



**SURFACE
PREPARATION
& COATING**

Ship Hull Repair



**Property Damage
Restoration**



**Temporary
Humidity Control**



**Property Damage
Prevention**



APPLICATION

Overview

Shipyards around the world regularly call Munters when they need help with ship repairs. This is due not only to the fit for purpose technology and proven track record they provide, but perhaps most importantly, the guarantee of a consistent service right across the globe.

Military vessels in particular are exposed to more wear and tear than ordinary ships and due to the nature of the service they provide require the highest possible standards of maintenance.

Normally all work is carried out in an enclosed area under controlled environmental conditions. These conditions state that:

- In order for the coatings to successfully adhere to the steel surface and promote overall drying, the temperature can not drop below the specified temperature for the coating used.
- To prevent corrosion on clean shot blasted areas, as well as condensation on the steel frame of the tent, the relative humidity (RH) must be constantly controlled against the dew point to avoid risks of condensation.

Traditionally gas heaters are used to control both temperature and humidity within the enclosures. However while such methods lower RH they don't change absolute humidity, in fact due to the burning of gas the absolute humidity actually increases. This method has a number of additional limitations:

- Increased energy costs
- Poor heat circulation, causing cold spots and pockets of high RH
- Interruption of work, while gas cylinders are replaced and specified environmental conditions restored
- Condensation on the cold surface of the steel frame caused by the low surrounding outside temperature
- Delayed programme of works in the morning, while gas cylinders which have run out overnight are replaced and the temperature of the enclosure decreased.

With Munters' in-house developed technology, we can decrease absolute humidity and dew point, while increasing heat. This completely controlled climate ensures you can conduct planned maintenance procedures irrespective of weather conditions.



Ship hulls after repainting.



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PROCEDURE

In order to maintain conditions Munters normally install their own desiccant dehumidifiers. Based on Munters' sorption drying wheel, the process ensures that when the air leaves the dehumidification units and enters the enclosures it is completely dry. These units also draw in heated reactivation air, collecting moisture via the drying wheel and then exiting the units and the enclosure as wet air.

Equipment is normally positioned outside the temporary structure with the dry air ducted and blown in, ensuring that as air is circulated, moisture is picked up and removed creating a closed circuit and ensuring constant air movement. Providing a total loss system enables Munters to effectively pressurise the area and reduce moisture infiltration.



During repair the ship hull is covered by plastic foil to maintain a controlled climate. Dehumidifiers blow dry air into the covering, ensuring minimum corrosion between blasting away the old paint and applying the new.

RESULTS

A completely controlled climate provides ultimate control of the entire resurfacing procedure, ensuring a higher quality finish, which ultimately leads to a lower lifetime maintenance cost.

BENEFITS

Using such methods Munters were able to provide:

Uninterrupted work – Continuous operation of Munters' dehumidifier units enables the programme of works to be completed without interruption, ensuring all deadlines are met.

Controlled resurfacing conditions – Regular checks are undertaken during the entire resurfacing process to ensure RH is constantly maintained irrespective of weather conditions. This constant level of humidity improves the overall curing process and avoids corrosion and condensation.

Reduced energy costs – In addition to being more effective, Munters' dehumidifiers are considerably more efficient than heaters at controlling humidity, consequently costing less and providing a more environmentally friendly option.



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