



# Hydraulic Oil Plastic Injection Moulder

## CJC™ Application Study

### CUSTOMER

Wavin Metalplast-Buk  
Ul. Dobizynska 43  
64-320 Buk, Poland

### THE SYSTEM

STORK Plastic Injection Moulding Machine type  
SX 3000/2100, each with approximately 720 L  
of Shell Tellus ISO VG 46 oil.

### THE SOLUTION

A **CJC™ Fine Filter unit 27/27** was installed,  
(stationary filter with a pump flow of 400 L/h),  
using one **CJC™ Fine Filter insert B 27/27**  
with a filtration degree of 3 micron absolute, i.e.  
98.7 % of all solid particles  $> 3 \mu\text{m}$  and approx.  
50 % of all particles  $> 1 \mu\text{m}$  will be retained in  
one pass.

The CJC™ Fine Filter insert is capable of absorb-  
ing both oxidation products, solid particles and  
water.

Dirt holding capacity: approx. 2 kg

Water absorption capacity: approx. 0.9 L

### THE TEST

The Fine Filter unit was installed on the  
machine, when the machine was set up at  
the Wavin premises in Buk. Wavin has CJC™  
Filters on all their machines.

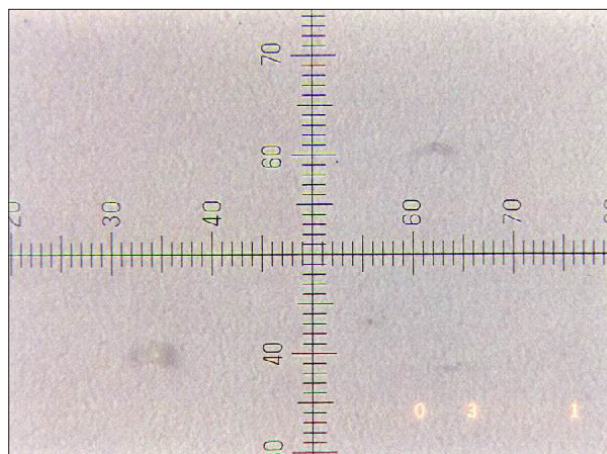
The oil samples were taken through a sampling  
point before the CJC™ Filter.

The oil on this machine has not been  
changed and the condition of the oil is still  
excellent.

The filter inserts are replaced once a year.



*At Wavin Metalplast in Buk, Poland all STORK plastic injection moulding machines are equipped with CJC™ Fine Filter units.*



*The oil analysis were performed by Filtrex Services,  
Hoorn, The Netherlands.*

### THE RESULT

| Hydraulic System on STORK Plastic Injection Moulder |            |            |             |
|---|------------|------------|-------------|
|   | > 2 micron | > 5 micron | > 15 micron |
| No. of particles/100 mL                             | 4,874      | 2,693      | 513         |
| ISO Class 4406 *)                                   |            | 13/12/10   |             |
| NAS Class 1638 *)                                   |            | 4          |             |
| Colour of membrane                                  |            | White      |             |
| Water content                                       |            | 46 ppm     |             |

\*) Further information on cleanliness classes are available on request.



# Filtration test by STORK PLASTICS Plastic Injection Moulding Machines

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### STORK ANALYSIS RESULTS

The sophisticated hydraulics of modern, hightech plastic injection moulding machines call for maximum oil cleanliness to secure accurate operation. In their continued effort to optimize operation reliability and repeatability STORK PLASTICS have tested CJC™ Offline Fine Filters on their state-of-the-art range of SX 2000/1000 injection moulders. Even the very finest of contaminating particles - solids and water - are a constant threat to the liability and lifetime of the fine hydraulic components (including the oil) of an injection moulding machine.

Consequently, STORK PLASTICS found it sensible - both economically and technically - to investigate the effect of an additional fine filtration system on the SX 2000/1000 machines.

The offline principle, where the fine filter is equipped with its own pump, working in a separate filtration circuit, was chosen because of the round-the-clock operation facility.

Operating the filter during main hydraulic system shut downs greatly increases the filter efficiency and reduces the contamination reduction time. This is particularly important during the running in of new machines when the contamination level is prone to rise.

When running the filtration test on the SX 2000/1000 in December 1992 STORK decided to take samples (upstream filter) at relatively close intervals. The results are given in the next column.

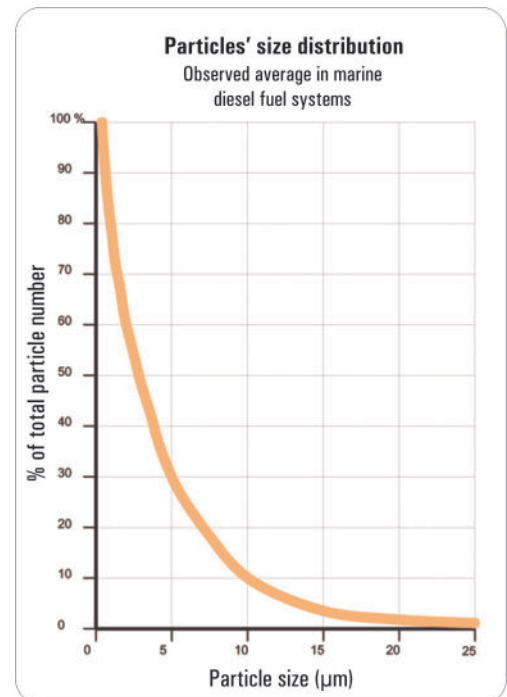
STORK recommends an oil cleanliness level of ISO 16/12, NAS 6 or better for maximum component security. As the chart shows, this value was more than achieved after 8 hours of operation.

After some 100 hours the cleanliness level stabilized at ISO 12/11, NAS 5-4. Such clean oil prevents sudden increases in the contamination ingress from having a harmful effect on the hydraulic components and prolongs the lifetime of the oil, very often to five years or more.

The large dirt and water capacity of the CJC™ Fine Filter insert ensures that the attractive operational economy is feasible even when maintaining oil cleanliness level as low as ISO 12/10.

| Hours of operation Moulder |                   |                   |
|----------------------------|-------------------|-------------------|
| Hours                      | ISO Class 4406 *) | NAS Class 1638 *) |
| 0                          | 16/15             | 9                 |
| 1                          | 16/13             | 7                 |
| 8                          | 13/11             | 5                 |
| 25                         | 13/12             | 6                 |
| 100                        | 12/11             | 5                 |
| 200                        | 12/10             | 4                 |

\*) Further information on cleanliness classes are available on request.



The above graph shows how particles in a normal hydraulic oil system are size distributed.