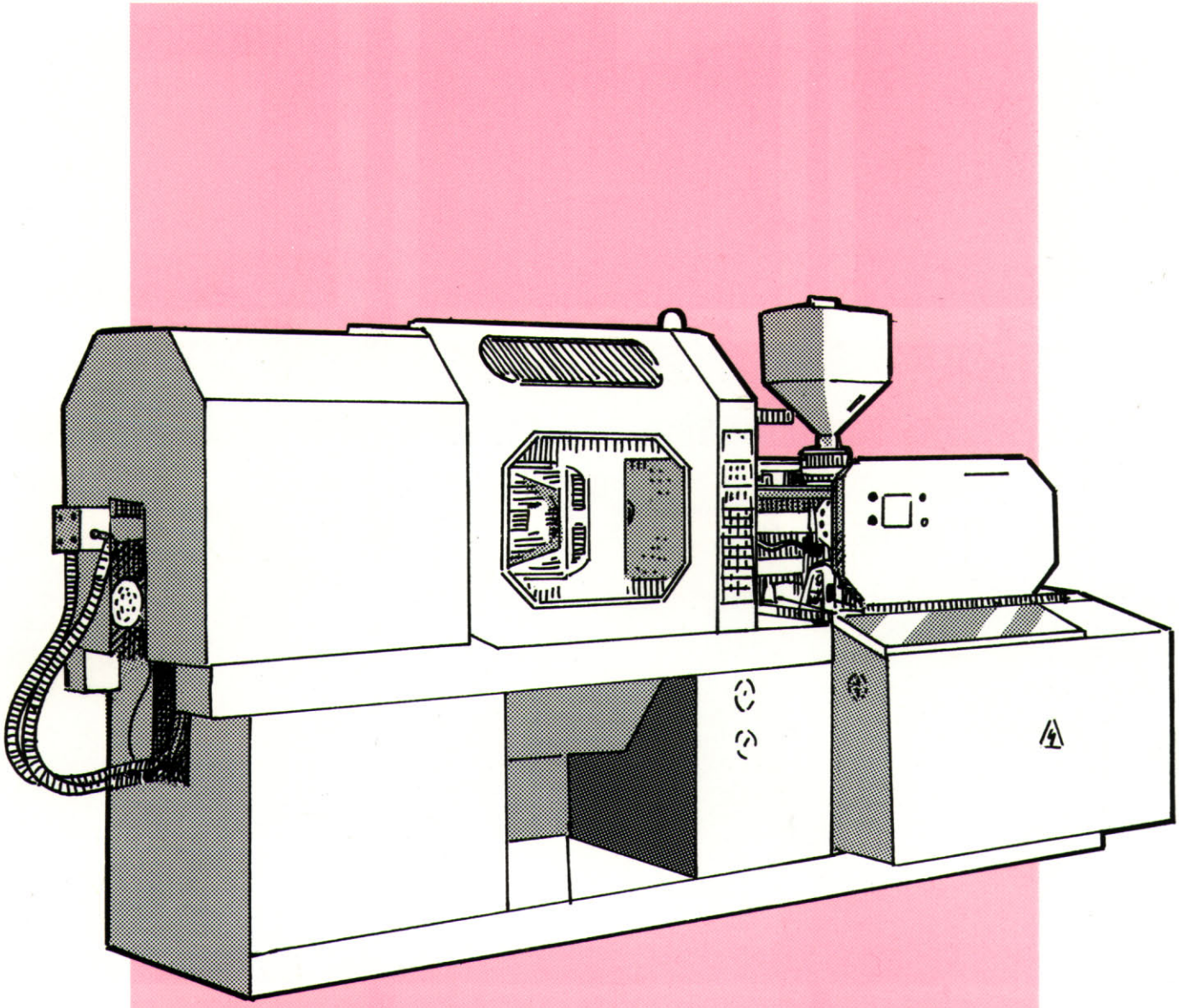
WHAT IS THE MOST ECONOMIC WAY TO CLEAN THE OIL IN A PLASTIC INJECTION MOULDING MACHINE?



Results of an independent study of oil filtration in plastic injection moulding machines

These photographs were taken of the tanks of three plastic injection moulding machines after one year of continuous operation. Each machine used a different method of oil filtration. The tank of the machine fitted with the CJC off-line filter did not need cleaning.

A

MACHINE NO 485
18,850 HOURS RUN
25/5/84
NO PRESSURE FILTER
TANK NEEDS CLEANING

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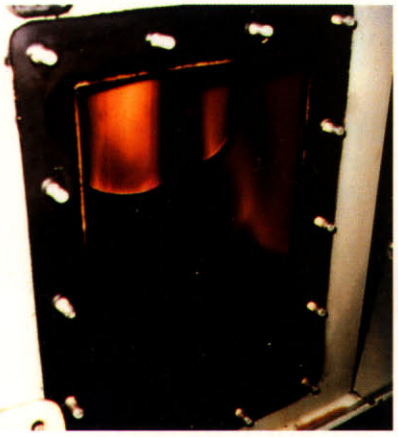

MACHINE NO 485
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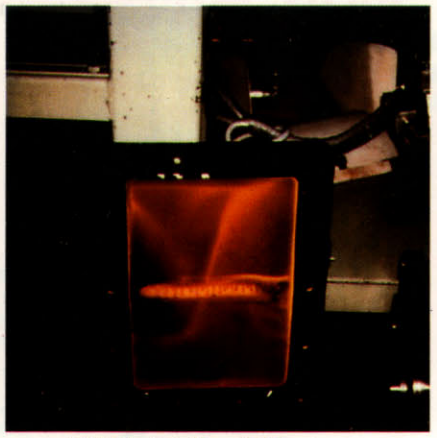
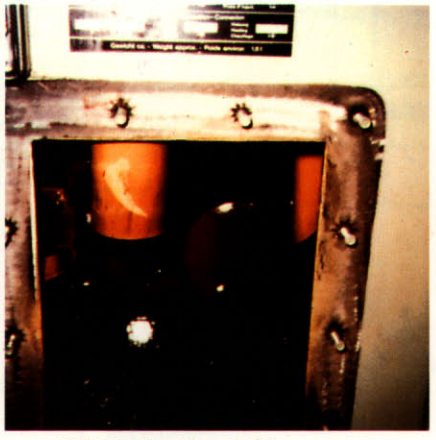
B



MACHINE NO. 653
14,121 HOURS RUN
30/5/84
6μ PRESSURE FILTER
TANK NEEDS CLEANING



MACHINE NO. 653
14,121 HOURS RUN
30/5/84
6μ PRESSURE FILTER
TANK NEEDS CLEANING

MACHINE NO. 653
14,121 HOURS RUN
30/5/84
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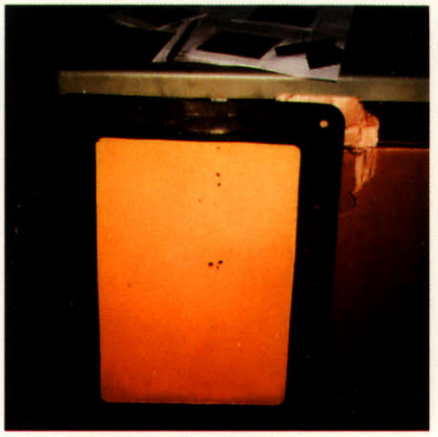
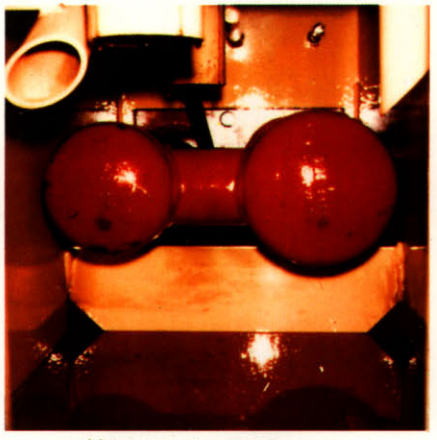
TANK NEEDS CLEANING

C



MACHINE NO. 482
20,264 HOURS RUN
24/5/84
CJC OFF-LINE FILTER
NO CLEANING NEEDED



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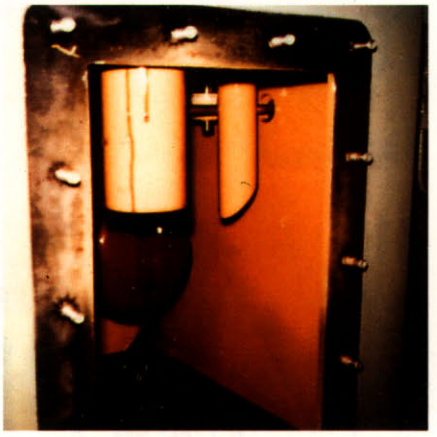

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COMPARATIVE OIL FILTER TEST

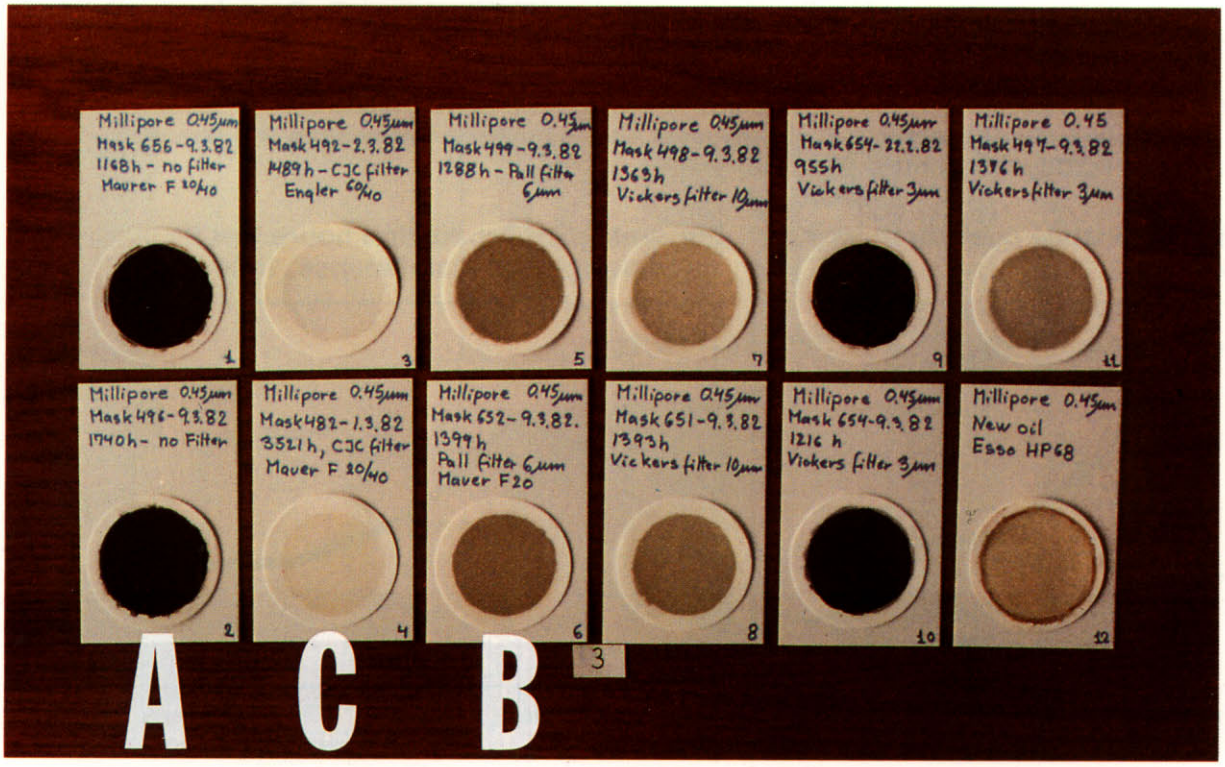
One of the biggest plastic moulding companies in Europe is based in Denmark. The company has several hundred plastic injection moulding machines which are kept running 24 hours a day, seven days a week. The cost of maintenance is a very important consideration in an operation of this size.

In 1981 the company decided to start a programme of service and maintenance trials with the aim of reducing costs. One of the first areas to be investigated was how to improve the quality of the oil in the machines.

A number of machines were selected to take part in a comparative test, and all were run under the same conditions. This was an independent study conducted by representatives of the company.

Millipore Membrane Test

After one month of operation samples of the oil were taken from each machine, and a millipore membrane test was conducted. The results are shown in the photograph below. The two machines fitted with CJC off-line filters had the cleanest oil.



The results in rows A, B and C relate to the machines shown opposite.

Tank Inspection

After a further 11 months of operation three of the machines were stopped, and their tanks were opened.

The maintenance manager took three polaroid photographs of each machine, and these are reproduced opposite.

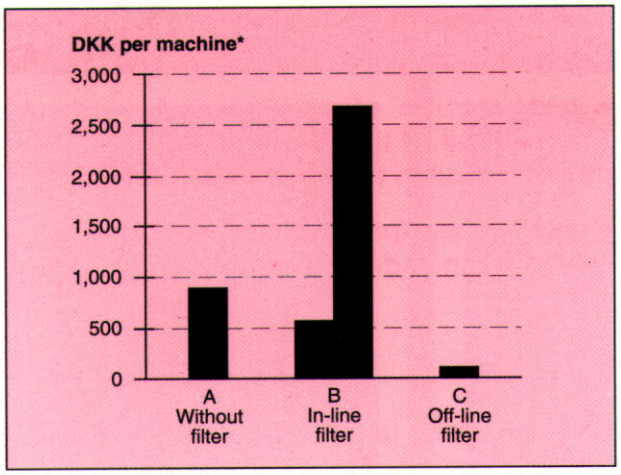
Row A shows a machine fitted with only a suction filter. The tank is filthy.

Row B shows a machine fitted with a 6 micron pressure filter. The tank is not as dirty as the machine shown in Row A, but it still needs cleaning.

Row C shows a machine fitted with a CJC off-line filter ($ß_3$ >75). The tank does not need to be cleaned.

THE EFFECT ON MAINTENANCE COSTS

Comparative cost of maintenance materials per machine during test



The graph (left) shows the cost per machine for packings, filter elements and other maintenance parts during the 12 months trial.

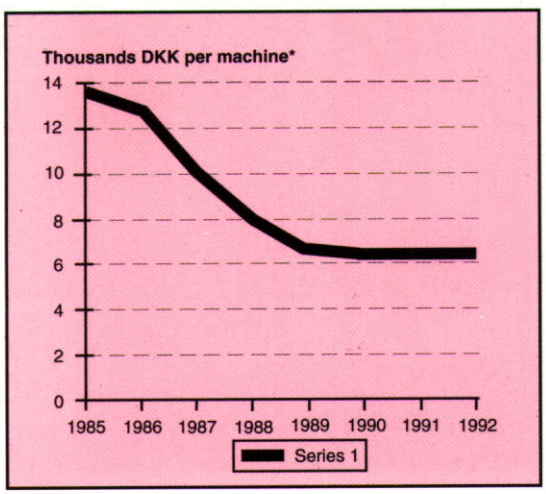
The results for the machines with in-line filters are shown in two columns. The smaller column indicates the cost of materials excluding filter elements.

Continued reduction in costs

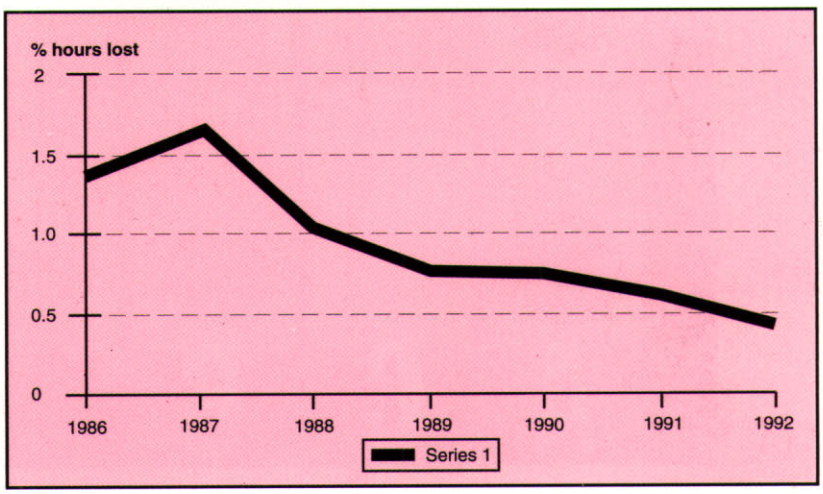
As a result of the comparative trial, the company decided to initially install off-line filters on all new machines and later existing machines were equipped.

The maintenance department have continued to monitor the performance of the machines fitted with CJC Filters. By 1992 all machines had CJC units and the graphs below show the reduction in both costs and lost production time.

Total maintenance cost per machine, 1985-92



Percentage of production hours lost through breakdowns and maintenance, 1986-92



The oil cleanliness level on these machines now ranges between ISO code 14/11 and 12/9 (according to ISO standard 4406).

In addition to these impressive results the factory is experiencing increased repeatability in the production cycles, increase of the average oil and pump lifetime from 15,000 to 40,000 hrs, virtually no unplanned production stops, and the cleaning of system oil tanks is now history.

Also the good results achieved by off-line oil contamination control have caused the maintenance department to extend main overhaul intervals from three to at least five years.

CJC

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*1.000 DKK ~ £110