

## Hot and Warm Forming

# Improve process stability and production efficiency in Hot Forming

QH PRESSMAX FWW 1635

### The Challenge

One of the world leader in manufacturing seat components planned to have a die lubricant for the newly developed hot forming technology. A new technology was developed to produce seat components replacing the current fine blanking process followed by heat treatment by a blanking and hot forming process. The production rate is assumed to be around 5.000 parts per day by 2025.

The challenges were to:

- Cool the die surface as much as possible
- Enhance the lubricity during the forming process
- Obtain good release effect
- Provide good adherence on the die surfaces
- Leave no residue on the die surfaces

The current product used is a synthetic product from Bechem Lubrication technology (Beruforge).

### The Solution

Quaker Houghton forging experts analysed the customer concerns and challenges very carefully. After a proper analysis of the complete process and the effect of each process parameters on the part quality, two different synthetic products from product portfolio were selected. An intensive performance analysis of the selected products in Quaker Houghton laboratory was conducted, and the extracted data are evaluated and discussed with customer. Based on the results of the analysis and the requirements of the process, QH PRESSMAX FWW 1635 was selected as a potential candidate which met the customers' requirements the best. The product shows a perfect cooling performance with an acceptable lubricity. The excellent cleaning characteristic causes no residue on the die surface and the release effect is fulfilling the process requirements.

The applications method was also analysed with customer research and development team, to be sure that the process is stable and the results are satisfactory. It was decided to:

- use 12% of dilution in production
- set the spraying equipment pressure at 2-6 bar
- start with 10 ml of lubricant per production parts

### The Benefits

By using QH PRESSMAX FWW 1635 the customer could immediately see the perfect cooling performance by analysing the die temperature. The cooling performance directly affects the part quality and productivity.

Another main positive affect was the near zero residue on the die surface. Since the dilution was selected tailored to the application, the residue on the die surface was completely disappear which make the product more interesting for this specific application.

We can address the advantages as following:

- Excellent cooling performance resulting in shorter process time
- Good release effect eliminating galling and reducing die wear
- Good adherence properties resulting in more precise parts with better surface finish which reduce scrap rates
- Leave no residue on the die surface which is better from an environmental perspective
- Reduced die forging surface cleaning increasing the production efficiency.

### The Product

QH PRESSMAX FWW 1635, is a synthetic forging lubricant, originally developed for valve forging operation (coining operation), exhibits brilliant cooling performance with good lubricity, depending on dilution used.

This product is always a good candidate for cooling the die surface without having any residue.