

MGDUFF



BALLAST TANK DESCALING WITH MAGNESIUM RIBBON

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MAGNESIUM RIBBON FOR RAPID DESCALING

De-scaling ballast tanks with magnesium ribbon offers ship owners and managers a cost effective solution to what can otherwise be a very labour intensive process.

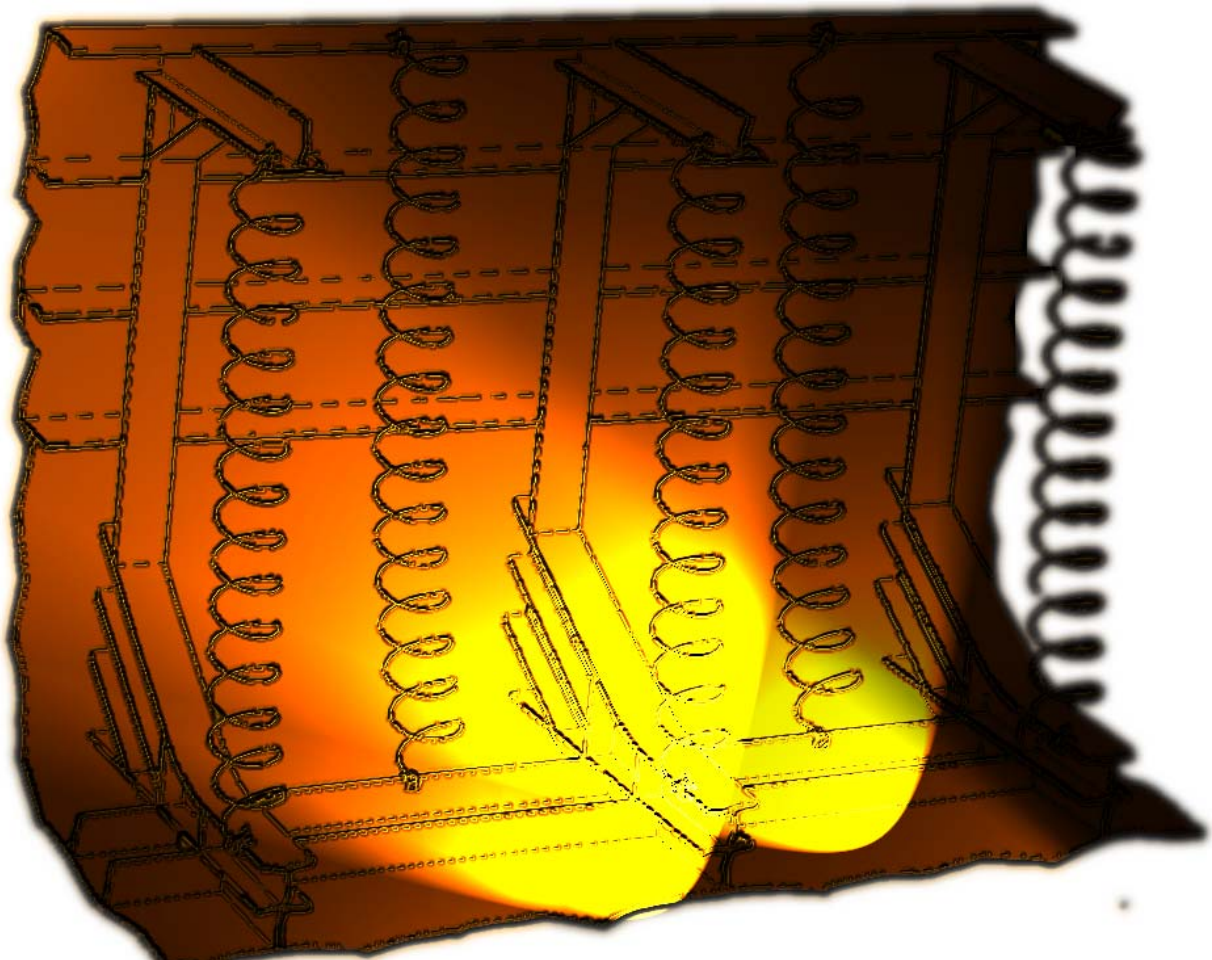
This type of system can be installed very simply by two or three people and does not require staging or shot blasting equipment. The ribbon is light and flexible and is fixed with screw down clamps.

The Process utilises magnesium ribbon, a continuous length of extruded high purity magnesium of rectangular section with a steel wire insert. As a rule of thumb about one metre of magnesium ribbon will be required for every three square metres of surface area within the tank.

The nature of the material combined with the long narrow profile makes it an extremely efficient sacrificial anode when fitted in the appropriate quantities and under full ballast condition. Within a matter of days the potential difference between the tank steelwork and the magnesium will literally lift most of the loose matter and corrosion products such as heavy and light scale, millscale and any loose paint or soft coatings not adhered to the steel work.

MGDuff have been involved in this type of application for over thirty years and offer a complete design and material package. Systems are tailored to suit the individual vessel and combine detailed installation plans with the complete scope of supply including the magnesium ribbon cut to length and ready to fit.

FITTING MAGNESIUM RIBBON



Magnesium ribbon can be fitted easily and quickly, the ribbon weighs only 0.3 kg per meter and is cut and prepared into lengths for the contract or vessel. The ribbon is prepared with the wire insert exposed for fitting to the clamps at each end.

Following the system plan, clamp the ribbon at or near the deck head and allow it to drop and curl against the steel work then clamp again at the bottom end. Magnesium ribbon should not be pulled tight, but allowed to lie curled against the steelwork.

In double bottom tanks the ribbon can be pulled through lightening holes in longitudinal floors between web frames.

Where clamps are fitted steel work must be cleaned back to bright metal and the clamps tightened down hard to ensure a good connection. Clamps may be fitted to longitudinals, flat bar stiffeners and face flats of transverse web frames but never to sounding pipes, ballast suction pipes, grids or other non structural steel work.

Runs of magnesium ribbon greater than ten metres will require additional support and special clamps are available for this purpose.

BALLAST TIME

When all magnesium ribbon is installed, the tank should be pressed up fully for the allotted period to ensure that the upper regions and deckhead are descaled. Descaling will not be achieved successfully if the tanks are only partially filled and water movement will cause the ribbon to detach.

The ballast time varies according to the resistivity of the ballast water which increases as the water becomes less saline. As a rule when ballasting with seawater allow at least ten days but if the salinity of the water is thought to be low i.e. from a harbour or estuary mouth, fourteen days should be taken.

Do not ballast in rivers or estuaries or where the water is known to be brackish.

SAFETY

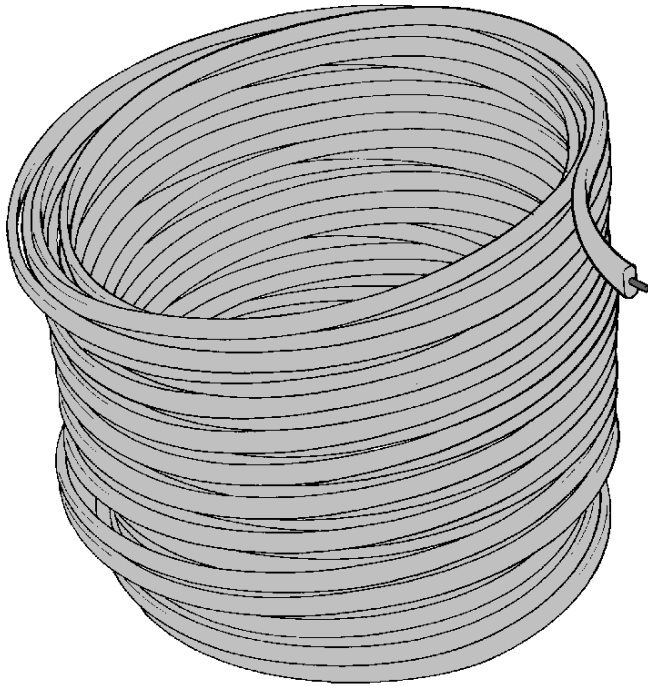
During the descaling operation small quantities of hydrogen gas are produced. The tank should be well ventilated and the immediate area should be kept free from sparks and flames. Before re-entering tanks always observe the correct tank entry procedures and codes of safe practice.

Safety boots and hats must be worn when re-entering as loose scale and rust can fall from upper horizontal surfaces and cause injury.

FINAL TREATMENT

After the descaling operation has been completed the loose scale on the bottom of the tank must be removed. The surface of the steelwork may have a white powdery residue which is a harmless product of the galvanic process is mostly washed away in the ballast water. If left to dry it may be necessary to pressure wash the steel to remove the residue.

The tank is now ready for coating and the installation of a suitable cathodic protection system.



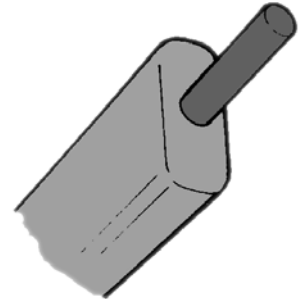
High Potential Magnesium Ribbon Anode

Potential against Ag/AgCl Reference Cell - 1.7 Volt

Seawater Capacity - 1230 Amp/Hrs/Kg

Cross Section - 20mm x 10mm

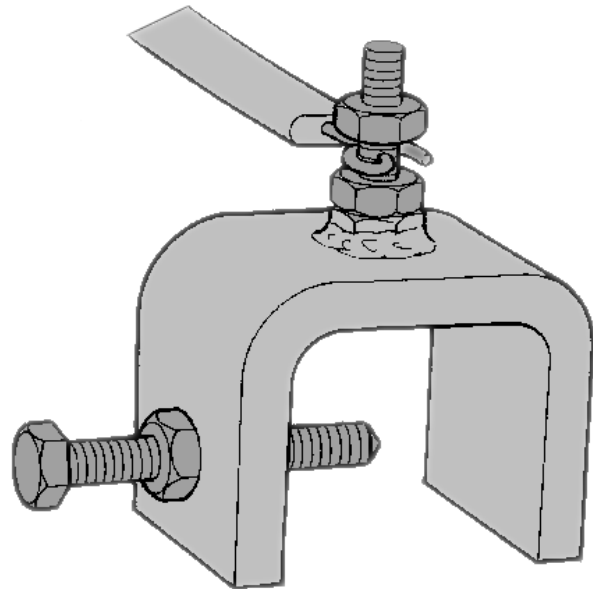
Mild Steel Core - 3mm dia Flexible Core



MAGNESIUM RIBBON END CLAMPS

Magnesium ribbon clamps are made of mild steel and weigh approximately 0.75 kg each, The clamp has a 50mm jaw and will fit most longitudinal bulb angles and stiffeners.

The ribbon wire insert is held in place with a locknut and stud arrangement on the top of the clamp. The stud has a 4mm hole to accommodate the ribbon insert. The clamp is held in place with a



MAGNESIUM RIBBON SUPPORT CLAMPS

These are similar in construction to the end clamps.

The ribbon is fed through the top slot and held in place with a sharpened tip bolt and locknut arrangement on the top of the clamp. The clamp is held in place with a sharpened tip bolt with locknut arrangement.

Clamps may be retrieved and reused in other applications, which can represent a considerable cost saving.

