



# RENOLIN ZAF MC

Universal lubricating and hydraulic oils  
based on hydrocracked base oils



---

## CONTENT

Energy Saving Hydraulic Oils	3
Application Details	3
Lubrication Requirements	3
Customer	4
Project Overview	4
Test Results	5
Conclusion	5

## RENOLIN ZAF MC

Universal lubricating and hydraulic oils based on hydrocracked base oils



*Conversion of 55x IMMs*



### Energy Saving Hydraulic Oils

- Excellent oxidation stability and ageing resistance
- Excellent air release characteristics
- Wide operating temperatures
- High shear stable viscosity index products
- Extended service intervals
- Excellent dispersant and detergent properties

### Application Details

Injection moulding machines (IMM) are commonly used in the plastic processing industry. Injection moulding utilises a ram or screw-type plunger to force molten plastic material into a mould cavity; this solidifies into a shape that has conformed to the contour of the mould. Most IMMs consist of a basic hydraulic system, comprising of an electric motordriven hydraulic pump, control valves, pistons and interconnecting pipes and hoses.

### Lubrication Requirements

Choosing the right quality hydraulic oil is paramount to the effective maintenance of any IMM. Traditionally, mineral oil based HLP specification hydraulic oils were used, containing zinc or zinc free EP additives, dependent on the OEM recommendation. However, as new IMM designs become smaller and faster, the hydraulic oil is forced to work harder which can result in accelerated oil ageing and contamination, reduced machine efficiency and increased energy consumption.





*Annual saving in excess  
of £38,000 per annum*

### Customer

The customer is a globally acting manufacturer of plastic closures, with 21 factories in 19 countries across the world. Their reputation is built on delivering quality products and services to the highest standards to its global customer base, including many leading blue-chip companies.

The UK operation was interested in looking at the potential energy saving possibilities of FUCHS specialist hydraulic oils for their plastic injection moulding machines. The FUCHS products are based on hydrocracked base oils as opposed to traditional mineral oil based hydraulic oils.

### Project Overview

Following a review of the maintenance procedures at the customer's UK operation, FUCHS was requested to supply a proposal for the lubrication of 55 x IMM machines in use.

Following a site study by FUCHS Technical Engineers, the use of hydraulic oils based on hydrocracked base oils was suggested. This type of lubricant technology was chosen because of its propensity to deliver:

- Improved oxidation stability and ageing resistance
- Extended service intervals
- Energy saving potential

The customer has a number of different IMMs from various manufacturers, including Arburg, Husky and Nestal. Two identical IMMs were selected based on their consistently high output rates and were isolated for the entire period of the trial.

Each IMM was fitted with a specially designed ammeter which records, every 5 seconds, the kWh being used by the machine and also an average for each 30 minute period.

To start the trial, both machines were filled with traditional HLP type hydraulic oil. In this instance, due to the OEM recommendation, this was a zinc free specification. The machines were then run over an extended period and the results compared to show consistency.

Following this, one machine was drained, cleaned and refilled with FUCHS RENOLIN ZAF 68 MC, a specialist HVLDP type hydraulic oil based on hydrocracked base oils. The machines were then returned to full production and the energy consumption compared.



Average KWh consumption was reduced by 4.7%

### Test Results

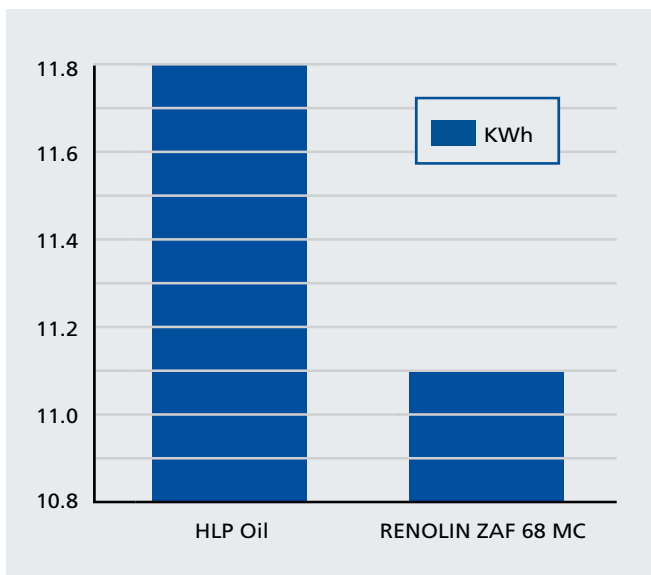
Almost 300 'average' energy consumption readings per machine were taken over the period and compared. It was shown that the average KWh consumption was reduced by 4.7% on the IMM that operated using FUCHS RENOLIN ZAF 68 MC.

Following the conclusion of this trial, a full proposal was submitted for the conversion of the entire 55x IMM to the HVLDP technology. Despite an initial outlay in cost of lubrication, the calculated payback period for the change was less than 4 months.

### Conclusion

Based on the customer's energy charges (8.8p day and 5.2p night) and production rates, the use of RENOLIN ZAF MC, or the equivalent RENOLIN MR 68 MC (zinc containing oil) will equate to an annual saving in excess of £700 per machine. For 55 machines this provides an annual saving of £38,500.

When companies look to reduce maintenance costs, very few will investigate the savings available through lubricant technology. Through the selection of the correct lubricant technologies, significant savings can be achieved from choosing the right lubricants. Applied knowledge of how hydraulic efficiency can be improved through proper hydraulic fluid selection can increase the bottom line. Please consult FUCHS LUBRICANTS – your hydraulic oil expert



## **Innovative lubricants need experienced application engineers**

Every lubricant change should be preceded by expert consultation on the application in question. Only then the best lubricant system can be selected. Our experienced engineers will be glad to advise on products for the application in question.

**FUCHS LUBRICANTS SWEDEN AB**

Swedenborgsgatan 20B  
118 27 Stockholm, Sweden  
+46 775 59 59 59  
fse-order@fuchs.com  
fuchs.com/se

**FUCHS LUBRICANTS NORWAY AS**

Fredrik Selmers vei 6  
0663 Oslo, Norway  
+47 21 99 59 50  
fse-post@fuchs.com  
fuchs.com/no

**FUCHS LUBRICANTS DENMARK ApS**

Tuborg Boulevard 12, 3  
2900 Hellerup, Denmark  
+45 32 46 30 00  
fse-bestil@fuchs.com  
fuchs.com/dk