APPLICATION OF FLUX maxguard™ ON BOARD SHIPPING VESSELS
FOR PROTECTION OF BOILER, MAIN ENGINE JACKET COOLING AND
GENERATOR COOLING SYSTEMS FROM SCALE AND CORROSION
A Case Study by M/s. Flux Hi-Tech, Inc.

CLIENT: THE SHIPPING CORPORATION OF INDIA LTD.
TESTED ON BOARD: BULK CARRIER VESSEL M.V. HARDWAR

This application has a reference to the installation of the FLUX maxguard™ on the Shipping Corporation of India Ltd., bulk carrier vessel M.V. Hardwar. The ship was fitted with the Flux maxguard™ at Visakhapatnam Port on May 13, 1998.
INSTALLATION:
The following equipment were fitted with the Flux maxguard™ for protection of the system from scale and corrosion:
1. Generator AE3 Cooling Water Inlet
2. Main Engine Jacket Cooling Water Inlet
3. Boiler Feedwater (Auto) Inlet

OBSERVATIONS:
The following were the observations for all the three systems after fitting the Flux maxguard™:

A) Generator AE3 Cooling Water
The study for this unit was carried out in the following manner. Two similar systems AE2 and AE3 were selected for comparison purpose. Prior to fitting of the Flux maxguard™, the AE3 cooling water outlet manifold pipe was renewed. For AE2, the same pipe was also renewed but this system was not fitted with the Flux maxguard™.

After 1350 hrs. of operation of AE3 and 589.5 hrs. of operation of AE2, both the manifold flanges were opened for inspection.

It was found that the new pipe in the AE2, despite having been operated for lesser number of hours, was badly scaled and corroded. In comparison, in the AE3, which was protected with the Flux maxguard™, not only had the new pipe remained clean, but also the deposits on other waterside parts prior to the fitting of the Flux maxguard™ were partially cleaned up.

B) Main Engine Jacket Cooling Water Inlet
The main engine unit no. 6 exhaust v/v was due for overhauling two months after installation of the Flux maxguard™. In previous instances, the overhauling was a tedious task with the exhaust v/v housing coming off with much difficulty and having a hard layer of scale on the surface. Most often the exhaust v/v had to be forced out from the landing on account of severe scale formation.

In this case when the overhauling was carried out at the port of Tuticorin on July 13, 1998 (640 hrs. after fitting the Flux maxguard™), the housing came out with ease and soft scale was observed in the cooling water space. This clearly indicated progress of the descaling process in the jacket cooling circuit.

C) Boiler Feedwater (Auto) Inlet
Unfortunately in this case, there was no scope for comparison, as the internal condition of the boiler could not be ascertained prior to fitting of the Flux maxguard™.
It was decided that the performance of the Flux maxguard™ in this case would be judged on the basis of physical inspection at the end of a 6-month period (there was no scope for a physical inspection prior to that as the vessel would be in voyage).

Prior to fitting the Flux maxguard™, the waterside was always found to be having a layer of around 5 to 6mm of scaling despite the fact that the boiler was regularly treated with cleaning chemicals. At the end of the 6-month period after fitting the Flux maxguard™, the boiler was opened for inspection.

It was also observed that the scale in this instance was soft as compared to that prior to fitting the Flux maxguard™ and in certain areas, the internal surface had been totally cleaned of the layer of scale. This indicated that the process of descaling was progressing and even the scale, which could not be removed with the help of cleaning chemicals, was being removed with the use of the Flux maxguard™.

RESULTS:

Thus all the three systems fitted with the Flux maxguard™, showed positive indications towards the effective functioning of the device and improvements in the efficient functioning of the systems concerned.

Subsequent to this successful online performance of the Flux maxguard™, the following vessels of the Shipping Corporation of India were fitted with the device as outlined below.

M.V. Murshidabad
  1) Boiler
  2) Fresh Water Hydrophore System

M.V. Patliputra
  1) Boiler
  2) Exhaust Boiler
  3) Main fresh Water Line

M.V. Goa
  1) Boiler
  2) Exhaust Boiler
  3) Condenser Sea Water Cooling Line

M.V. Lok Pratap
  1) Boiler
  2) Exhaust Boiler
  3) Main Sea Water Line

M.V. Haridwar
  1) Main Engine Jacket F.W. Cooling
  2) General F.W. Cooling
  3) Boiler

M.V. Lok Prem
  1) Boiler
  2) Exhaust Boiler
  3) Main Engine Jacket Cooling

M.V. Uttarkashi
  1) Hot Water Line
  2) Boiler

M.V. Dev Prayag
  1) Boiler feed water lines
  2) M/E jacket.
  3) Aux S/W Cooling Line

M.V. Lok Pragati
  1) Boiler feed water line
  2) A/E Jacket Cooling water line
  3) M/E cooling water line

M.V. Gangasagar
  1) Boiler
  2) Main Sea Water Line
  3) General F.W. Cooling

M.V. Lok Prakash
M.V. Mandakini
  1) Boiler
  2) Exhaust Boiler
  3) Main Sea Water Line.