

Clean HFC fluid is a necessity for preventive maintenance

At Albert Handtmann Metallgusswerk GmbH & Co. KG are more than 40 die-casting machines and deburring presses equipped with CJC[™] Fine Filtration systems for HFC fluid care.



"The high quality of die-cast parts relies on well-functioning production plants, which can be achieved only with preventive maintenance and among other things an absolutely clean operating medium (HFC fluid)."

Mr. Zwick, Maintenance Die-casting, Albert Handtmann Metallgusswerk GmbH & Co. KG





Application study

Care of HFC fluid on die-casting machines and deburring presses

Customer

Albert Handtmann Metallgusswerk GmbH & Co. KG, Biberach, Germany. Handtmann operates globally in six business segments: filling and portioning systems, machining centres, plant, systems and plastics engineering and light-metal casting. Due to its technological focus and innovative force, its products has helped Handtmann achieve a leading position on the market.



SYSTEMS

Cold-chamber die-casting machines with mould clamping forces up to 4,000 tons and deburring pressures (operating capacity: 3-Shift operation).

Manufacturers: Bühler, Müller Weingarten, Tecnopress Italia Fluid type: Petrofer Ultra Safe 620

With cleanliness classes up to 22/19/16 (according to ISO 4406), the hydraulic fluids had a very poor condition and did not correspond with cleanliness classes 17/14/11 for valves (MOOG) as recommended of manufacturers for sensitive components. A direct connection was suspected between poor fluid cleanliness and the frequent malfunctions and breakdowns on die-casting machines and deburring presses. In addition, the heat exchangers (coolers) of the deburring presses were regularly soiled with a paste-like layer affecting the cooling capacity and temperature of the HFC fluid. The existing inline filters have a filtration degree of 5 μ m, but they have to be changed frequently due to the comparatively low dirt holding capacity with a simultaneously high volume flow rate. To extend the service life of the inline filters and achieve the desired fluid cleanliness, Albert Handtmann Metallgusswerk GmbH & Co. KG decided to perform a test series with CJC[™] Fine Filter units. Due to the extremely high dirt holding capacity and highly-efficient filter yield of the CJC[™] Fine Filter units based on the unique combination of filter material and filtration type, the fluid cleanlinesses were significantly improved in cleanliness classes from 13/11/7 to 15/14/11 within an extremely brief period of time and the service lives of the inline filters were extended considerably.

SOLUTION

CJC[™] Fine Filter unit with CJC[™] Fine Filter insert BLA for the continuous care of fluid in the offline flow. The CJC[™] Fine Filter unit removes particles and oil-ageing and oxidation products (e.g., resins) from the HFC fluid. Filter material: renewable raw materials (cellulose) Filtration degree: 3 µm absolute, 1 µm nominal



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deen mit Zukunft

Filtration degree of test membrane: 0.8 µm Liquid volume: 100 ml

	CJC™ Fine Filter unit	27/27	27/54	27/81
	Fluid volume	Up to 1,500 l	From 1,500 l	From 4,000 l
	Dirt holding	Approx. 2 kg	Approx. 4 kg	Approx. 6 kg
	Pump flow	360 l/h	780 l/h	1,080 l/h

Light-metal casting – fine filtration of water on leak testing basin

SYSTEM

The quality test of the die-cast parts is performed in the leak testing basin. The die-cast parts are immersed in the water-filled basin and pressurised. The smallest leaks can be detected by the escape of small air bubbles; to do so, the test water must have a high degree of purity. The water, which is always clean due to the CJC[™] Filter Filter unit, must also be changed considerably less frequently (only every 2 - 3 months instead of weekly), cost-intensive basin cleaning procedures are not required.

SOLUTION

CJC™ Fine Filter unit 27/54 with CJC™ Fine Filter insert D 27/54 for continuous fine filtration of the water. Filtration degree: 3 µm absolute



pended matter, algae).

Application study

Care of HFC fluid on die-casting machines and deburring presses



Connection between high machine and process reliability and consistently clean operating medium

According to Mr Zwick, Maintenance Die-casting, the following advantages can be achieved through the permanent care of the HFC fluid:

- Malfunctions and breakdowns in die-casting machines and deburring presses have been drastically decreased.
- Considerable reduction of mechanical malfunctions in proportional valves (e.g., switching precision).
- Low abrasion on the clamping cylinders and therefore a longer service life.
- The service lives of the pumps increase considerably.
- The seal abrasion of the piston accumulators is constantly filtered out, improving functionality and extending the service life in the process.
- Machine components such as tie bar withdrawal unit, core cylinder and height adjustment unit work without malfunction (e.g., the holding-down cylinder had to be changed only once in 4 years).
- The heat exchangers (coolers) are no longer dirty, cleaning tasks are no longer necessary and an efficient cooling capacity is guaranteed.
- The inline filters are protected and the service lives of the filter elements have doubled. (The filter elements of the CJC[™] Fine Filter units must be changed once a year due to the high dirt holding capacity.)

The connection between the high quality of the die-cast parts and consistently clean operating medium

The results of the leak test best visual proof for the high quality of the die-cast parts due to the care of the HFC fluid with a CJC[™] Fine Filter unit in the offline flow. The difference between the die-cast parts coming from a die-casting machine with a CJC[™] Fine Filter unit or a die-casting machine without a CJC[™] Fine Filter unit can be observed very well based on the air bubbles occurring and demonstrates how good and useful the use of CJC[™] Fine Filter units are. The amount of rejects has been considerably reduced.

Possible potential savings with a short amortisation period

Lower maintenance costs and higher system and process reliability increase profitability. The following table shows an excerpt from the maintenances costs of the last 4 years and the related potential savings. CJC[™] Fine Filter unit amortise within the first year of operation.

Savings in 4	years	Plants WITH CJC™ Fine Filter	Plants WITHOUT CJC™ Fine Filter
Internal gear pump	Spare parts costs	-	EUR 1,800 2 units in 4 years
Voith Duplomatic	Personnel costs	-	EUR 960 2 employees, 4 hours, EUR 60/hour
Control filter	Spare parts costs	EUR 3,200 1 unit/year	EUR 12,800 - 16,000 4 - 5 units/year
Casting unit	Personnel costs	EUR 1,440 2 employees, 3 hours, EUR 60/hour	EUR 5,760 - 7,200 2 employees, 3 hours, EUR 60/hour
Holding-down	Spare parts costs	EUR 500 1 units in 4 years	EUR 2,000 4 units in 4 years
cylinder	Personnel costs	EUR 120 2 employees, 1 hours, EUR 60/hour	EUR 480 2 employees, 1 hours, EUR 60/hour
Valves	Spare parts costs	EUR 6,000 1 unit/year	EUR 18,000 3 unit/year
Manufacturers: Bosch Rexroth, Moog	Personnel costs	EUR 480 2 employees, 1 hours, EUR 60/hour	EUR 1,440 2 employees, 1 hours, EUR 60/hour
	Repairs	EUR 480 2 employees, 1 hours, EUR 60/hour	EUR 1,440 2 employees, 1 hours, EUR 60/hour
Excerpt fr	rom costs	EUR 12,220	EUR 44,680 - 49,320
Excer	pt from p	EUR 32,460 - 37,100	

In the production facilities of Albert Handtmann Metallgusswerk GmbH & Co. KG, more than 40 CJC™ Fine Filter units on cold-chamber die-casting machines and deburring presses for the care of HFC fluid are in operation in the meantime. At present, all production machines operated with HFC fluid are equipped with CJC™ Fine Filter units. At the acquisition of new die-casting machines, CJC™ Fine Filter units are a permanent part of the specification!



- worldwide



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History

Founded in 1928 and located in Hamburg, we develop and manufacture CJC[™] Fine Filter technology since 1951. With substantial know-how and in-house analysis and test facilities we are experts when it comes to the maintenance of oils and fuels.



Quality

Competent advice and individual solutions, even for the most difficult filtration problems of our customers - that is our daily claim. The certification of our company according to DIN EN ISO 9001:2008 provides us with assurance and motivation.

CJC[™] worldwide

CJC[™] Fine Filter systems are available worldwide through subsidiaries and distributors. Find your nearest distributor on our website www.cjc.de - or give us a call!

