Project Description: Rust Bullet on Cargo Vessel

February 08, 2008

Rust Bullet Application Report by Hapag-Lloyd AG

Dear Sirs,

The conservation of the cargo bay tanktops on our container vessels is insufficient. These tanktops cannot be cleaned nor is a proper surface preparation as the cargo bay is in continual use and packed with containers. Appropriate maintenance work can only be carried out every 2.5 years within the interval of regular repair docking time.

Tanktops are the floor of the cargo bay. At the same time this floor is the ceiling of the double layer and hopper tanks. In operation these areas are constantly exposed to highly aggressive media like:

- Inflating sea water caused by leaky hatchway doors.
- Leakage of freight caused by improperly packed containers.
- Mechanical damage of surface paint caused by loading/unloading procedures.

If the tanktops are insufficiently protected from corrosion, extensive steel repair work will become inevitable. The rust inhibitors used so far could not fulfill these requirements. Numerous rust protective products from various suppliers did not show the expected result.

In September 2007 we applied Rust Bullet for the first time at the Seoul Express (ex. Bremen Express) after 7.5 years operation time of the vessel. Our purpose was the conservation of all cargo bay tanktops. After 5 months operation time still no corrosion could have been detected. Therefore we feel that Rust Bullet seals the surfaces affected by corrosion in an excellent way. We would like to continue to observe the treated surface portions for another 2.5 years to fully document the expected success of Rust Bullet for our application.

Best Regards,

Hapag-Lloyd AG
Lars Voss
(Senior Superintendent Engineer)