

Hot and Warm Forging Increase Part Quality While Decreasing Consumption In Pre-Coating Step Of Warm Forging Process

QH PRESSMAX™ FWG 1402

The Challenge

The customer is a global engineering and manufacturing company, dedicated to delivering mass production solutions for mobility. It is the only major Tier 1 supplier completely focused on automotive driveline technologies. The customer's expertise makes the ideal partner for conventional vehicles, all-wheel drive systems and electrification strategies. Based on the market situation, the customer was forced to increase the efficiency of the production line by increasing die lifetime. The customer asked Quaker Houghton Forging experts to analyse the existing Warm Forging line and highlight potential savings and performance increases respectively. After a detailed analysis of the production line, Quaker Houghton's Forging team decided to separate this project in two steps, which in the first step would focus on the coating process. After further review of the process and technical discussion with the customer, some major goals were defined:

- Reduction the cost of coating process
- Increase the die life to increase the productivity
- Good coverage and coating quality to increase part quality

The Solution

The Quaker Houghton forging experts analysed the process and all boundary conditions. After understanding the process requirements, different products were preselected. Adapted application performance tests in R&D labs in Italy and Germany were conducted with the selection of QH PRESSMAX™ FWG 1402 as the best potential product.

After a partial implementation of the product in production, the positive results enabled the customer to change completely to this promising product and increase the die lifetime and productivity.

Quaker Houghton's forging team decreased the annual product consumption drastically. Where the current product, Berulit 913, was used with 10% DM at a ratio 1:1, the QH PRESSMAX™ FWG 1402 could deliver even better performance at half the usage with a 1:2 ratio diluted with water. The solution got first implemented in one of the production lines. After steady development of the process and finding the perfect process and application parameter, the product was also introduced in the second production line and the operation fully changed to QH PRESSMAX™ FWG 1402.

The Benefits

Directly after the first trial with the selected product, the customer could evaluate its performance. The part quality compared to the prior product was improved, while the overall cost reduced drastically.

This reduction in consumption had a direct and major effect on the savings. The proposed solution was also more cost effective compared to the prior product. We can highlight the advantages of using QH PRESSMAX™ FWG 1402 as:

- Excellent coating properties
- Very good lubrication properties meeting severe application requirements
- Lower price per kg
- About 33% less consumption which resulted in a saving of about 55 k€ per year
- Reduction of cost per piece for this operation about 70%.

The Product

QH PRESSMAX™ FWG 1402 is one of the best pre-coating solutions in warm forging. The product is used to reduce stress during extrusion for the first forging stage or to enhance the forming properties during warm forging process. With the right application parameters and dilution, the product can enhance the productivity and effectiveness of high rate warm forging applications.

Quaker Houghton grinds and blends its own graphite mix to achieve the best graphite particle size and ratio. This guarantees the highest quality and performance of its forging products.

