



Oil Filtration Systems
INDUSTRY

CJC™ Application Study

THE CUSTOMER

STORA ENSO, Barcelona (Spain).
The paper plant of STORA ENSO situated in Barcelona produces recycled paper. It's co-generation plant is equipped with an ABB type VE-36A, 12 MW steam turbine. It has been operating for 7 years.

THE SYSTEM

The steam turbine is equipped with a bearing lubrication system and a hydraulic system to regulate speed. The lubrication system and the hydraulic system are centralized on a 6,500 litres storage tank. Oil: SHELL Turbo CC 46 (ISO VG 46).

THE PROBLEM

STORA ENSO had frequent problems of steam leaking into the lubrication system via bearings seals (carbon seals). Oil emulsifies with water. The lubricant was analysed, and the result showed that it was quite contaminated by solid particles causing excessive wear and tear on the hydraulic system.

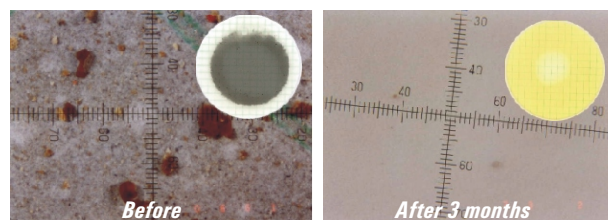
Contamination by water and particles caused oil oxidation which in turn produced sludge. This sludge (oxidation waste) stuck to the surfaces causing choking of pressure filters and malfunctioning of valves.

THE SOLUTION

A CJC™ FilterSeparator PTU3 27/81 MZ-EPW with a CJC™ FilterInsert 3 x BLA 27/27 was fitted to the steam turbine oil storage tank to clean and dry oil continuously with a flow of 785 litres/hour, removal of particles of 3 µm absolute and micro-sludge and separating water from oil by means of a manual water drain.

THE RESULT

In a 6 months' period it has been possible to decrease contamination by wear and tear particles by 150 times and the oil has been dried to a level under 100 ppm (< 0.01%). At present the oil is kept at a cleanliness level 10 times cleaner than the recommended one.



THE RESULT

	Before	After 1 month	After 6 months
ISO classification:	20/19/16	16/15/9	13/12/7
No of particles of 2 µm:	75,036	55,872	5,417
Water:	35,490 ppm = 3.54%	894 ppm	89 ppm
Resins level (oxidation):	grey	white	white

COMMENTS

Mr. Roberto Ledesma (Maintenance Superintendent):
"The CJC™ FilterSeparator has given very satisfactory results. It is an ancillary installation that is very effective on a steam turbine. This gives an assurance of clean and dry oil and this is the key to good lubrication. We will now fit a CJC™ Off-line FineFilter on our 2 gas turbines to remove waste from oil oxidation and wear and tear particles that in-line pressure filters do not remove..."

Application Study
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