



To whom it may concern

Subject : Successful varnish removal with Fluitec ESP-436 in gas & steam turbines at Emirates Power Co.,
Al Taweelah, Abu Dhabi

1. Diagnostic

An abnormal varnish potential was identified in the turbine oils at the Taweelah A2 Power Plant. The diagnostic was made by the Siemens Energy Oil Laboratory in Mülheim, Germany. The MPC –membrane patch colorimetry- values, were in the high 30's, indicating a risk of varnish on the white metal surfaces in the turbine, and therefore a danger to the reliability of the equipment.

2. Solution

To avoid any operating problems and to clean-up the oils and the turbines themselves, Siemens Energy recommended to decontaminate the units. Siemens's recommendation to do so, is the use of the Fluitec ESP –Electrophysical Separation Process. This recommendation is based on intense experience, trials and successes. The ESP process is unique in its ability to remove both soluble and suspended contaminants. This is required in order to remove varnish.

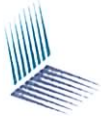
The ESP unit selected is the ESP-436 with 4 elements, treating 9 liters per minute, in kidney loop. This allows Emirates CMS to treat all its turbines one by one, with fast treatment, meaning the varnish potential can be greatly reduced within a 30 day period.

3. Implementation – start up

The Fluitec ESP-436 unit was delivered in September 2010, and a Fluitec representative came to attend its startup on 3 October 2010. The installation and the operation of the ESP unit is simple and requires minimal on-going attention or maintenance.

4. Results

The MPC of turbine GT13 was greatly improved from a MPC of 35.9 to 18.5 in 33 days of treatment. ST14 was clean-up to 18.9. GT12 was cleaned up to 24.1. Given the observed progress, further treatment will bring these values to below 15, which is close to a new oil's condition. GT11 and ST15 will also be treated with the same expected good results. Fluitec ESP is proving to be the right decision by Emirates CMS Power Company for varnish removal.



5. Fluitec interaction

Throughout all these steps, Fluitec's staff has been most helpful, available and effective. They have been most proactive in following-up on progress of the treatment, consistently exceeding our expectations. Based on our experience, we recommend Fluitec and its ESP technology to anyone who needs to perform a varnish decontamination of turbines, and so to reduce reliability issues.

1st MAY, 2011

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OPERATIONS MANAGER

EMIRATES CMS POWER COMPANY

ABU DHABI. U.A.E.