

CASE STUDY

# Extension of Oil Life and Increased Reliability at Waste to Energy Plant in Germany

Fluitec's ESP helps increase efficiency and reliability at plant

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**TOTAL SAVED**  
**\$81K**



**CLIENT:** Major Waste to Energy Plant

**COUNTRY:** Germany

**APPLICATION:** Waste to Energy

**COST SAVINGS:** \$81,000

**OIL SAVINGS:** 1500 gals / 5678 liters

**SOLUTION:** Legacy ESP



## PROBLEM

The servo valves on one of the turbines began experiencing issues with sticking and deposits were also seen on the valve internals and radial bearings. After these were noticed, the system was manually cleaned and returned to operation. One year after this manual clean-up, the oil analysis results showed a drastic increase in varnish type contamination and an accelerated decline in antioxidants (only 10% remained). Additionally, the air release values were nearing the OEM's condemning limit of 8 mins. The oil needed to be changed but the plant needed to ensure the varnish issues did not return.

## SOLUTION

Fluitec's **ESP** was installed on the system three months prior to the oil change. The MPC levels went from 58 to 11 as the ESP cleaned up the entire system. The oil was then changed and the ESP unit put back into service. The MPC levels remained within the range of 5-6. As a result of this success, the ESP unit was then placed on another steam turbine with similar issues (elevated presence of varnish contaminants and depleted antioxidant levels). Comparable type results regarding the cleaning of the oil, restoration to OEM acceptable ISO cleanliness levels and reductions in temperatures

were all observed. Yet another ESP unit was used on the last steam turbine which experienced elevated temperatures and identical challenges. Similar results of improved efficiency and cleaned oil were also seen.

## RESULTS

After installation of the ESP system on the first turbine, there was a decline in the MPC values from 58 to 11. Following the new oil change, the ESP unit remained in service on this turbine and the MPC values remained within the normal range (below 15) for the next three years. The ISO cleanliness levels were also maintained and fell between the ranges of 16/14/13 and 19/18/15.

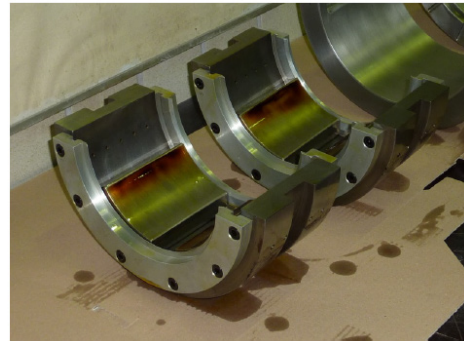
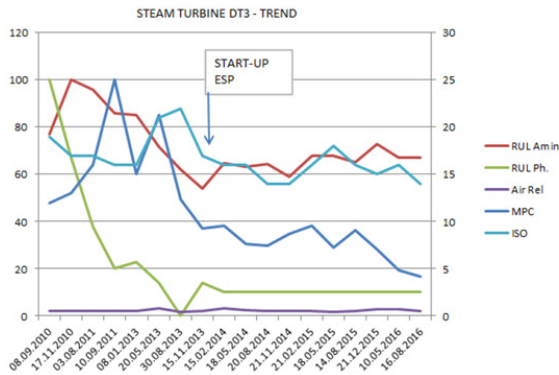


Figure 2: varnish deposits on bearings at MVA HAMM Turbine 1



Fig.6: MPC patch tests from MVA Hamm Turbine in 2011 (left) and after 1 year service (right)

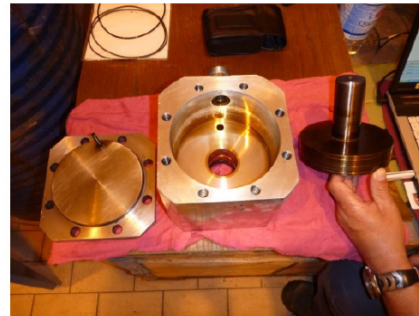


Figure 1: varnish deposits on servo valves at MVA HAMM Turbine 3