CONICAL RUDDERSTOCK & RUDDER REPAIR IN DRYDOCK

IN-SITU AND WORKSHOP MACHINING REPAIR

A vessel owner approached Goltens to evaluate the repair of a damaged rudderstock on its vessel in a drydock in Spain. Goltens specialists inspected the rudderstock and prepared a detailed repair procedure consisting of repairing the rudderstock in Rotterdam, machining the rudder in–situ and fabricating a stepped insert bush. The proposed process was reviewed and approved by the customer and Class.

The Rudderstock, with a 1:15 taper, was inspected, cleaned and machined in the workshop. Goltens was able to save the bearing sleeve but the oil grooves and O-ring grooves required restoration. Also, the rudderstock nut was repaired and the SKF-pump ring was overhauled including a newly fabricated piston ring.

To accommodate the smaller rudderstock, the conical bore in the rudder needed to be machined to undersize and a stepped bush inserted. Goltens manufactured the bush within very tight tolerance, and the bush and the rudderstock were blue fitted in the workshop.

Onsite in Spain, Goltens In-Situ Specialists machined the rudder to a diameter of 800mm and a depth of 910mm. Goltens then used liquid nitrogen to freeze the bush and insert it in the rudder. The rudderstock was blue-fitted into the rudder and due to the precision of the machining, only two blue fits were necessary for acceptance by class.

REPAIRS CONSISTED OF:

- Workshop machining of 1:15 taper rudderstock and restoration of oil and o-ring grooves
- Fabrication of stepped bush for insert and bluefitting with rudderstock
- In-Situ machining of Rudder (800mm dia x 910mm deep)
- Installation of stepped bush in rudder
- Blue fitting of rudderstock and bush

RESULTS:

Goltens continuously monitored the entire assembly process of the rudderstock and the rudder which was completed by hydraulic press-up method. The reassembly of the rudder was successful and the vessel was returned into service 3 days before the delivery date stated in the original repair planning to the complete satisfaction of the owner and class society.

PROJECT FACTS:

Vessel dimensions:	175 x 30
Vessel deadweight:	31,434DWT
Rudderstock sizes:	8m x ø750, 12 Ton
Rudder sizes:	10x3m, 15 Ton