

Use of Filming Amines and Reverse Osmosis in boiler water treatment at CLEAN Camberley site

The Camberley plant is a large commercial laundry part of the CLEAN group of laundries. This plant processes up to one million pieces of linen per week on a two shift/7 day per week operation.

The steam system consists of two Byworth Yorkshireman2 3.5 tonne boilers running at 12.5 Bar. The boilers run in Service/Standby mode with only one in service. They feed five ironers, two continuous batch washers and two small washer extractor machines. The washers use direct steam injection from Flash steam as well as Live steam to achieve wash temperature.

Since 2010, when the plant was opened, the boiler feed water has been supplied via a Softening Set and a Reverse Osmosis (RO) unit. In addition, the feed water has been dosed with a filming amine, V2000 from **GEMchem Ltd.**

Checks for water softness after the softener set to ensure correct operation, and the boiler water TDS value are made daily. The boilers have a side mounted Auto TDS system which samples once a shift. If the TDS exceeds 2000, the system will control TDS by blowdown. Normal TDS level is 1000-1200. A full water analysis is done monthly. A daily two second blow down is done from the boiler bottom drain on boiler start up. Water analysis consistently shows no iron detectable in the system. (See sample report.) With the water kept in good condition, there is no need to blowdown to achieve correct TDS, hence there is a large annual saving of energy.



Boiler 2. Second and some third pass tubes and rear smoke box from top manway. June 2017



Boiler 2. Second pass and some third pass tubes and rear smoke box from top manway. June 2012



Boiler 2 Furnace, second and third pass tubes looking up through rear side inspection hole. June 2017

The hot well is kept at about 60 C and we have a heat exchanger after the pump set fed with heat from returning condensate and there are also economisers on the boilers. The hot well is dosed with filming amine in proportion to make up water. Make up water is about 0.6m³ per hour.

At each annual inspection it has been noted that there is little, if any, sludge to remove from the bottom of the boiler. There is little or no scale on the boiler tubes and the small amount of pitting present is less than 0.5mm deep. (See photos.)

For us, the use of and RO plant and injection of amine is very successful. The boilers have stayed in good condition with minimal scaling in the boiler. TDS stays low and constant so blowdowns are minimised with a good saving in energy. We have little or no problems with the other parts of the steam system either.



Boiler 2 Second and third pass tubes and rear smoke box from top manway. June 2013

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June 2017

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