

## De-scaling of Black & Grey Water Lines, Tanks & Components

Blocked and reduced bore pipes no longer require lay up or dry docking to remove pipe scale by traditional potentially hazardous and aggressive solutions such as diluted phosphoric or hydrochloric acid and the collection and costly removal of the waste product.

The use of **GREENBIOCLEAN GEL** or **LIQUID** is a safe, non toxic, environmentally friendly alternative.

**GREENBIOCLEAN GEL** is user friendly and can be dosed by hand or calibrated dosing unit.

This unique product, because of its thixotropic properties, coats the full pipe bore and dwells on the surface of the scale, dissolving only the calcium element of the scale.

This serves to soften and weaken the scale which breaks down and moves along with the discharge flow. In reduced bore pipes there is also a noticeable effect on the effluent transfer as the applied gel increases the velocity and reduces the drag.

After cleaning to full bore, regular dosage of the gel can be introduced as part of the ship's husbandry programme of preventative maintenance.

**GREENBIOCLEAN LIQUID** is ideal for a quicker removal of scale and is ideally suited for dosing units set to combat the varying degrees of blockage and density of scale. The detergent properties of the liquid allows penetration of the fatty layers to reach the scaling underneath.

We were invited to survey the vacuum pipe work on a vessel where pipe blockage had become critical. The pipe work had already been deemed untreatable and provision had been made for a full strip out and replacement of the pipe work system.

**GREENBIOCLEAN LIQUID** was introduced into the system via dual dosing units mounted on the vacuum valves of strategic toilets. The pictures below show the results over a seven day dosing period

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