POLYFLAKE®

"Innovative Coatings, Engineering Solutions"

Trusted protection.

for marine, energy and industrial assets that cannot afford to fail

CAPABILITIES · SINCE 1989

SUPERIOR CORROSION PROTECTION

Engineered to outlast the steel it protects.

Polyflake LLC is a Miami-based marine corrosion engineering specialist. For 35 years our glass-flake coating systems have protected assets where ordinary coatings give out. We formulate every resin in-house, apply it with our own crews, and back it with documented results and a written warranty, from the world's largest cruise fleet to onshore energy and industrial plants.

Our vinyl ester resins resist more than 800 aggressive fluids across the full pH spectrum and are salt-spray tested to 20,000 hours with no effect[1]. A vacuum bond to the substrate stops undercutting, so corrosion can only ever occur at the point of damage[2], and every system is reversible and repairable on-site for a documented service life of 25+ years.

10,000+
PSI TENSILE STRENGTH

20,000 hr
SALT-SPRAY, ASTM B117

100°C
IMMERSION SERVICE

25+ yr
DOCUMENTED SERVICE LIFE

1. Per ASTM B117 salt-spray testing. 2. Vacuum-bond adhesion verified on steel and cast-iron substrates; field-proven over 20+ years in continuous seawater cooling service.

01 · COATING RESIN SYSTEMS
Proprietary resin production and application for hulls, tanks, piping and equipment.

02 · HYDRAULIC & MECHANICAL
Workshop overhaul of hydraulic cylinders, pumps and large rotating machinery.

03 · MARINE CONTRACTING
On-site turnkey projects for piping, decks, pools and structural steel.

Up to the challenge

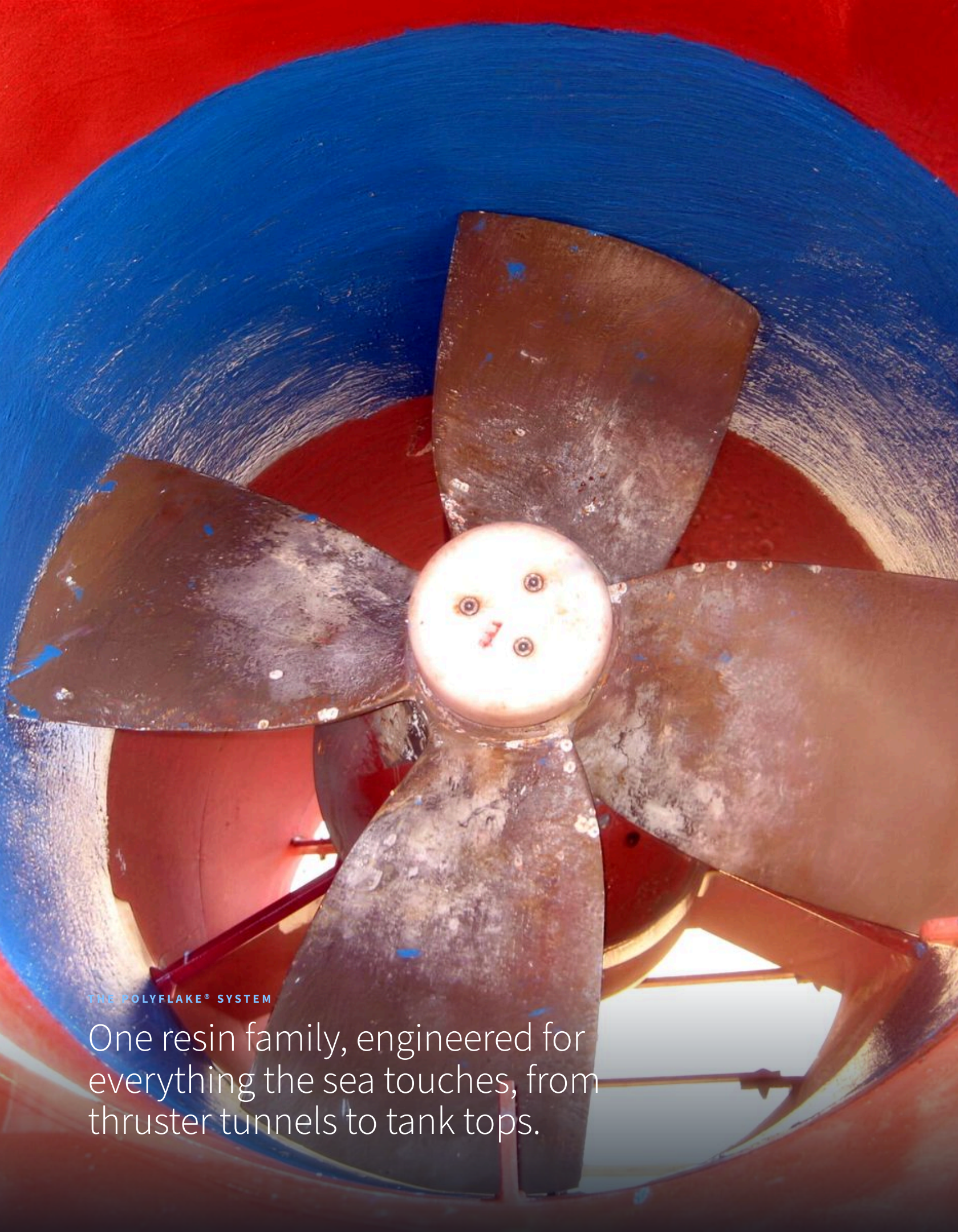
Marine, energy and industrial assets face some of the world's harshest environments.

At Polyflake we have 35 years of experience in marine corrosion engineering and understand these complex needs. We formulate every resin in-house, apply it with our own crews, document every step and stand behind the result, whether the job is a hull, a pipeline, a tank or a pump.

From a single Miami facility we reach international ports within 48 hours, with our own corrosion-control crews and a 24/7 emergency response - we protect your assets for a lifetime.

Polyflake delivers trusted protection for the world's harshest environments.

Proven performance	›	Proprietary Polyflake®, Polyglyde® and Polytube® systems, refined over 35 years of field application and tested to 20,000-hour ASTM B117 salt spray. Nothing rebadged from a generic supplier.
Global service	›	Miami, the gateway to the world's largest cruise fleet, mobilising rapidly for dry-dock, pipeline and shutdown work across the Americas and beyond.
Professional support	›	Our own in-house applicators working to NACE/SSPC standards, with full ISO 9001 documentation and a written warranty on every project.
Innovative solutions	›	Six engineered resin systems and in-place rehabilitation that replace stainless steel, rubber linings and full asset replacement.



THE POLYFLAKE® SYSTEM

One resin family, engineered for everything the sea touches, from thruster tunnels to tank tops.

THE POLYFLAKE® COATING SYSTEM

One resin family. Six engineered systems.

Vinyl ester resins reinforced with C-glassflakes, applied as base, reinforcement and top coats to 30–75 mils DFT on steel, bronze, aluminium, copper-nickel, GRP and concrete.

System	Engineered for
110 Epoxy Vinyl Ester	Alkali, acid, bleach and solvent environments. FDA approved for food and potable-water contact.
220 Novolac Elastomeric	Chlorine, chlorine-dioxide and oxidising chemical service.
220T Novolac + Teflon	Ultra-low-friction, inert. Submerged hull and critical-flow surfaces.
440 Brominated Novolac	High temperature, chemical and fire resistance.
550 Glassflake Elastomer	Extreme strength and abrasion under high mechanical stress.
880 Cross-linked Epoxy	Solvent-less, white. Developed specifically for potable water.

625
V/MIL DIELECTRIC

1,560
PSI ADHESION TO STEEL

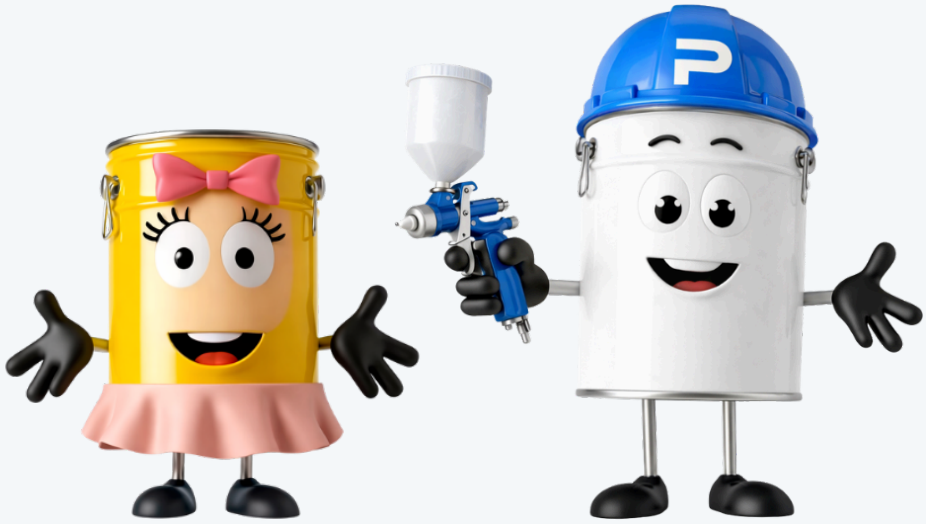
pH 1–14
FULL-SPECTRUM RESISTANCE

204°C
DRY SERVICE TEMP

MEET POLY & FLAKE

Real engineers behind every coat.

Poly and Flake are the friendly faces of our brand. Behind them, every specification and application is handled by experienced coating engineers working to NACE/SSPC standards.



MARINE & OFFSHORE

Protected from hull to pump room.

From submerged hulls and rudders to ballast tanks, sea strainers, OVBD pipework and EGCS scrubber discharge, we protect every wetted surface against constant seawater, marine growth and high-speed erosion.

System	Application & benefit
Polyglyde® hull hard-coat	Teflon-modified, low-friction underwater coating. Lower drag, less fouling, fewer dry-dockings. Lloyd's Register approved; first applied to Disney Magic & Dream, 2008.
Polyflake® tank & pipe lining	Ballast, sewage and potable-water tanks, sea strainers and internal piping lined to resist the full pH spectrum and 20,000-hour salt-spray exposure.
OVBD & EGCS discharge	Carbon-steel scrubber and overboard pipework coated to resist acid plus saltwater erosion to 110°C, with hull protection donuts against the acid plume.
Pump & equipment recovery	Impellers, volutes and casings rebuilt and coated to OEM specification, returning corroded equipment to full service.
Deck refurbishment	Turn-key removal of existing deck treatments, steelwork repair, closed-loop pollution-free blasting and anti-corrosion recoating of large deck areas.

2008
FIRST HULL AT SEA

40%
DRY-DOCK INTERVAL CUT

9%
TARGET FUEL REDUCTION

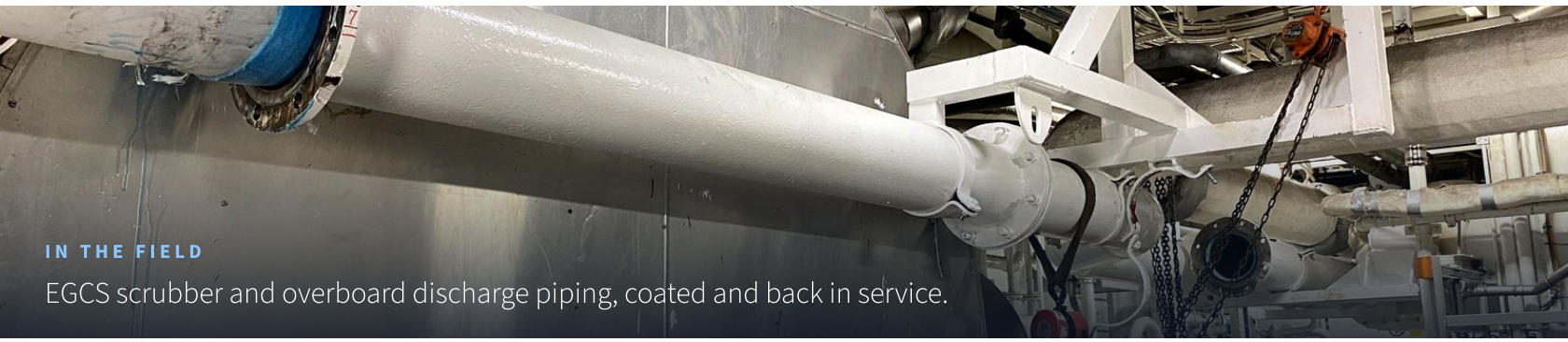
25+ yr
ENGINEERED SERVICE LIFE

OIL & GAS · EGCS

Carbon steel, coated. No stainless premium.

Scrubber discharge and process lines face acid plus high-speed saltwater erosion. Stainless 304/316 pits and crevice-corrodes in warm seawater; metallization cannot be tested for porosity. Polyflake lets you coat inexpensive carbon steel and test it in shop and field.

Challenge	The Polyflake answer
EGCS acid + erosion	Polyflake 110/220 resists acids and bases in high-speed saltwater to 110°C, on standard carbon-steel pipe.
Stainless pitting & cost	No corrosion-allowance over-thickness, no cross-contamination shop, no long lead times. Coating is measurable and certifiable.
On-board repair	Pipe can be modified or repaired on site by untrained personnel with an original Polyflake kit and instructions.



IN THE FIELD

EGCS scrubber and overboard discharge piping, coated and back in service.

SCRUBBER OVERBOARD & DISTANCE PIECES

The distance piece problem, solved in place.

Scrubber washwater leaves the hull at pH 3 to 4, and class societies have documented severe corrosion in the discharge line outboard of the overboard valve, the distance piece, within the first years of EGCS operation[1]. Conventionally painted steel spools have leaked at sea[2]. Replacing them in stainless costs a premium and still pits in warm seawater.

Challenge	The Polyflake answer
Acid attack at the hull penetration	Spool pieces shop-coated with Polyflake 110/220 to ~1,200 micron, holiday-tested before installation, with a coated hull protection donut against the acid plume.
Long steel lead times	Improved single-piece fabrication, pre-coated in our shop and finished at the weld only, cuts fitting and installation time in dock or afloat.
Renewal without dry-dock	Polytube® GRP liner inverted through the existing line onboard, snaking 90° elbows, cured in place by a crew of three.

pH 3–4
WASHWATER RESISTED

110°C
ACID + EROSION SERVICE

1,200 µm
TYPICAL LINING DFT

3
CREW, INSTALLED AFLOAT

1. ClassNK technical review, damage of SOx scrubber discharge water lines. 2. P&I club risk alert on severe corrosion at scrubber overboard connections.

SEA CHESTS & SEA STRAINERS

Sealed against the sea it drinks from.

Sea chests feed every cooling system on board, and they suffer for it: biofouling roughens the surfaces and chokes water flow[3], stagnant pockets breed microbially influenced corrosion at the welds, and bronze fittings set up galvanic couples that eat bare steel first.

Challenge	The Polyflake answer
Fouling & flow loss	Smooth, hard Polyflake lining that marine growth grips poorly, cleanable by divers without stripping the coating.
MIC & crevice attack	Pinhole-free, holiday-tested lining isolates the steel completely; welds and edges stripe-coated before the full system.
Galvanic corrosion	625 V/mil dielectric barrier breaks the couple between hull steel and bronze fittings, fully compatible with existing anodes.
Strainer housings	Rubber-lining removal and Polyflake recoat of ER main and auxiliary strainers, a service delivered across major cruise fleets.

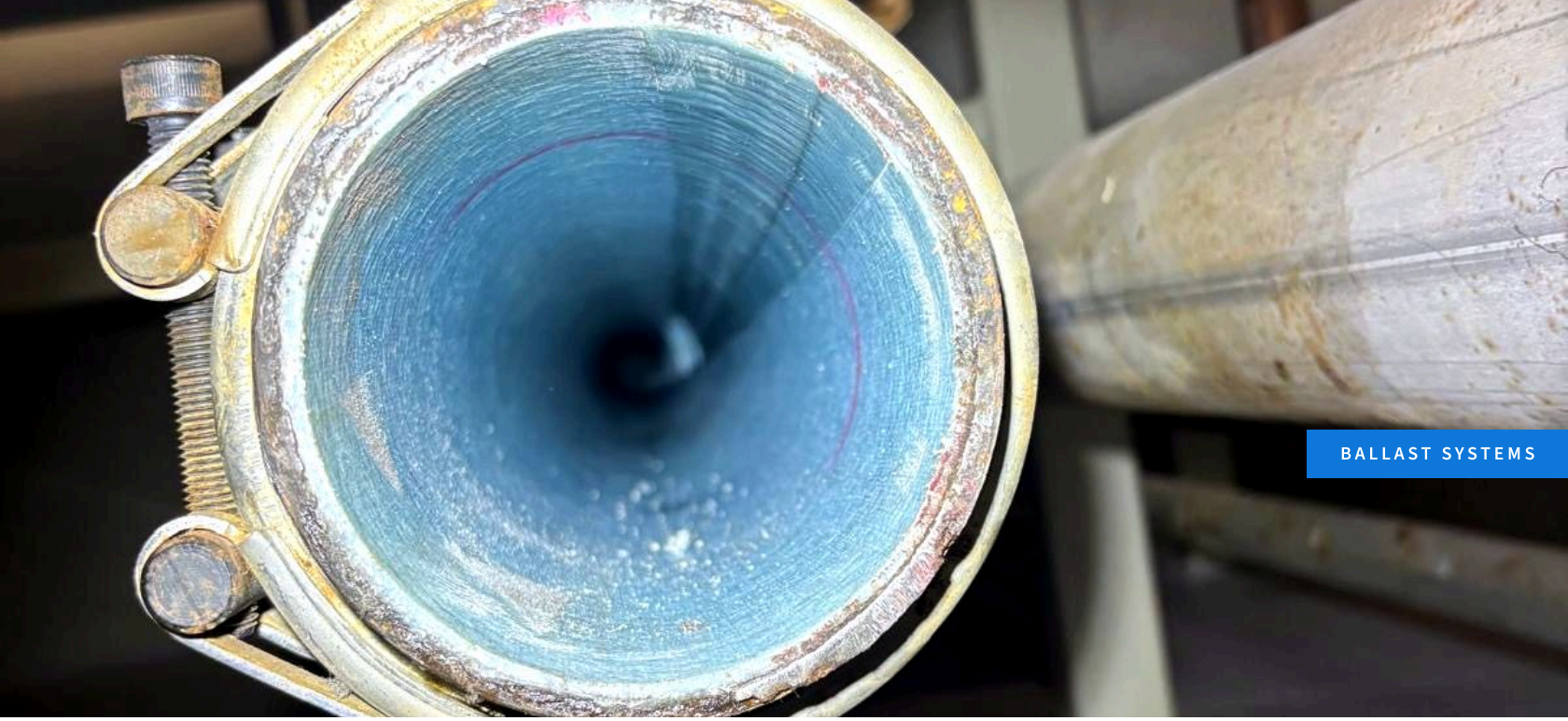
625
V/MIL DIELECTRIC

20,000 hr
SALT-SPRAY TESTED

pH 1–14
FULL-SPECTRUM SERVICE

25+ yr
IMMERSION SERVICE LIFE

3. Peer-reviewed review of biofouling in ships' internal seawater systems, Frontiers in Marine Science, 2021.



BALLAST WATER LINES & TANKS

Ballast lines that outlive the treatment system.

Ballast water treatment retrofits changed the chemistry inside the pipe: regulatory studies warn that electrochlorination and other treatment technologies can accelerate corrosion in ballast tanks and piping[4]. When a buried ballast crossover fails, the repair means steel renewal deep inside the ship.

Challenge	The Polyflake answer
Treatment-accelerated corrosion	Polyflake lining resists oxidising, chlorinated service (system 220) across the full pH spectrum, sealing weld seams and pitted steel.
Lines buried in the ship	Polytube® reverse lining rehabilitates ballast crossovers in place, up to 100 m in a single run, through multiple 90° elbows, with no disassembly.
Tank coating breakdown	Ballast and bilge tank recoating to a documented, holiday-tested finish, delivered on cruise vessels alongside pipe lining in the same docking.

100 m
SINGLE-RUN LINER LENGTH

90°
ELBOWS, LINED THROUGH

0
PIPE DISASSEMBLY

25+ yr
PROJECTED SERVICE LIFE

4. U.S. Coast Guard R&D Center, ballast water treatment corrosion scoping study.

REHABILITATION & WORKSHOP

Rebuilt in place or in our Miami shop, and returned to service better than new.

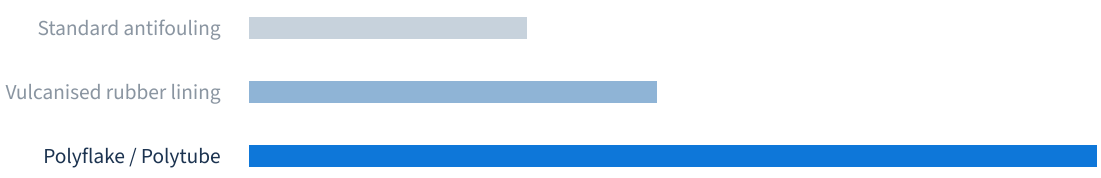
POLYTUBE® PIPE LINING

Lined in place. No pipe disassembly.

A structural fiberglass (GRP) liner cured in place inside the existing pipe, snaking through 90° elbows with no disassembly, up to 100 m in a single run. Complementary Polyflake® lining rebuilds complex spools to better-than-new on carbon steel, CuNi, bronze and stainless, at around 85% of the cost of full replacement.

Pipe diameter	2"–24"+
Burst pressure	> 42 bar
Single-run length	up to 100 m
Ingredients	NSF certified

EXPECTED SERVICE LIFE VS. ALTERNATIVES · YEARS BEFORE MAJOR DAMAGE



POLYTUBE® CURED-IN-PLACE LINER

A smooth, seamless glass-flake bore, cured in place inside the original pipe.

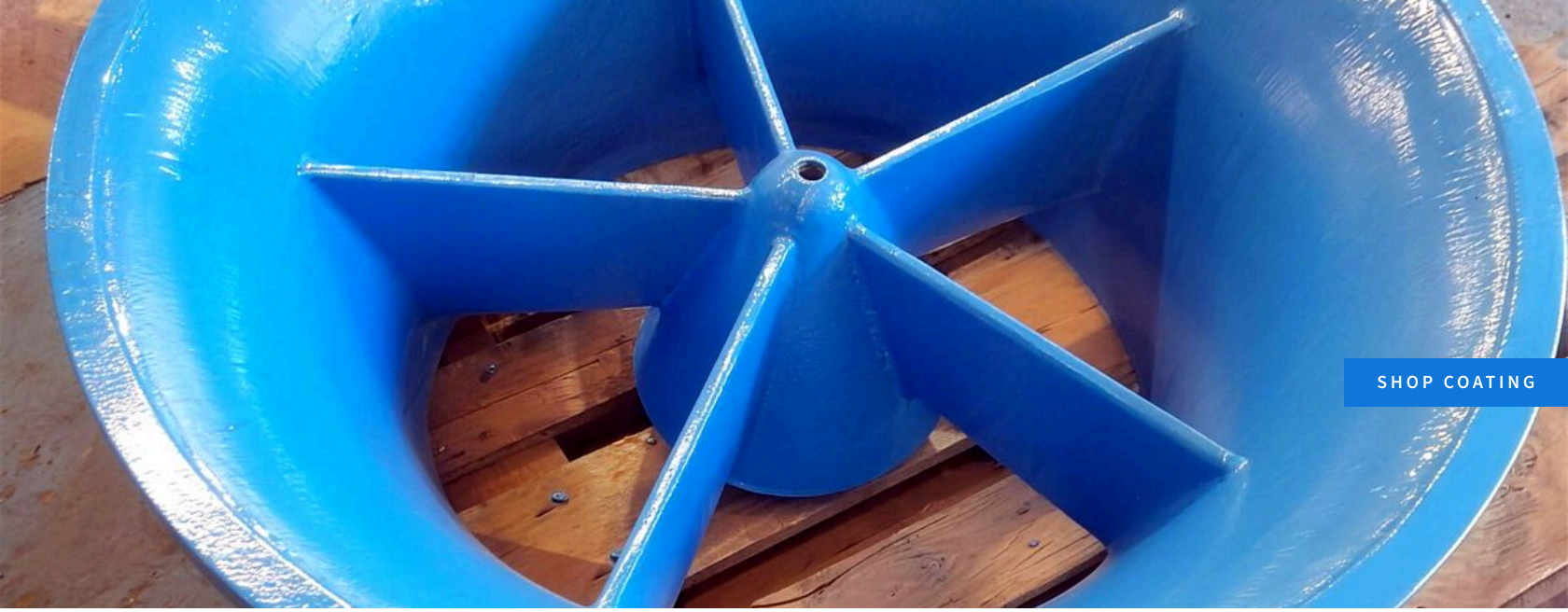
PRECISION MACHINING & REPAIR

Restored to OEM specification, since 1992.

Hydraulic cylinder reconditioning and full machinery overhaul: line boring, honing, metal deposition, dynamic balancing, pressure and insulation testing, with class survey and certification when required.

Capability	Specification
Hydraulic cylinder pressure	350 bar (5,000 psi) and over, final-tested at 1.5 × design pressure.
Cylinder bench capacity	Up to 26 ft (7.9 m) length, 22" (509 mm) diameter, 40,000 lb·ft torque, 7-ton rod extraction.
Pump & machinery overhaul	Reconditioned and Polyflake-coated to or beyond OEM spec, with full QA documentation to ISO 9001.
Mechanical seals & gaskets	New supply and reconditioning of mechanical seals, spiral-wound gaskets for high-pressure steam service, O-rings, sliding rings and custom-cut gaskets.
Cylinder 10-year surveys	Periodic inspection, seal and bolt renewal and pressure testing, keeping cylinders certified as pressure vessels throughout their life.

Turn-key service. Every overhaul includes pre-inspection and a detailed condition report before any repair proceeds, dynamic balancing, workshop testing and class survey with certification when required.



WORKSHOP COATING SERVICES

Shop-coated, holiday-tested, ready to bolt on.

Corrosion-susceptible components come to our Miami shop and go back protected: blasted to SA 2.5, coated under controlled conditions, tested pinhole-free and machined to tolerance, so what returns to the ship is measurable, certifiable and ready to install.

Component	What we deliver
Spool pieces & elbows	Internal lining to specification with flange faces dressed, coated across the face for a continuous corrosion barrier, holiday-tested before dispatch.
Pumps, impellers & volutes	Rebuilt and coated to OEM geometry, dynamically balanced, pressure and insulation tested, with class survey when required.
Diffusers & fan housings	Eroded profiles rebuilt with Polyflake 550 abrasion-grade resin and returned to design shape for full flow efficiency.
Water boxes, covers & strainers	Rubber-lining removal, reconstruction of wasted seal faces and full recoat, machinable to tolerance after cure.

RECEIVED · WASTED & CORRODED

RETURNED · COATED & BALANCED

THE PROCESS

From bare steel to 25+ years.

Every system follows the same four disciplined stages, documented at each step to ISO 9001.

01

Surface preparation

Grit-blast to SA 2.5 white metal with a 75-micron anchor profile.

02

Application

Base, reinforcement and top coats to 30–75 mils DFT, with verified recoat timing.

03

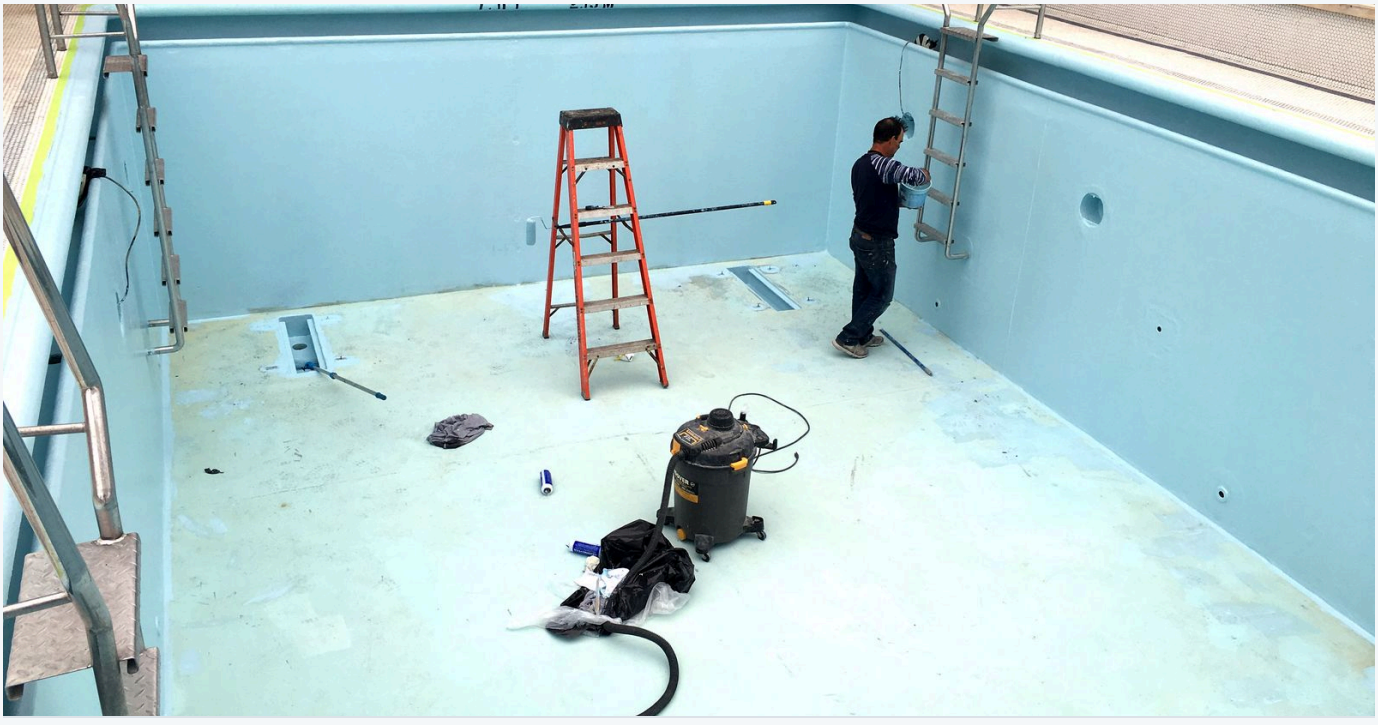
Quality control

DFT measurement, holiday testing and cure checks, all documented with hold points.

04

Decades in service

25+ years of protection, renewable and repairable on-site without stripping.



PROOF · CASE STUDIES

Field-proven across 340+ documented projects.

Marine corrosion and engineering deployments from 1989 to 2024, across the world's leading cruise operators.

Project	Result
Disney Magic & Dream Maritime · Polyglyde hull	First marine hull application, 2008, extended to full hulls and rudders. 9% target fuel reduction, 40% dry-dock interval cut, 25+ year service life.
Pump refurbishment Industrial · Polyflake	Efficiency recovered and restored to OEM. 85% cost saving versus replacement, back in full service in 12 days.
Scrubber & fuel line Oil & Gas · Polytube	Reverse lining cured in place with a crew of three in 5 days. Carbon steel coated to 110°C; 85% cost saving, no dry-dock.

85%
TYPICAL COST SAVING

18%
PUMP EFFICIENCY RECOVERED

25+ yr
DOCUMENTED SERVICE LIFE

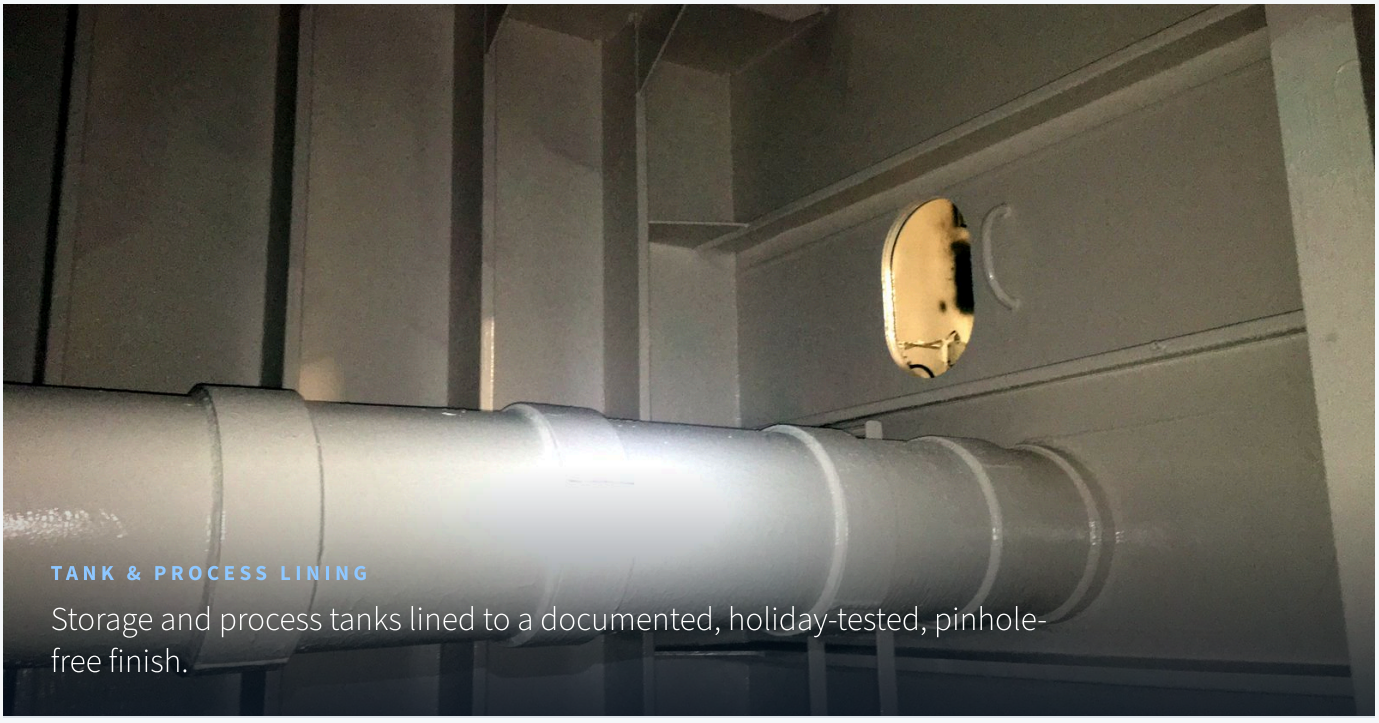
RECEIVED · CORRODED BEYOND ECONOMIC REPAIR

RETURNED · REBUILT & COATED FOR 25+ YEARS

INDUSTRIES SERVED

Built for the world's harshest environments.

Sector	Typical applications
Maritime & Marine	Hulls · Rudders · Ballast & sewage tanks · Sea strainers · OVBD pipework
Oil & Gas · EGCS	Scrubber discharge · Pipelines · Refineries · Process lines
Pool & Water	Commercial & aquatic pools · Decks · Potable-water tanks (FDA)
Chemical Processing	pH 1–14 service · Pumps · Storage tanks · Valves · Smoke stacks
Power & Hydro	Condensers · Water boxes · Impellers · Penstock interiors
Wastewater	Digesters · Clarifiers · Concrete tanks · Pipe linings



TANK & PROCESS LINING

Storage and process tanks lined to a documented, holiday-tested, pinhole-free finish.

QUALITY & APPROVALS

Independently approved. Proven in the lab and the field.

LLOYD'S REGISTER | FDA APPROVED | NSF CERTIFIED | ISO 9001 | NACE / SSPC | IMO

Property	Value
Tensile strength	10,000–11,000 psi
Flexural strength	16,000–18,000 psi
Adhesion to carbon steel	1,560 psi
Salt-spray (ASTM B117)	20,000 hours, no effect
Immersion / dry service temp	to 100°C immersed · to 204°C dry
Dielectric strength	625 V/mil · prevents galvanic corrosion

DELIVERED WITH EVERY PROJECT

Surface-prep records
Blast standard, profile and cleanliness verified.

DFT measurements
Layer-by-layer thickness with hold points.

Holiday & cure testing
Pinhole-free coating, certified before hand-back.

Written warranty
Traceable materials, backed in writing.

PROVEN AT SEA

Trusted by the world's leading cruise operators.

Carnival	**Royal Caribbean**	**Disney Cruise Line**
Norwegian	**Celebrity Cruises**	**Holland America**
Princess Cruises	**Seabourn**	**Azamara**

Selected from 340+ documented marine corrosion and engineering projects, 1989–2024. Full reference list available on request.

Ready to protect your critical assets?

Talk to a coating specialist. We will assess your application and deliver the right system.

REQUEST A QUOTE

+1 (786) 673-9094

POLYFLAKE®
"Innovative Coatings, Engineering Solutions"

Since 1989, Polyflake LLC has engineered and applied glass-flake protective coatings for the assets the world depends on. We develop every resin in-house in Miami and protect maritime, energy and industrial clients worldwide, backed by documented quality and a written warranty.

CONTACT

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