

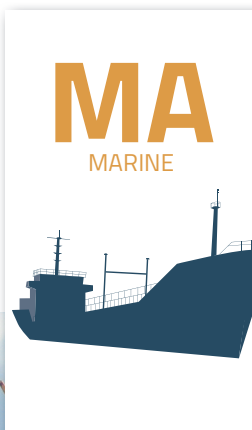


ZINGA® ON SHIPS AND MARINE STRUCTURES

Year after year the cost of marine corrosion has increased with an estimation today of 4% of the Gross National Product. Many different types of destruction can attack structures, ships and other equipment used in sea water service. The term 'aqueous corrosion' describes the majority of the most troublesome problems encountered in contact with sea water, but atmospheric corrosion of metals exposed on or near coastlines, and hot salt corrosion in engines operating at sea or taking in salt-laden air are equally problematical and like aqueous corrosion require a systematic approach to eliminate or manage them.

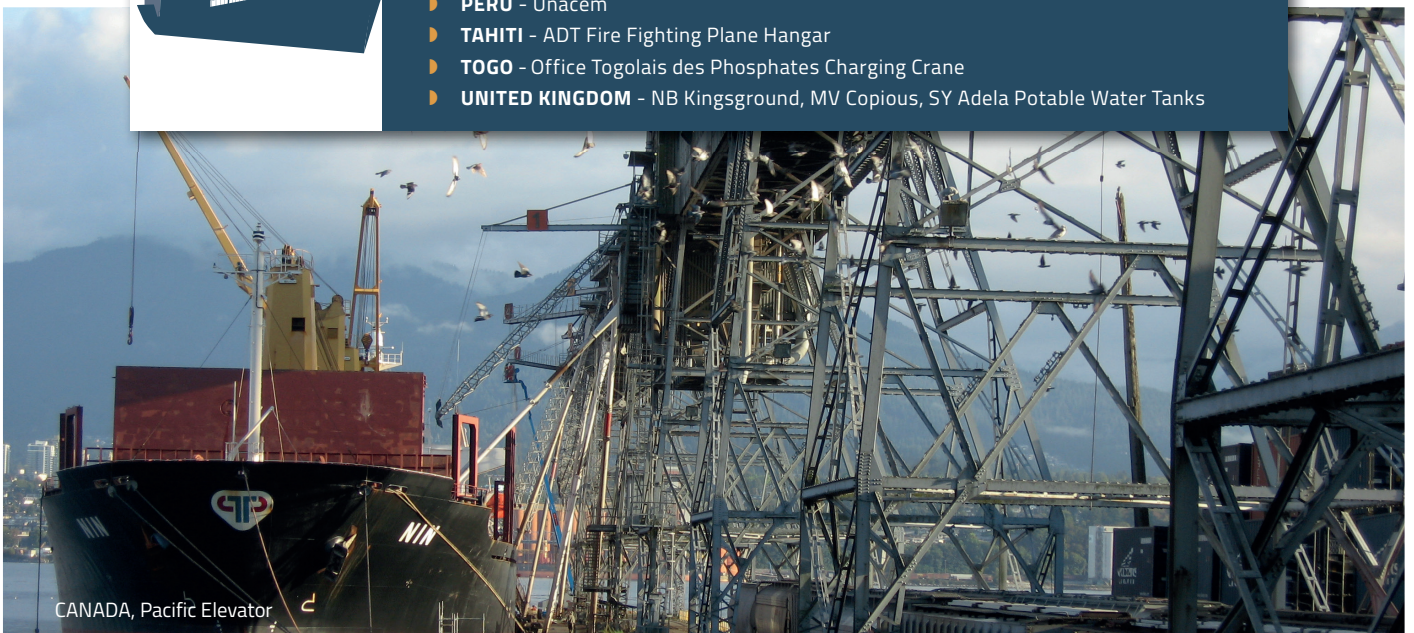
Sea water, by virtue of its chloride content, is a most efficient electrolyte. The omnipresence of oxygen in marine atmospheres, sea spray and splash zones at the waterline, and sometimes surprisingly at much greater depths, increases the aggressiveness of salt attack. The differential intensity of oxygen dissolved at the waterline or in a droplet of salt spray creates a cell in which attack is concentrated where the oxygen intensity is the lowest. Crevices, which allow ingress of water and chlorides, but from which oxygen is excluded, rapidly become anodic and acidic and are hidden start points of corrosion.

ZINGAMETALL offers a total galvanic protection for every simple part of marine structures, from piers to boats, ship hulls, decks, ballast and water tanks.



SOME EXAMPLES OF OUR +100 REFERENCES

- ▶ **BELGIUM** - MV Bonne Industrial Theresia Houseboat Waltzing Mathilde, SV Mercator
- ▶ **CANADA** - Pacific Grain Elevator, USNS Zeus Cableship, BC Ferry Terminal
- ▶ **INDONESIA** - Indonesia Navy Ships
- ▶ **IRELAND** - Killybegs Pier, Bangor Pier, Fitzwilliam Quay Dublin
- ▶ **LA REUNION** - St. Paul's Jetty
- ▶ **MALAYSIA** - ExxonMobil gratings YOHO platform
- ▶ **PERU** - Unacem
- ▶ **TAHITI** - ADT Fire Fighting Plane Hangar
- ▶ **TOGO** - Office Togolais des Phosphates Charging Crane
- ▶ **UNITED KINGDOM** - NB Kingsground, MV Copious, SY Adela Potable Water Tanks





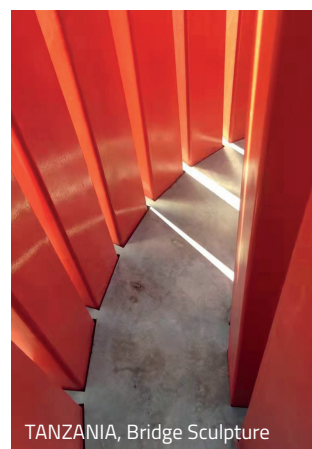
UNITED KINGDOM



INDONESIA



IRELAND, Fitzwilliam Quay Dublin



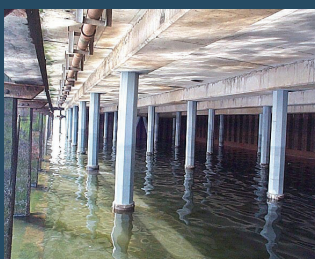
TANZANIA, Bridge Sculpture



BELGIUM, Canal Fenders



UNITED KINGDOM, London Eye Barrage Pontoon



KILLYBEGS (IRELAND)

The Killybegs fishing pier, which supports factory buildings, is held up by 309 mild-steel hexagonal shaped legs, all approx. 600 mm in diameter. These pier legs have been in the sea for 25 years and due to the salt and the sulphate reducing bacteria present in the sea water, they were losing up to 2 mm per year of their thickness. The waters around Killybegs are particular because they have the highest rate of corrosion in Europe. The application of ZINGA® on the pier legs at Killybegs Harbour was done in the summer of 2000. In 2003, 2006, 2009 and 2014, inspections performed by SGS concluded that ZINGA® was still in very good condition.



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