



**CLEAN OIL
BRIGHT IDEAS**

CJC™ Application Study

Application Study
written by:

Ricard Ortiz Torres
C.C.JENSEN Ibérica
Spain

2009

CUSTOMER

C.N.Vandellós II Tarragona, Spain

THE SYSTEM

Main turbine, Nuclear Power Plant
Oil type: Repsol Turboaries 32
Oil tank volume: 37,000 L
Total oil system: 80,000 L

THE PROBLEM

The customer had problems during the routine starting of the turbine, when water ingress through the oil seal was detected. This vastly increased the amount of moisture in the oil, so it was necessary to reduce the water content in order to avoid the risk of severely damaging the turbine.

THE SOLUTION

CJC™ Filter Separator PTU3 5x27/108 N-EPTW (6,760 L/h) with **CJC™ Filter Inserts BLAT 27/27** was installed on the main tank and **2 off CJC™ Filter Separators PTU3 27/108 GP-EPW** (900 L/h) with **CJC™ Filter Inserts BLAT 27/27** were installed on the 2 auxiliary engines, situated at a lower level. These engines share the oil circuit, but can also work independently.

THE TEST

Samples were taken to confirm the proper size of the oil maintenance systems and to ensure customer satisfaction.

OIL SAMPLES

The Millipore membrane test was carried out at start-up of the filter and again after 11 months of operation. The oil samples showed that oil degradation (oxidation) was heavily reduced.

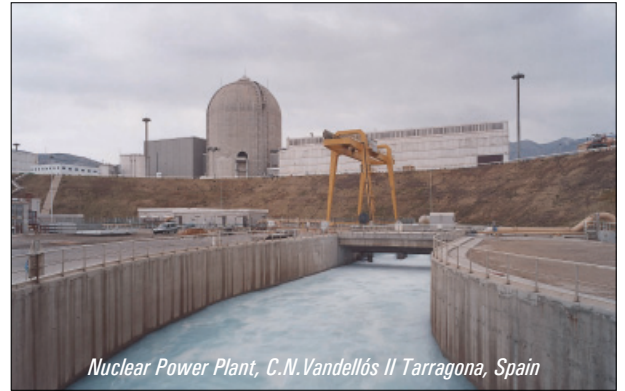
THE RESULT

In less than a week, the water content was reduced significantly while it took a little longer to reduce the number of particles (see graph - the first date indicates the turbine start-up). Furthermore, the amount of varnish deposits was reduced dramatically as can be seen by the changing colour of the Millipore membrane.

COMMENTS

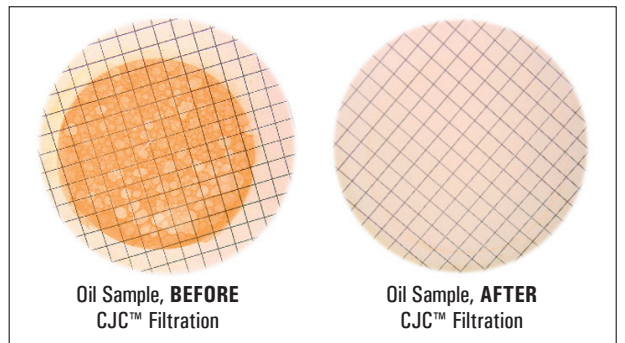
*Mr. Javier Gonzalez, Mech. Maintenance Dpt.:
We bought this filter as a substitute for a centrifuge to remove the large amount of water that is generated in the turbine at start-up. But, unexpectedly, we have gained more benefits. Before installing the filter it was necessary to clean the varnish deposits of the walls in the heat exchanger at each stop of the plant. Now we just look at the system to verify that it is clean. We have never seen the oil so clean. The reliability of the equipment is increasing with time.*

*"More fine filtration -
less mechanical maintenance"*



Nuclear Power Plant, C.N.Vandellós II Tarragona, Spain

OIL SAMPLES



Oil Sample, **BEFORE**
CJC™ Filtration

Oil Sample, **AFTER**
CJC™ Filtration

THE RESULT

	BEFORE	AFTER		
	28.08.07	1 month	2 months	11 months
Particles > 4 µm	234,200	172,870	51,110	40,780
ISO 4406/09	18/16/13	18/16/13	16/14/11	16/14/11
Water, ppm	20000	74	45	38

THE RESULT

