally focused on abrasion resistance, among*

*other features.”* The wear rings are in direct contact with the pumped fluids which, for some of them, carry abrasive particles such as sand. *“Therefore, it is essential to accurately quantify the resistance of our products in abrasive conditions and compare it to that of metal parts,”* continues Séverine Pujol.

## Characterising abrasion resistance

In order to obtain as much quantitative data as possible and provide its customers with more accurate recommendations, 3P called on Cetim's skills and testing equipment, with the objective to reliably and quickly

characterise the abrasion resistance of various materials used in wear rings. *“With the results obtained, we were able to confirm and demonstrate the advantages of our materials and further improve their reliability. We relied on the expertise of Cetim, whose experts carried out standardised three-body abrasion tests (Miller Test to ASTM G 75) with a 100 µm sand bed between two materials of the pump,”* explains Séverine Pujol. For these tests, Cetim adapted its standardised metallic materials test bench so as to characterise 3P's polymers. This test bench is unique in France and combines many specific techniques to carry out various operations such as renewal of the sand bed, friction measurements, determination (by profilometry) of the surface texture of the specimens after the tests, etc.

## Cetim's asset

Cetim's experts are able to associate the abrasiveness of a product and the resulting surface appearance.



For that purpose, they rely on a specific test bench, (unique in France), accurate measurement techniques and high skills in tribology.