

A2O materials:

A Versatile Functional Tape for Simplified
Application and Extended Corrosion Protection in
Challenging Operating Environments

Marine • Defense • O&G Infrastructure

Sep 2026



Corrosion is a \$2.5 Trillion dollar problem



\$2.5 Tri.
Global cost/yr¹



CURRENT COATINGS **FAIL FAST** IN TOUGH CONDITIONS

- ✗ LIMITED ADHESION UNDERWATER
- ✗ POOR CROSS-COMPATIBILITY
- ✗ SUSCEPTIBLE TO FATIGUE

A2O's materials overcome current limitations

CURRENT COATINGS

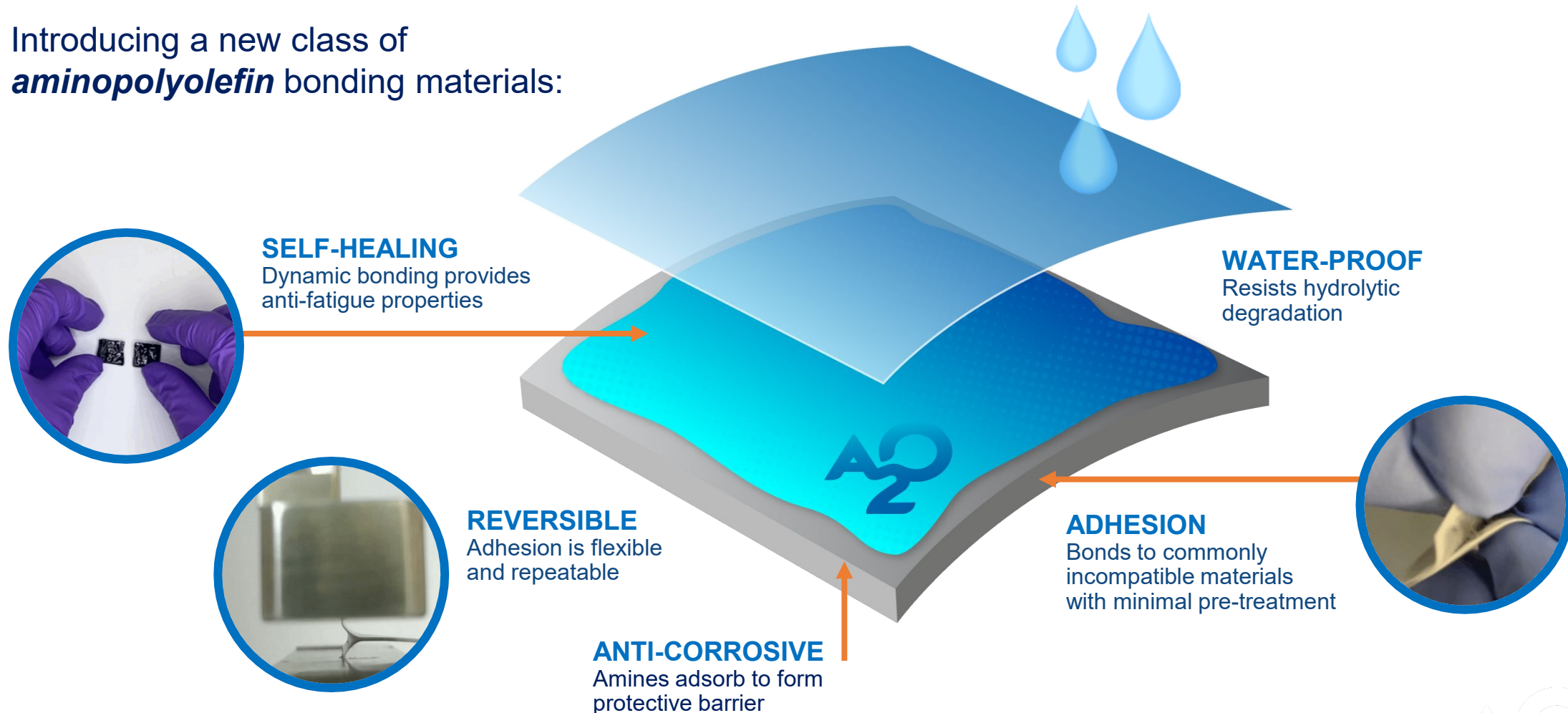
- ✗ FAIL UNDERWATER**
- ✗ NOT CROSS-COMPATIBLE**
- ✗ SUFFER FROM FATIGUE**

A2O SOLUTION

- ✓ STRONGER UNDERWATER**
- ✓ BONDS ACROSS DISSIMILAR MATERIALS**
- ✓ SELF-HEALING AND REVERSIBLE**

New chemistry enables the comprehensive solution

Introducing a new class of
aminopolyolefin bonding materials:



APE is compatible with virtually all materials



APEs can be formulated into coatings or pressure-sensitive tapes/wraps/sleeves

Open time: Extended (> weeks)

Set time: Reaches max <1 hr

No curing step required

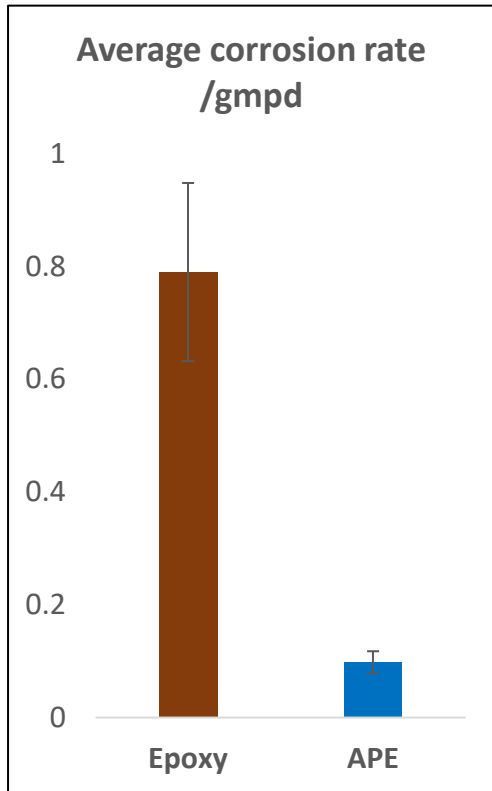
High-
low
SFE

Metals
Composites
Glass
Rubbers
Polyolefins
Fluoropolymers

Mild steel
Stainless steel
Bronze
Iron foil
Aluminum foil
Titanium foil
Amorphous copper foil
Carbon-fibre-reinforced plastic
Bone
Ion-exchange membranes (fuel-cells)
Cured epoxy
Polyurethane paint
Neoprene
Natural rubber
Styrene-butadiene rubber
Fabrics- Nylon, lycra, elastane,
cotton, polyester
Nylon
Polylactide (PLA)
Polypropylene
Polyethylene (LDPE, HDPE, UHMWPE)
Polytetrafluoroethylene (PTFE)

APE expands long-term corrosion protection

80% lower corrosion rate than epoxy¹

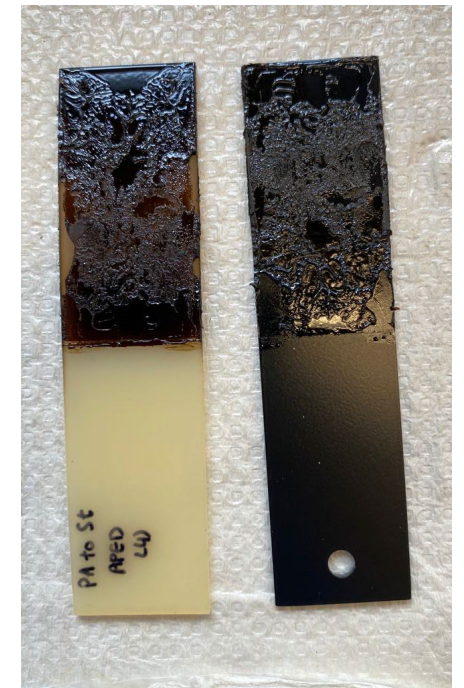
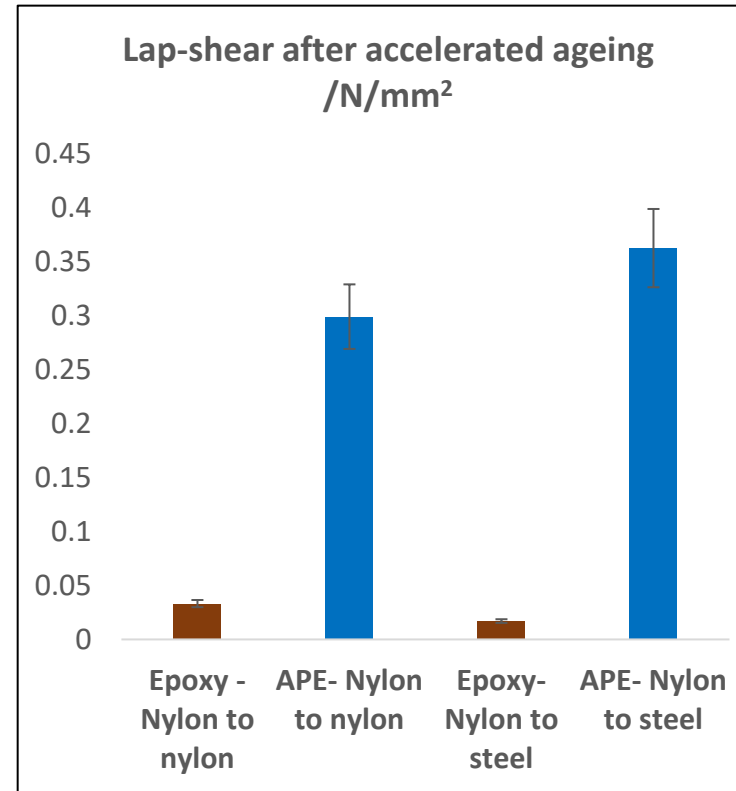


Epoxy
coated
coupon



APE
coated
coupon

Still bonds after “30 years” accelerated aging²



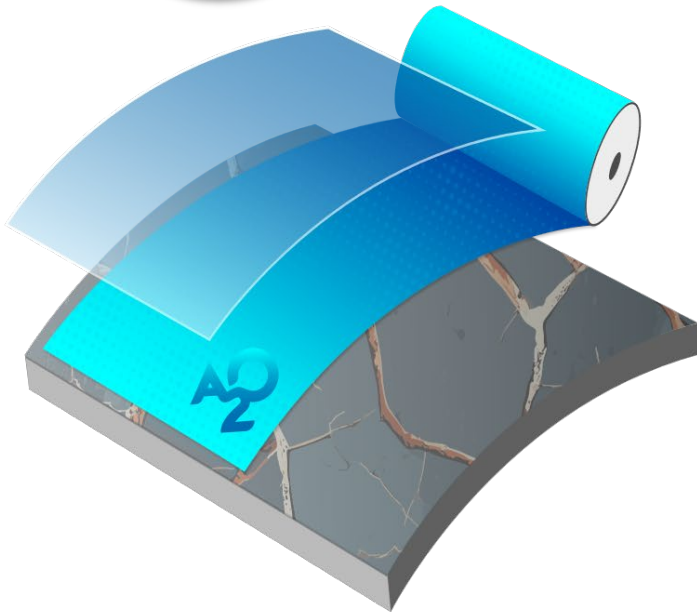
**APE maintains
cohesive bonding
after ageing**

A2O Products – Next Generation Corrosion Control



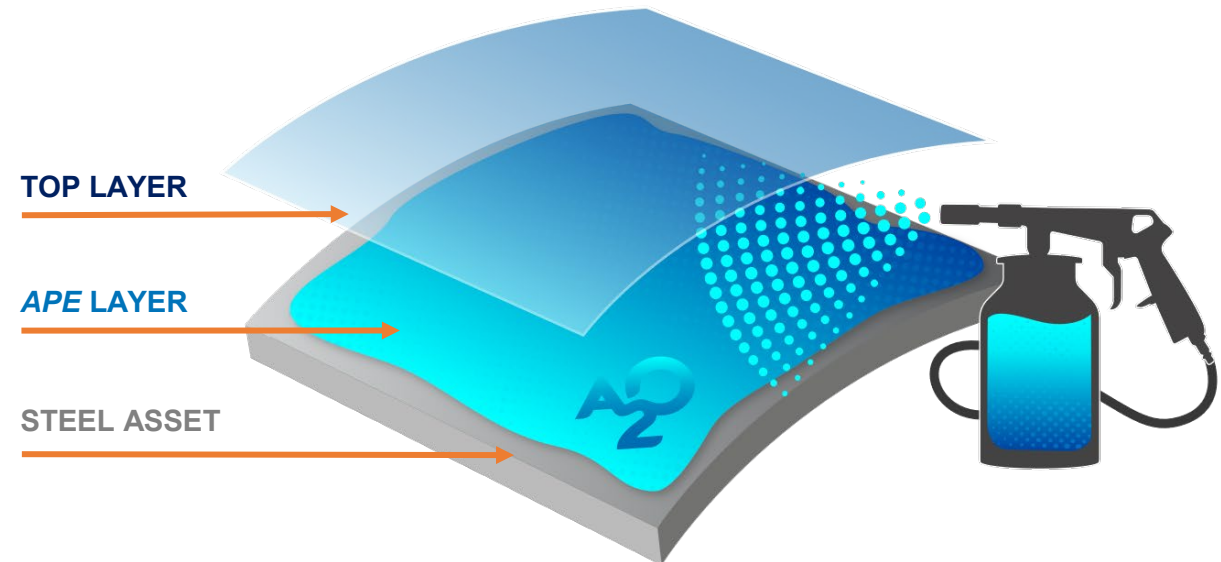
A2O Repair Tape

Practical repair for in-service assets where the coating has failed



A2O Coating Layer

Coating for large-scale anti-corrosion protection or adhesion



Example certification data for 1st product

First Product: low-temperature pipeline repair of defects and holidays in epoxy-coated pipe.

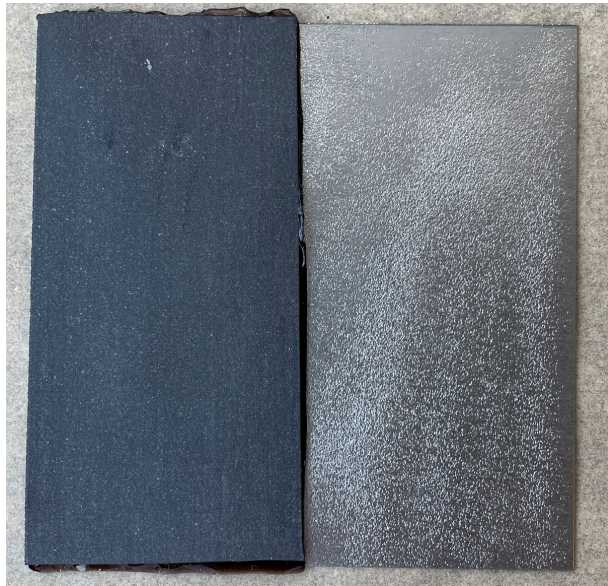
Test	Acceptance criteria	A2O-RT	General Translation and Notes
Cathodic Disbondment results at 28 days, Pretest conditions 7 days, 65°C	<20 mm Holiday post test at maximum temp	1.2 mm (SP3) 0.8 mm (SP15)	Both surface preparation methods provided good protection against coating disbondment, with the more thorough SP11 preparation delivering substantially better performance.
Adhesion to steel at 20°C and mode of separation	≥95% cohesive and peel >2 N/cm	C, >2.9 N/cm	Note this tape specifically for low-temperature application (-20°C to ~30°C). A2O can adjust the material rheology to optimize performance across different application temperature ranges.
Adhesion to existing coating at 20°C and mode of separation	≥95% cohesive and peel >2 N/cm	C, >2.9 N/cm	
Lap-shear at 20 °C	≥ 2.0 N/cm ²	~11.2 N/cm ²	
Lap-shear at 60°C	≥ 0.2 N/cm ²	~2.2 N/cm ²	
Tg	≤-35 °C	-43 °C	
Drip resistance	≥ 80 °C	Pass 7 days	

A2O Tape provides solution for bonding transitions

Challenge: Coatings and tapes bond well to steel but not to adjoining materials like rubber

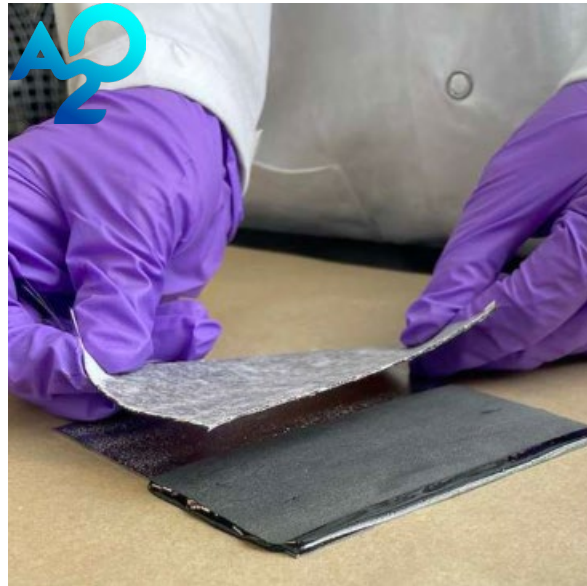
Example: Linings, tiles, gaskets, tanks etc.

Solution: APE tape leverages cross-compatibility to form spontaneous bond across transition

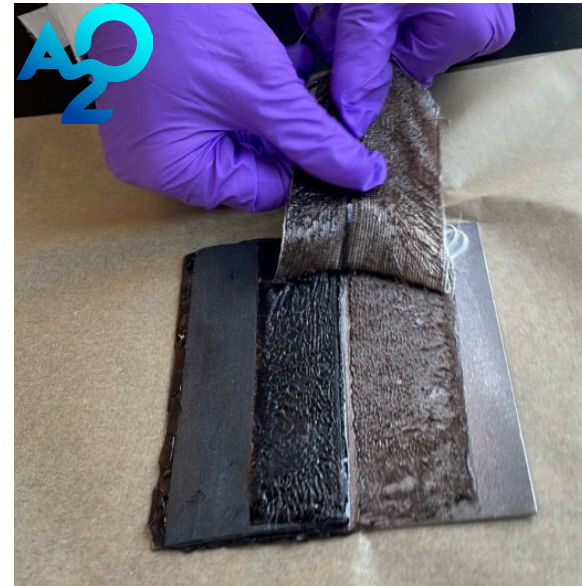


EPDM
rubber

Steel
(SP11 prep)



A2O tape
application



A2O: High cohesion +
peeling force



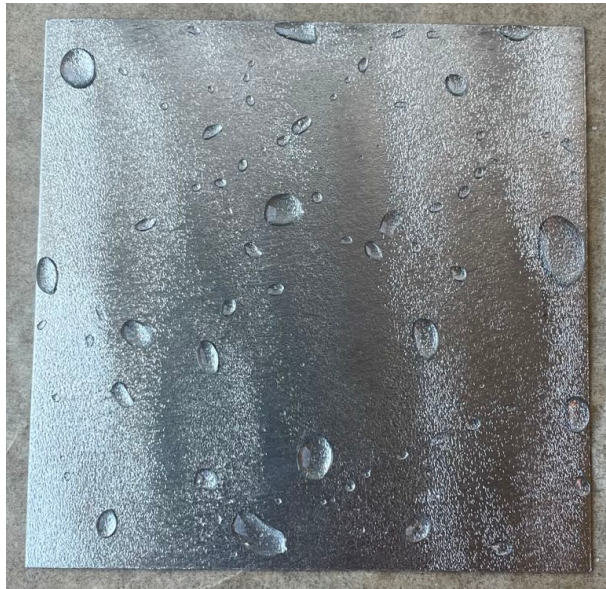
Commercial tapes
can't seal transition

A2O Tape provides solution for wet surface bonding

Challenge: Coatings and tapes require dry and moisture-free surfaces to properly bond

Example: In-service repair scenarios where humidity, dew and moisture are present lead to defective applications

Solution: APE tape can form spontaneous bond to wet surfaces



Wetted Steel
panel
(SP11 prep)



A2O tape application
to wet panel



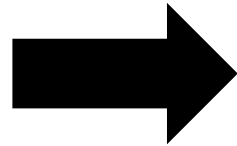
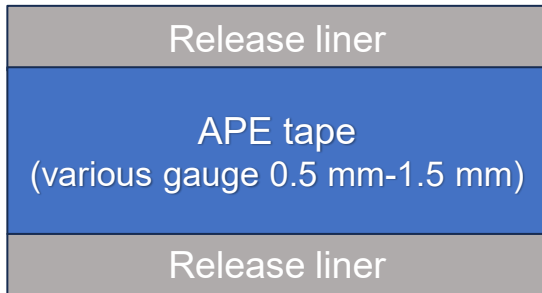
A2O: High cohesion +
peeling force



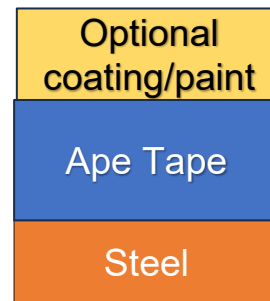
**Commercial tapes fail
to bond**

Tape Formats and Uses

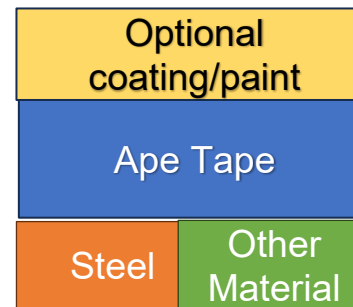
Option 1: Universal 2-sided tape



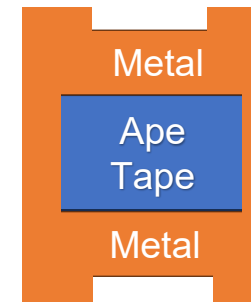
Corrosion repair on metal



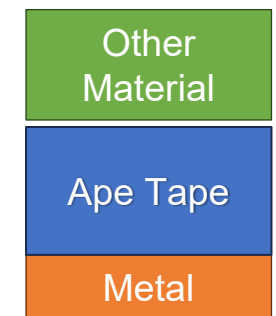
Corrosion repair on mixed substrate



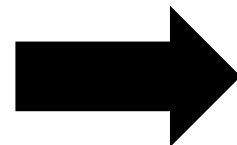
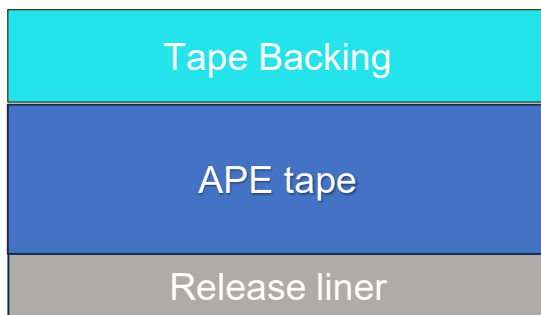
Gasketing + Anti-corrosion



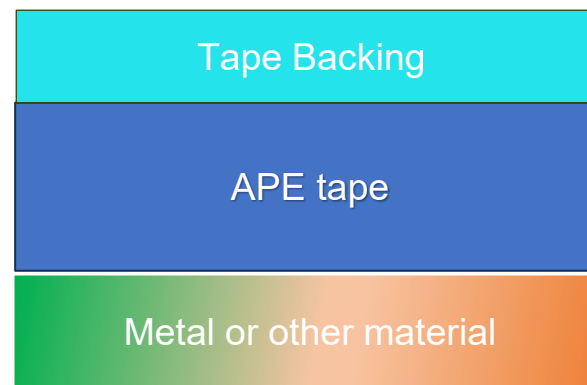
Adhesive 2-sided tape



Option 2: Single sided tape



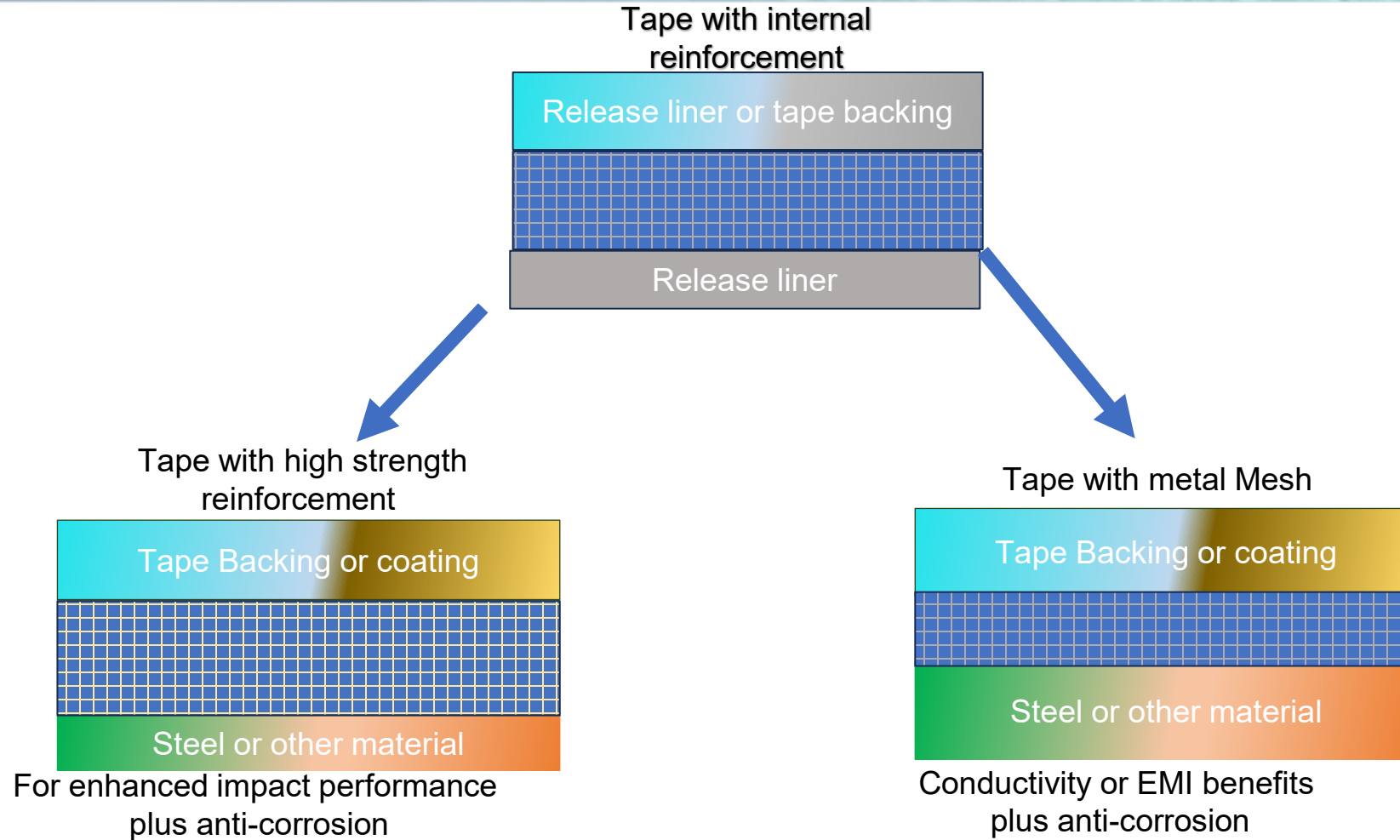
Corrosion repair with added function



Tape backing can be

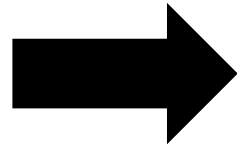
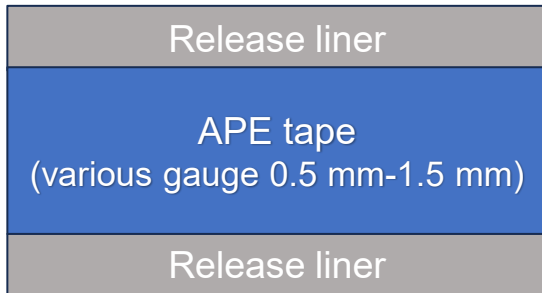
- Antifouling film
- Weather layer film
- Generic Nylon or PP/PE
- Etc.

Any of these tapes can also be reinforced internally

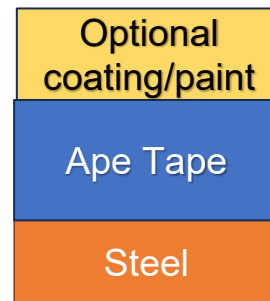


Tape Formats and Uses

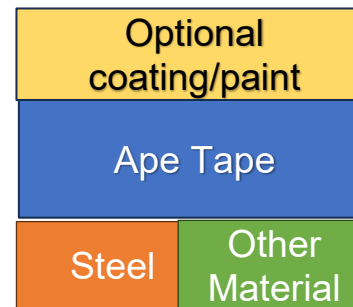
Option 1: Universal 2-sided tape



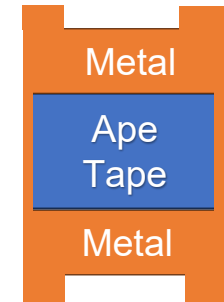
Corrosion repair on metal



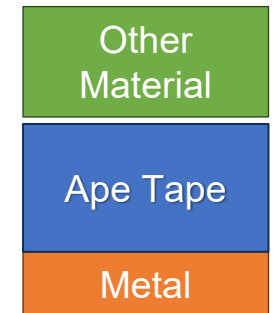
Corrosion repair on mixed substrate



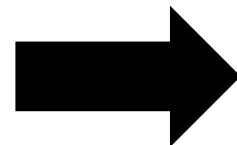
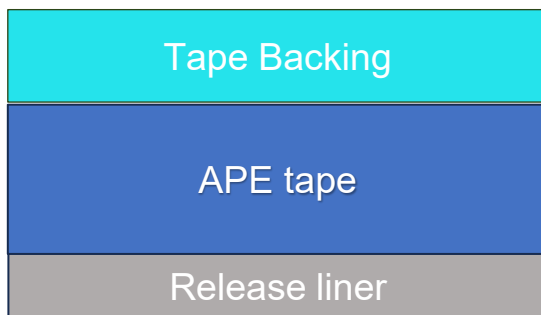
Gasketing + Anti-corrosion



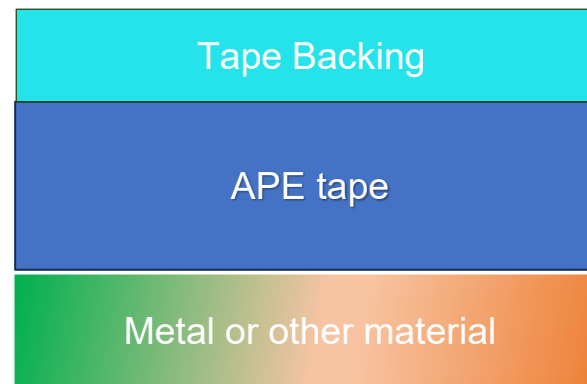
Adhesive 2-sided tape



Option 2: Single sided tape



Corrosion repair with added function



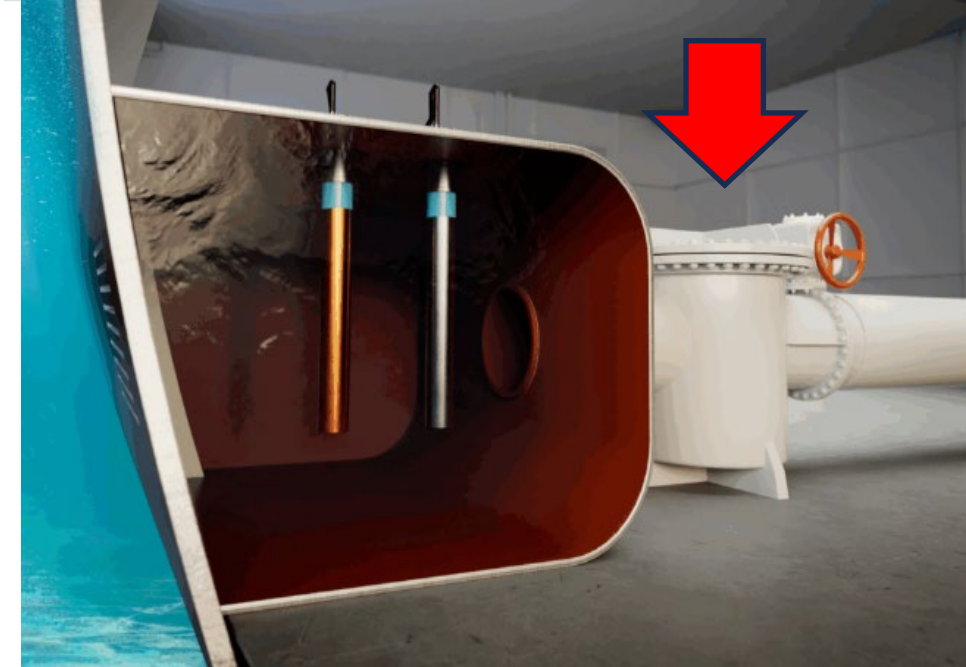
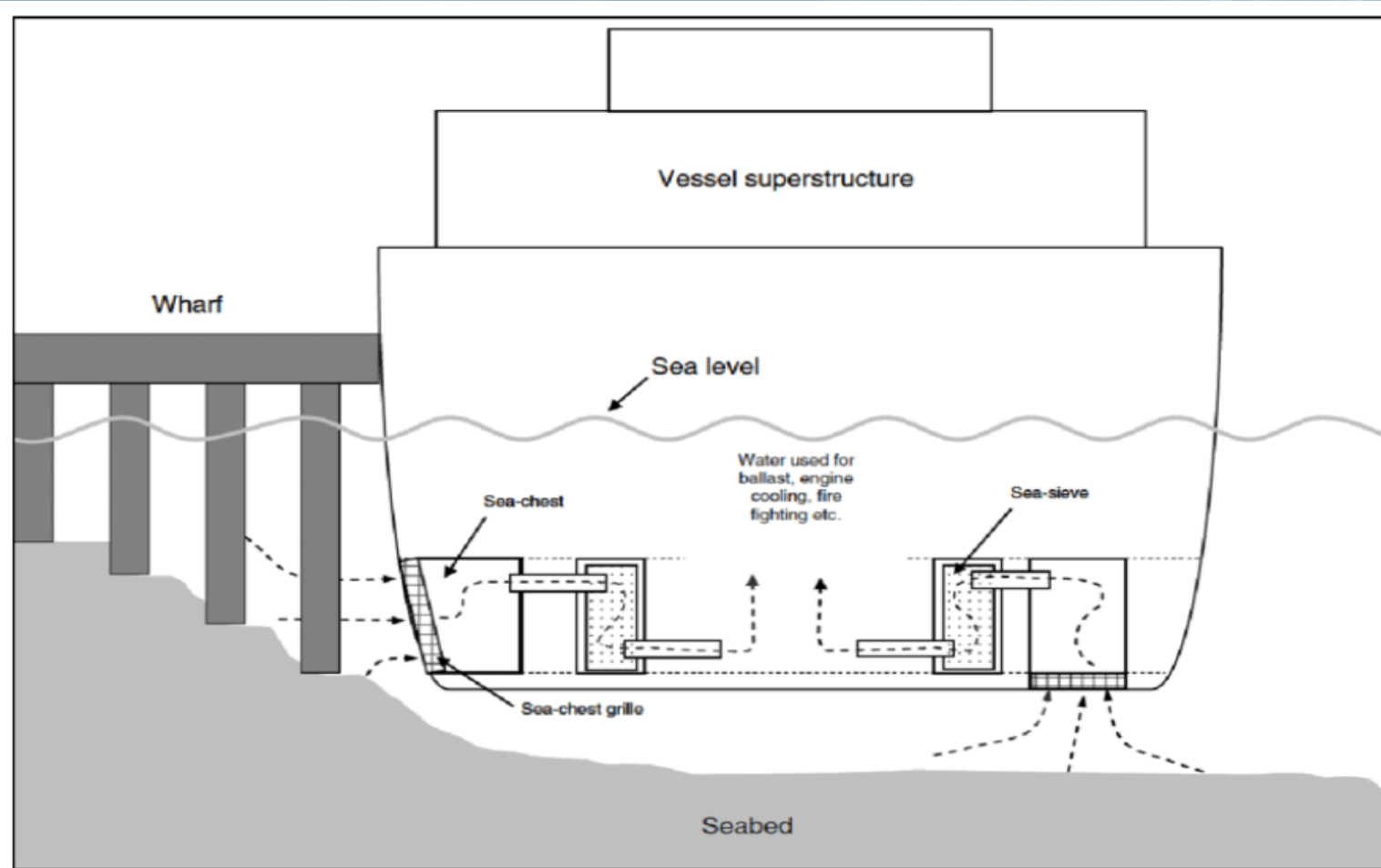
Tape backing can be

- Antifouling film
- Weather layer film
- Generic Nylon or PP/PE
- Etc.

Case Study: Sea Chest Filter Repair



Sea Chest – Ship type Oil Tanker



Fatigue and wear during operation create defects

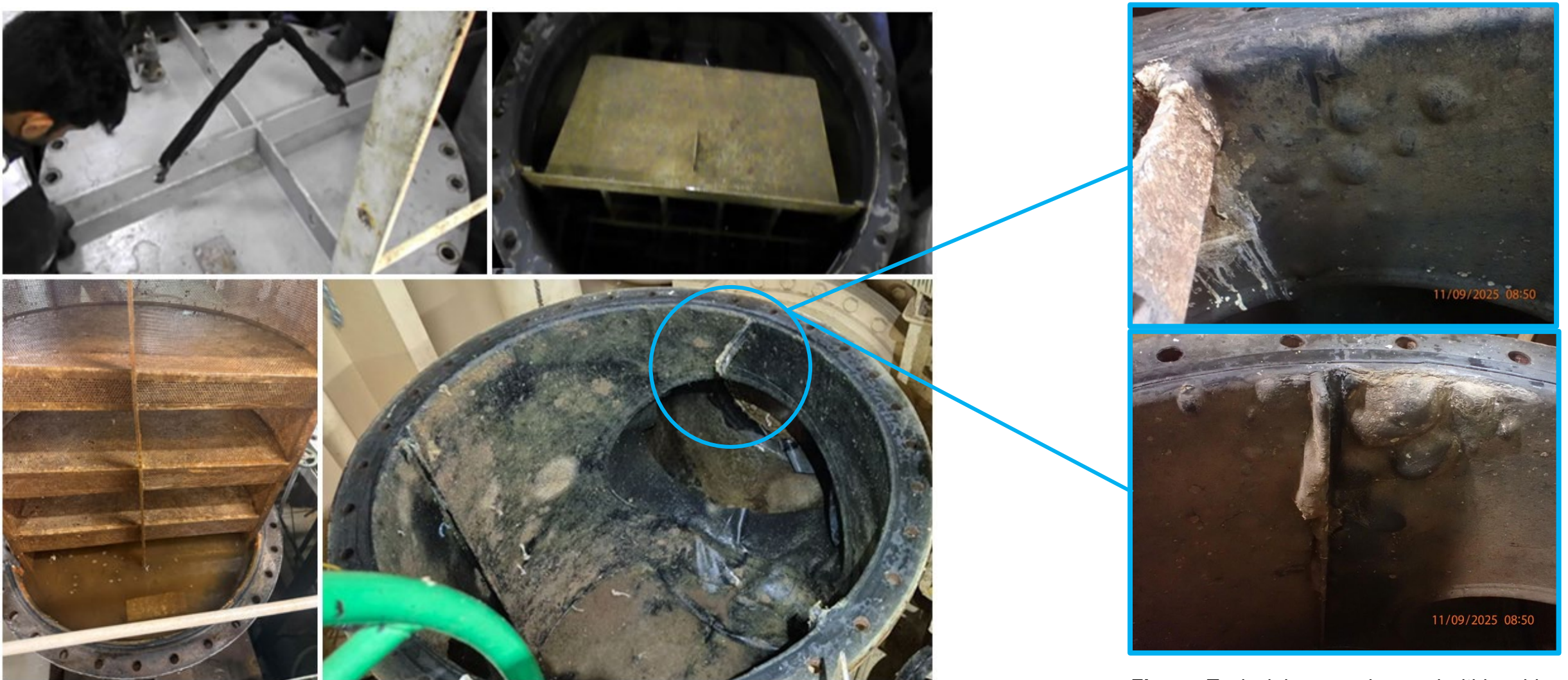


Figure: (TL) Sea chest strainer housing cap (TR) Opened housing showing strainer (BL) Removed strainer element (BR) Strainer housing

Figure: Typical damage observed within rubber-lining which allows underlying corrosion spread

Current sustainment method: treatment not a cure

Ongoing maintenance loop



Figure: Defect area after rubber liner removal showing underlying corrosion



Figure: Defect Area to be repaired after removing corrosion using hand tools

Apply epoxy-based repair paint, 5 layers.

2 days of maintenance work + downtime.

Exposed area repaired.

New weak point in the boundary
Fails within 3 months.

Next inspection:

Adjacent rubber areas require cut out and repair

A2O's solution breaks recurring maintenance loop

Repaired defect + sealed edge to prevent further failure



Figure: Defect area after rubber liner removal showing underlying corrosion



Figure: Defect Area to be repaired after removing corrosion using hand tools

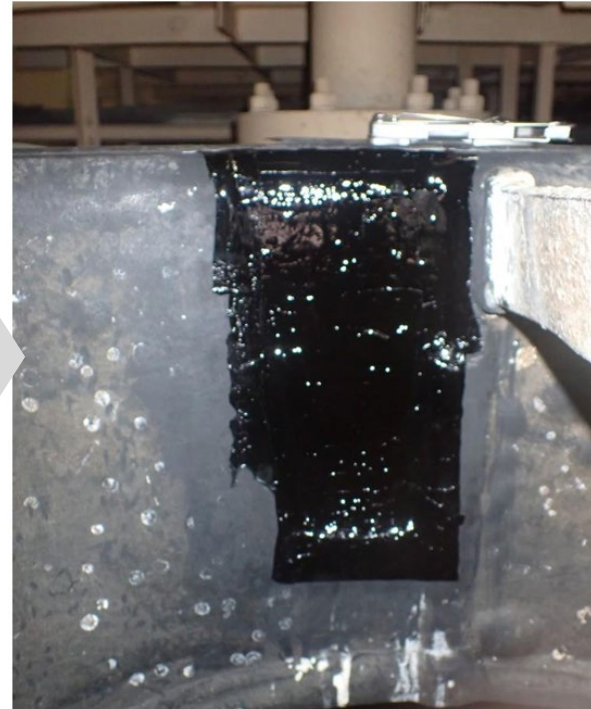


Figure: A2O patch applied

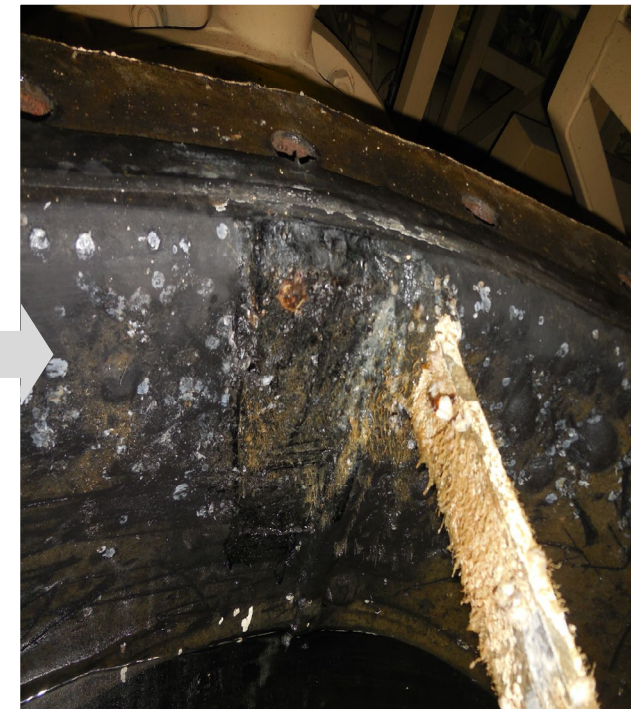


Figure: After >12 months no failure of repair

Partner With Us to Deploy A2O



A2O materials combine differentiated properties:

- ✓ Excellent adhesion to wet surfaces and underwater performance.
- ✓ Strong adhesion to both metals and low-surface-energy materials.
- ✓ Dynamic self-healing behavior.
- ✓ Improved chemical resistance for demanding industrial and marine environments.

Cross-functional products ready for testing

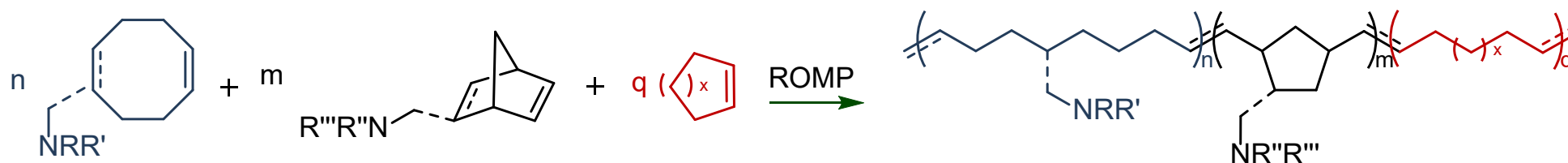
- APE tape section samples available
- APE coating opportunities
- Gaskets, sealants and beyond

Contact Jon Sargent jsargent@A2Oam.com



Breakthrough direct routes to aminopolyolefins

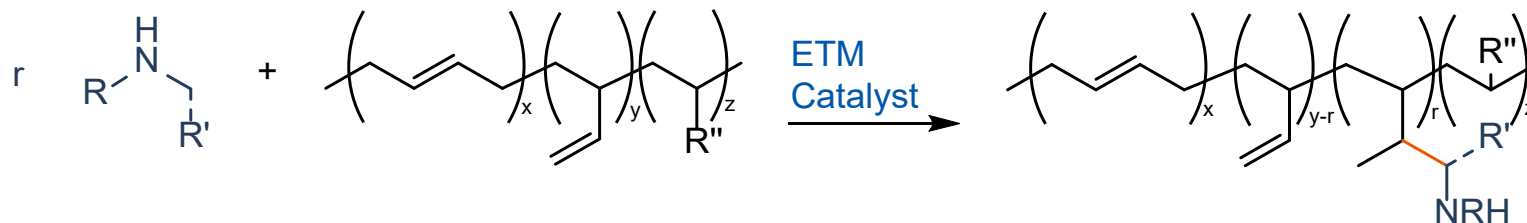
1. **APE**: Synthesis of aminated monomers as ring-opening metathesis polymerization (ROMP) pre-cursors¹:



2. **ATPOs**: Post-polymerization modification of vinyl-terminated macromonomers²:



3. **APBDs**: Post-polymerization modification of unsaturated polyolefins³:



Direct functionalization enables tunable properties:

- Modulus (liquid to solid-like)
- Thermal transitions
- Dynamics of hydrogen-bonding networks (reversible bonds)