



**CLEAN OIL
BRIGHT IDEAS**

Hydraulic Oil

Hydraulic Press, Plate Heat Exchanger

CJC™ Application Study

**Application Study
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CUSTOMER

FUNKE Wärmeaustauscher Apparatebau GmbH, one of the leading companies for the development and manufacturing of high quality heat exchangers in Germany. The plate heat exchanger are used in several sectors for example in the pharmaceutical and food industry.

THE SYSTEM

Hydraulic press with a press force of 15,000 t for manufacturing of plate heat exchangers

Oil: Hydraulic oil HLP 46
ISO VG 46, temp. 40°C

Oil volume: 12,000 L

THE PROBLEM

During commissioning of a new hydraulic press it was noticed that the system tank was heavily contaminated. Because politics and press were already invited for commissioning, there was a high time pressure on the basis of which the tank before filling with new oil could not be cleaned. When circulating through the hydraulic systems the contaminations led to problems with the servo valves. Sticking and defective valves resulted in breakdowns and productions stops already within the first years. An oil analysis confirmed the bad condition of the oil which was mainly contaminated with metal wear, sand and plastic particles – the ISO Code 4407 was 22/17/12 (recommended oil cleanliness level for systems with servo valves: 16/14/10). Also the water content was with 141 ppm above the threshold value.

THE SOLUTION

A CJC™ Fine Filter HDU 27/108 with 4 x CJC™ Filter Insert B 27/27 (3 micron absolute) and a pump flow of 1,260 ltr/h was installed.

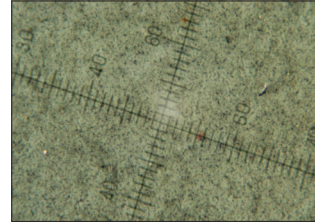
Dirt holding capacity: approx. 8 kg

Water absorption capacity: approx. 3.6 L

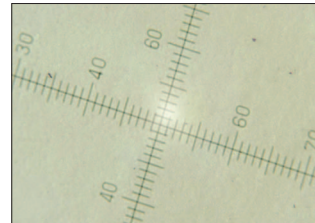
THE RESULT

Within just 3 weeks the oil cleanliness level has dramatically improved in such extent that the oil could still be used (ISO Code 16/14/10 for systems with servo valves was achieved). After another week the ISO Code already reached 13/12/9. Wear parts such as servo valves are spared and the life time of oil and system components shall be extended by a factor of 2.

OIL SAMPLES



*Oil sample no. 1, 14th Sept. 2007:
BEFORE commissioning the
CJC™ Fine Filter
result: ISO Code 22/17/12*



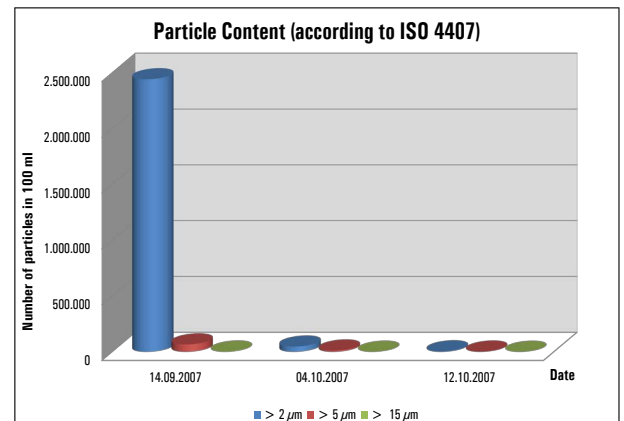
*Oil sample no. 2, 4th Okt. 2007:
AFTER 3 weeks of fine filtration
result: ISO Code 16/14/10*



*Oil sample no. 3, 12th Okt. 2007:
AFTER 4 weeks of fine filtration
result: ISO Code 13/12/9*

ISO Code 22/17/12 means, that with 12,000 litres approx. 4,800 kg dirt/year is pumped through the system. With the achieved cleanliness level of 13/12/9 the amount of dirt reduces to approx. 96 kg dirt/year.

THE RESULT



	14.09.2007	04.10.2007	12.10.2007
Particles > 2 µm	2,443,481	46,945	4,232
Particles > 5 µm	66,093	11,392	2,098
Particles > 15 µm	2,417	833	351
ISO Code 4407 *)	22/17/12	16/14/10	13/12/9
NAS	12	6	3
Water, ppm	141	59	98
Test membrane, colour	grey	white	white

**) Information for establishing the cleanliness level are available on request.*