

Hot and Warm Forging Improvement of tool life and productivity while reducing consumption

QH PRESSMAX™ FWG 3725

The Challenge

The customer is a world leader in bearings, CV joints, linear modules, distribution rollers, suspension parts, and associated training and services.

For their 2 automated warm forging lines, producing CV joints and tulips, the customer had significant variations in terms of die life, which required to stop production very often in order to change the dies. On each screw press, the forging process is in 3 stages from a cylindrical billet.

The customer has a very precise monitoring of certain parameters such as dies and punches life, the quantity of lubricant used by forged part as well as the productivity and the exact cost of each forged part.

From the preparation and application of the lubricant in place, Lubrodal F24W, the customer automatically diluted between 18 and 20% of product in water and sprayed with very precise times on each tool. The concentration control is carried out at least twice a day to the different dies wears and their causes.

Their main objective was to reduce this cost per part to be more competitive.

The Solution

Quaker Houghton's forging experts have studied each step of the process to understand what is possible to reach the customer expectations.

The 1st forging stage is a direct extrusion, the 2nd stage is an upsetting and the 3rd is a back extrusion. The punch from the 3rd stage was the one that wears out the fastest. The wear was mainly due to too high temperature during production.

The solution is to decrease the punches temperature by applying a better cooling performance lubricant, with a very good adhesion on the punch surface, even when applied at low concentration.

After our specific forging lab simulations, we recommended to use QH PRESSMAX™ FWG 3725 which showed excellent results in our lab.

During the first test, we immediately obtained excellent adhesion properties on the dies and punches, which allowed us to reduce and optimize the concentration from 18-20% to 8-10%.

The Benefits

The positive effects of the QH PRESSMAX™ FWG 3725 for the customer were immediate.

- The dies and punches temperature were decreased by 15-20°C, which increased the dies and punches life by 15% on average and by 25% on their critical dies.
- Because die temperature was lower, it was possible to reduce spraying time by 10%.
- Productivity increased allowing the customer to produce during a complete shift without replacing dies.
- Consumption decreased by 50% compared to the competitor.
- There was a significant overall reduction in direct costs, but also an indirect impact regarding forging line cleanings.

The Product

QH PRESSMAX™ FWG 3725 is an emulsion water based graphite forging lubricant designed to have a perfect compromise between lubricity and cooling performances.

The product can be used on various processes in hot or warm forging for medium or high deformation on complex shapes.

QH PRESSMAX™ FWG 3725 is suitable for steel, stainless steel, nickel alloys, aluminium alloys and other light-weight alloys. It is also a good alternative to choose, if you need a compromise between oil and water based forging lubricant.

Quaker Houghton grinds and blends its own graphite mix, controlling the particle sizes and distribution. This guarantees the highest performance and quality of its graphited forging products.