

# Lube Oil

## Gas Turbine GE40MW, Cogeneration Plant

### CUSTOMER SAVINGS & BENEFITS

Installing the CJC® VRU Varnish Removal Unit, the following benefits were obtained:

- Varnish reduced - MPC from 36 to 7 in 4 months
- No oil change needed - environmental savings
- Extended oil & machinery lifetime

### CUSTOMER

**Barcelona Carton** - manufacturer of coated paperboard made from recycled fibers (WLC) and virgin fibers (FBB). It is the largest producer of WLC in Spain and the only one producing FBB.

### SYSTEM

Gas turbine in cogeneration plant.

**Type:** GE LM 6000 PC  
**Oil type:** Shell Turbo Oil CC32  
**Oil volume:** 7,000 ltr  
**Temp. operating:** 67°C

### PROBLEMS

A hazardous condition was detected in the system due to high level of varnish, MPC above 30. Using conventional filtration technologies did not reduce the MPC sufficiently. This issue led to the implementation of a corrective plan to completely eliminate varnish contamination.

### SOLUTIONS

A **CJC® Varnish Removal Unit VRU** with **CJC® Varnish Removal inserts VRi** was installed.

### RESULTS

Using the CJC® VRU, the state was changed from HAZARD to CONTROLLOED, since the MPC value was reduced to 7. The CJC® VRU kept the MPC value constant over time at below 15, without altering the properties of the oil.

### FINANCIAL BENEFITS

The high efficiency of the CJC® VRU removing varnish from the system avoided the cost of changing the oil as well as large economic losses due to a possible shutdown of the cogeneration plant.

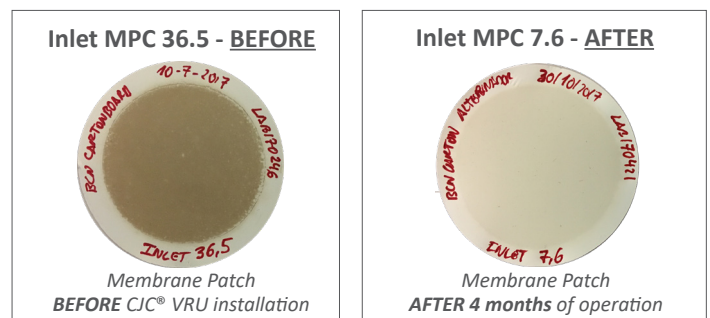
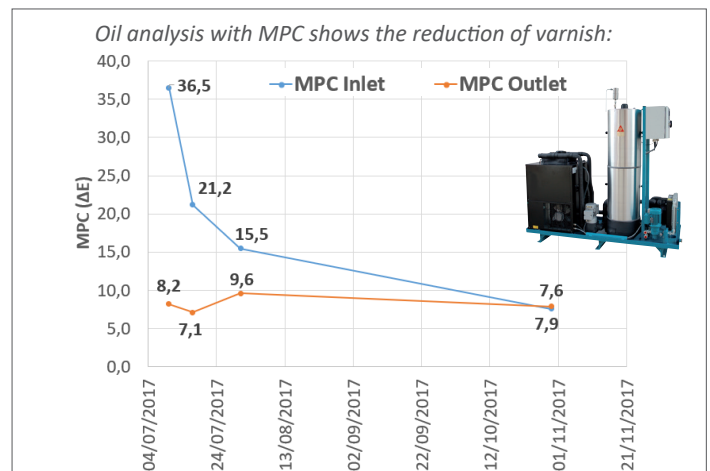
### ENVIRONMENTAL BENEFITS

The rapid action of the CJC® VRU provided environmental benefits by avoiding waste oil. Since commissioning, the CJC® VRU has maintained a low level of varnish, extending oil and machine lifetime.



Barcelona Carton, Spain  
with the CJC® Varnish Removal Unit VRU installed

### RESULTS



### Customer Statement:

Mr. Roberto Ledesma, Head of Maintenance:  
*"The CJC® VRU reduced the MPC value to low, stable, and controlled levels, giving us peace of mind and the security of having clean, varnish free oil. In addition, since the CJC® VRU Filter was put into operation, we have observed fewer pressure filter changes and a reduction in system component failures, which has resulted in financial savings."*

