

CASE: Complete Turbine Decontamination within 10 Hours

Ocean Team saves customers for huge amounts of money by fast and effective elimination of heavy contamination consisting of particles and remains of oxidation in turbine systems off-shore. Within only 10 hours 12,000 litres of turbine oil were brought down 8 cleanliness classes from a starting point equalling ISO 4406 23/21/18 to the optimum level at 15/13/10.

A customer in Qatar was experiencing challenges with a tripping Solar Gas Turbine located at an off-shore production platform. After Ocean Team's inspection of the turbine and analysis of an extracted oil sample, it was clear, that the turbine was heavily contaminated with particles and remains of oxidation.



Picture 1 – Plugged filter with remains of oxidation from a large-frame industrial gas turbine.

What was the normal procedure?

Normally the customer would have resorted to clean the turbine system manually in order to eliminate the heavy contamination. Such a cleaning process would have involved following steps:

1. Shutdown of the infected system.
2. Draining of the system for all infected oil.
3. Mechanical cleaning of the oil tank.
4. Filling and filtering of new oil to the system.
5. Conduction of a full system flushing.

All together this sounded like a very expensive and time-consuming procedure for the customer, which would have resulted in huge production losses at the infected turbine.

Eliminate contamination by means of offline decontamination

But Ocean Team had a better solution: To eliminate the heavy contamination by means of an offline decontamination method, which saved the customer for the time-consuming draining and mechanical cleaning of the oil tank.

Our method is based on a special high flow filtration technique. We filtered the turbine oil with a capacity at up to 900 litres/minute. This caused the oil to stress and by this loose up in the contamination and carry it out to be captured by the offline decontamination unit.

8 ISO-classes within only 10 hours

Ocean Team's solution showed to be a much faster way to clean the turbine oil compared to the known mechanical alternative. The infected turbine oil had a cleanliness level equalling ISO 4406 standard code 23/21/18. Within only 10 hours, we managed to bring down the cleanliness level of the 12,000 litres of turbine oil as much as 8 classes to an optimum level at 15/13/10.

In comparison the customer had estimated 4 whole working days to the cleaning process, which was based on their previous experiences with the mechanical procedure. The result was, that the customer was able to get the turbine back online three days earlier than expected, which saved the customer considerable amounts of production loss.



Statement from the turbine manufacturer on our work for the Qatari customer:

"Ocean Team worked efficiently, safely and everything was kept very clean and tidy. The task was completed within the mini-mum timescale, which allowed me to get GT-B back online quicker than anticipated. I won't hesitate in recommending Ocean Team again to my higher management."

Source: Solar Turbines Europe SA

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An environmentally preferable solution

Beside the economic benefits by using Ocean Team's solution, the decontamination techniques are also a more environmentally preferable solution compared to the alternative to throw away all 12,000 litres of turbine oil and replace it with fresh oil. Just think about it – why throw away 12,000 litres of oil, when you can limit it to only throwing away the contamination, which is causing trouble in your system?

Decontamination instead of oil change thus saved our customer for additional costs by eliminating the need for 12,000 litres of fresh turbine oil as well as the costs connected to the disposal of the drained turbine oil.