CLEAN OIL
BRIGHT IDEAS

Quenching Oil
IPSEN Chamber Furnace

CJC™ Application Study

Application Study written by:

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Germany

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CUSTOMER

KNIPEX-Werk C. Gustav Putsch KG, Wuppertal, Germany.
The family-owned company is the world market leader for the manufacturing of pliers.

THE SYSTEM

Two IPSEN atmospheric chamber furnaces
Oil volume: each 2,000 Litres
Oil type: Quenching oil, ISO VG 24

THE PROBLEM

The high quality standards, applied by KNIPEX on the whole manufacturing process, were to be extended also on the quenching oil of the chamber furnaces. In this respect, a quality control was carried out.
An oil sample was taken on 28th of October 2010 and a membrane filter test was made (membrane filter 0.45 µm (micron), 2 g and 15 g samples).
The oil was contaminated to such an extent that a black muddy substance settled in the oil samples. The membrane test showed a grey brown or rather black coating on the membrane, a voluminous layer of amorphous contamination and dirt particles, mainly soot and metal particles as well as oil degradation products (resin / sludge) generated by the thermal stress of the oil.
During every semi-annual cleaning of the quenching bath a large amount of oil sludge had to be disposed of (in total 1,200 Litres/year).

THE SOLUTION

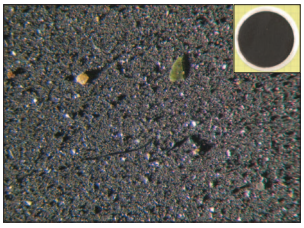
Testwise a **CJC™ Fine Filter HDU 38/100** with **CJC™ Fine Filter Insert 4 x F 38/20** (3 µm absolute) and a pump flow of 270 L/h was installed.
Dirt holding capacity: approx. 15 Kg
Water absorption capacity: approx. 8.5 L

THE RESULT

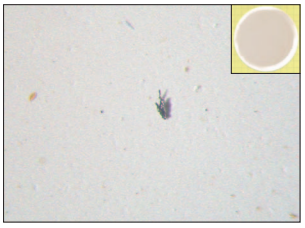
The oil sample of 10th of February showed that after less than 2 weeks the basic contamination had been substantially reduced by the CJC™ Fine Filter (see membrane filter and magnified views to the right) so that the oil can still be used after 5 years of service.
The amount of sludge to be disposed of decreased from 1,200 Litres/year to 200 Litres/year which lead to significant cost savings and a positive ecological benefit.
Additionally the clean oil helps to improve the surface quality of the quenched parts.
Because of the convincing result KNIPEX decided to buy the CJC™ Fine Filter and to install it at their chamber furnaces. In four week intervals both basins of the chamber furnaces will be filtered by turns.

IPSEN atmospheric chamber furnace at KNIPEX

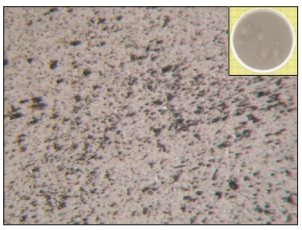
OIL SAMPLES



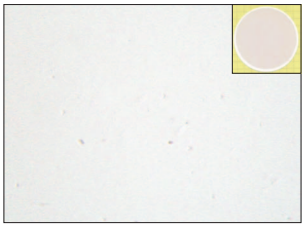
Oil sample of January 28, 2010
***BEFORE** filtration with CJC™,*
***15 g** liquid throughput,*
60-fold enlargement



Oil sample of February 10, 2010
***AFTER** filtration with CJC™,*
***15 g** liquid throughput,*
60-fold enlargement



Oil sample of January 28, 2010
***BEFORE** filtration with CJC™,*
***2 g** liquid throughput,*
60-fold enlargement



Oil sample of February 10, 2010
***AFTER** filtration with CJC™,*
***2 g** liquid throughput,*
60-fold enlargement

COMMENTS

Mr. Eilers, Operating Head, Hardening plant, Knipex plant:
"At first I was impressed which amount of dirt the CJC™ Fine Filter Inserts can absorb. The Filter Inserts now have a lifetime of up to four months.
The oil samples are classified as new by our oil supplier. The amount of sludge that needs to be disposed at every semi-annual maintenance has been reduced by 75%."

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