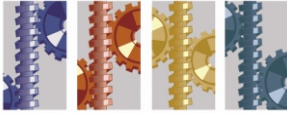




OIL FILTRATION SYSTEMS

CJC™ Application Study

Hydraulic Oil - Speed Control System, Hydro Turbine



INDUSTRY

*Application Study
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In co-operation with:

*Mr. Serrano and Mr. Rosico de
Endesa Generación*

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CUSTOMER

ENDESA GENERACIÓN SA (Girona, Spain). On the Ter River ENDESA has 10 hydroelectric generation stations and 7 mini hydroelectric stations.

THE SYSTEM

System for the speed control and hydraulic regulation of the hydro turbine type ESCHER-WYSS of 49.1 MW.

Oil volume: 660 litres.

Type of oil:

CEPSA CIRCULANTE ISO VG 68.

THE PROBLEM

The oil in the hydraulic system in the turbine G1 was analysed and a high level of wear and tear particle contamination as well as the formation of resins (the result of the oxidation of the oil) was detected. The concentration of these resins and metallic particles was accelerating the ageing of the oil. The contamination was also causing a drastic reduction in the useful life of hydraulic and mechanical components and causing breakdowns.

As each hydraulic generation station is maintained with a minimum of personnel, the client wished to optimise the maintenance of each hydro turbine.

THE SOLUTION

A **CJC Off-line FineFilter LG 15/25**, was installed on the hydraulic system. It has a flow of 300 L/h, filters to 3 µm absolute, eliminates resins and absorbs humidity. The dirt holding capacity is 2 litres of particles.

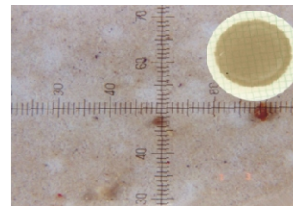
THE RESULT

A reduction in particle contamination of 100 times has been achieved, that has resulted in an increase in the lifetime of the hydraulic and mechanical components of 5 times. Not only have abrasive particles been removed, but also resins and humidity.

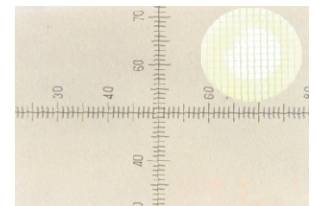
As clean hydraulic fluid is the key to the reliability of each turbine, the client has decided to install CJC filters to maintain the systems free of particles, resins and humidity in the hydro-electric generation stations at Susqueda and Sau (also in Girona, Spain).



Mr. Jesus Javier Moises in the hydro-electric generation station, next to the CJC™ LG 15/25 L FineFilter.



Before filtration with an In-line Filter.



After 3 months of filtration with CJC™ Off-line FineFilter.

THE RESULT

	Before Filtration	After 1 month	After 3 months
Solid particles > 2µm:	565,924	50,024	5,684
ISO code:	20/17/12	16/15/9	13/12/8
Water:	40 ppm	26 ppm	19 ppm
Resins (oxidation):	Colour brown	Colour white	Colour white

COMMENTS

Mr. Serrano, Co-ordinator Ter Area:

"...the CJC filters are reliable, the results achieved in the reduction of wear and tear have been impressive..."

Mr. Rosico, Hydraulic production unit - Area Ebro/Pirineo:

"The CJC filters drastically reduce the probability of bad mechanical breakdowns due to the oil. It is a solid step towards ideal proactive maintenance..."

