

POLYFLAKE® High Resistant Coatings



MARINE & CORROSION ENGINEERING

Corrosion prevention solutions for
new and existing equipment

POLYFLAKE® * SPECIALIZED SOLUTIONS FOR CORROSION IN HARSH ENVIRONMENTS

POLYFLAKE® technologies developed since 1992 can salvage equipment considered beyond repair with a consistent reduction of operating cost and environment impact. Developed to combat corrosion and abrasion in both new and existing plants.

POLYFLAKE® LLC supply program includes:

- ▶ **POLYFLAKE®** abrasion and corrosion coatings.
- ▶ **POLYFLAKE®** COATING SYSTEMS for:
 - ❖ Submerged hull “Hard Coating”.
 - ❖ **POLYFLAKE®** NSF Approved coating for the potable water systems and cruise vessels swimming pool reconditioning.
 - ❖ **POLYFLAKE®** coating system for alkali/acid, process tanks, Grey, Bilge and Black water tanks.
 - ❖ **POLYFLAKE®** coating for EGCS, IGS and aggressive /abrasive fluids tanks, pipes and fittings.
 - ❖ **POLYFLAKE®** coating for:
 - ❖ Abrasion and corrosion improvement on new equipment.
 - ❖ Overhaul/renewal of pumps, and machinery.
- ▶ **Coating Application Survey & Inspection.**
- ▶ **Services and Supplies:**
 - ❖ On-site pipe coating 20” ECO Blasting units.
 - ❖ **POLYFLAKE®** coating products and repair kits.
 - ❖ Surface preparation and application.
 - ❖ Marine equipment, machineries, and hydraulic jack overhaul.
 - ❖ Mechanical Seals.
- ▶ **Turnkey projects solutions**

POLYFLAKE® Coatings key advantages

Physical

- Undercutting Resistance
- Permeation Resistance
- Abrasion and Corrosion Resistance
- Impact Resistance
- Flexibility
- Reparability
- Rapidity of cure
- Machinability
- Use as filler

Commercial

- Competitive prime cost
- Lower steel cost
- Reduces Downtime
- Refurbishes old plant
- Long Life
- Low Cost per surface unit / year
- Reduces Maintenance
- Increase operation efficiency (minimize drag)
- Environment Friendly (reduces the use of energy and materials)

General

- Replaces rubber, lead and stainless*steel linings
- FDA Approved – Suitable for use with food products
- Fast installation
- On*Site or Shop application
- Suitable for use in radioactive areas
- Can replace bricks and tiles

POLYFLAKE® High Resistant Coatings

Wide
application
range



► **POLYFLAKE®** has implemented a Quality Assurance Program ISO9001 to ensure the standard of supply, service quality and commitment to our customers.

► The abrasion and corrosion resistance of **POLYFLAKE®** can extend the life of plant equipment in many areas where those problems can be virtually eliminated as well as contribute to a sustainable green environment, saving natural resources.

► Coating new equipment initial lining with **POLYFLAKE®** increases the resistance to abrasion, corrosion, cavitation, acids and alkalis permitting the use of less expensive base materials, possibly mechanically stronger carbon steel against expensive and mechanically poor stainless steel.



POLYFLAKE®

SUPERIOR COMPOUND PROPERTIES

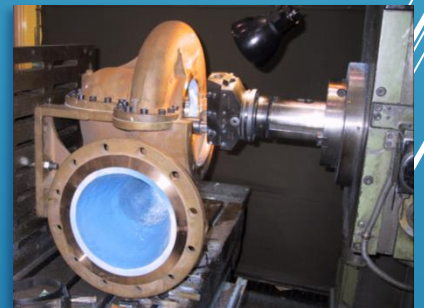
► Resistance to undercutting

- ❖ **POLYFLAKE®** extraordinary vacuum bonding means corrosion will only occur at the point of damage, unlike alternative linings such as rubber or sheet linings, where undercutting can expose large areas to corrosion.
- ❖ **POLYFLAKE®** increases the bond strength to the substrate and has a vacuum effect with steel, preventing undercutting.
- ❖ Concrete surface and Cast Iron Surfaces application with **POLYFLAKE®** Base Coat penetrates deeply into the top surface creating a mechanical bond.
- ❖ Field tests have shown that concrete will separate from concrete not from the **POLYFLAKE®** coating layers! Permeation/Osmosis Resistance. Next to basic corrosion resistance permeation/osmosis resistance is the factor which most affects the life of a lining/coating.
- ❖ Many alternative materials blister and fail prematurely because corrosive agents have permeated through to the substrate.
- ❖ While the rate of permeation increases with a rise in temperature and limits the use of many products to 140F to 158F (60°C to 70°C) **POLYFLAKE®** systems have been used in immersion service to around 212F (100°C); specific resin formulations can work up to 400°F (204°C)
- ❖ Customer experience indicates the durability of **POLYFLAKE®** a system capable of withstanding double salinity salt water at boiling point. The lining displayed no degradation after 12,000 hours under test.

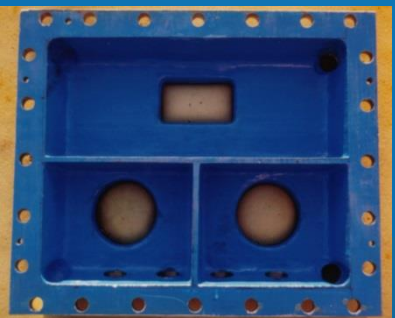
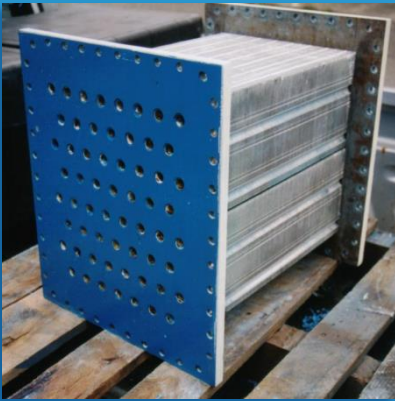
► High Build System

- ❖ **POLYFLAKE®** coatings are applied to a typical thickness of 650 to 3,000 microns (25 to 120 mils).
- ❖ On some occasions, rebuilding of corroded areas requires thicknesses of up to 12,000 microns that can be easily achieved with **POLYFLAKE®**.
- ❖ **POLYFLAKE®** is then used to rebuild worn machineries, like impellers and bodies damaged by cavitation and/or corrosion extending their operational life at a fraction of the cost of a new replacement.

POLYFLAKE® repair kit can be used onsite to correct damage.



POLYFLAKE® High Resistant Coatings



TurnKey Service

- ▶ We provide complete service installation and machining for equipment treated with **POLYFLAKE®**; this entails full service such as:
 - ❖ Equipment dismantling / installation.
 - ❖ Condition evaluation and reporting.
 - ❖ New parts manufacture, line boring, fitting, turning, etc.
 - ❖ Worn parts sandblasting, rebuilding and **POLYFLAKE®** application.
 - ❖ Rotating parts dynamic balance when applicable.
 - ❖ Equipment shop test as required: Spark test, Pressure Test, Electrical Insulation, Class survey and Certification.
 - ❖ Full QA Documentation and Certification according to ISO9001:2008.

Competitive lifecycle cost

- ▶ Cost will depend on many factors but, in general **POLYFLAKE®** is competitive compared with alternative methods and in most instances, it compares favorably in terms of replacement costs.
- ▶ The overall price difference in respect to less reliable coatings systems is relatively small in the range of 20% to 30% resulting in an unbeatable lifetime extension of the equipment and lower maintenance costs.
- ▶ On some applications particularly in the marine industry, where dry dock time is crucial. The rapid cure and over coating intervals are as low as half an hour producing savings far in excess of the extra applied costs of the **POLYFLAKE®** Coating System.

POLYFLAKE® High Resistant Coatings

POLYFLAKE® bonding can be applied on a wide range of base materials, with minimal changes to the final performances, like:

GRP

Copper
Nickel
Alloys

Copper

Aluminum
Brass

Wood

Cast
Iron

Rock

Concrete

Bronze

Aluminum

PVC

Stainless
Steel

Carbon
Steel

Other
Metals



► **POLYFLAKE®** Engineers select the base resin to be resistant to the Customer's environment in which the lining or coating is going to operate, which will depend on the following factors: Corrosion environment

1. Operating temperature
2. Mechanical considerations
3. Application conditions

POLYFLAKE® High Resistant Coatings



Application fields

Hulls * Decks * Rudders * Rudder Skeggs * Cooler End*
 Covers * Condenser End * Covers * Flanged Pipe Systems *
 Turbo Cooling Pipes * Propellers * Propeller Housings * Heat
 Exchanger * Bow*Thruster Housings * Stage Saltwater
 Pumps * Oil Cooler Covers * Sewage Tanks * Water Tanks
 (FDA Approved) * Kort Nozzles * Sea Strainers * Internal
 Piping * Butterfly, Gate and Ball Valves * Exhaust Housings
 * Sheet Piling.

Chemical Process Industry

Pumps * Blowers * Storage Tanks * Pipe Systems *
 Bottom*Plates * Centrifugal Fans and Housings * Smoke-
 Stacks * Ozone Tanks * Butterfly, Gate and Ball Valves.

Sewage Purification Plants

Water Box Covers * Pipe Systems * Sewage Pumps * Valves
 * Valve Cage – Cooling * Pumps * Basins * Tanks * Trenches
 * Concrete Tanks and Lining of Concrete Pipe Systems *
 Ozone Tanks * Digester Interiors * Clarifiers * Rake
 Assemblies * Catwalks.

Water Treatment Plants

Butterfly, Gate and Ball Valves * Pipe Systems internals
 (large and small diameter) * Water Storage Tanks (FDA
 Approved).

Power Station / Hydro Station

Water Boxes * Cooler End*Covers * Impellers * Centrifugal
 Pumps – Main Condenser Doors * Multi*Stage Pump Bowls
 * Vacuum Maintaining Pumps * Tube Plates * Penn Stock
 Interiors.

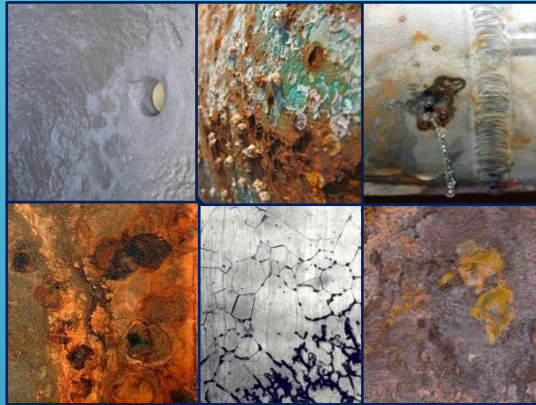
Transportation

Railroad Hopper Cars * Truck Chassis Containers * Container
 Platforms – Cask for Tankers (also for food transportation,
 FDA Approved).



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Marine & Corrosion Engineering



POLYFLAKE
LLC



POLYFLAKE EU
LTD

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