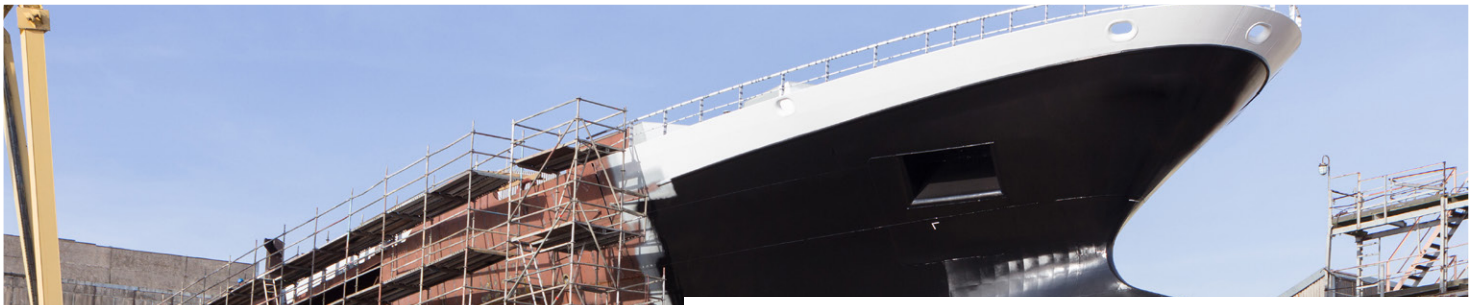


ZERUST® EXCOR®

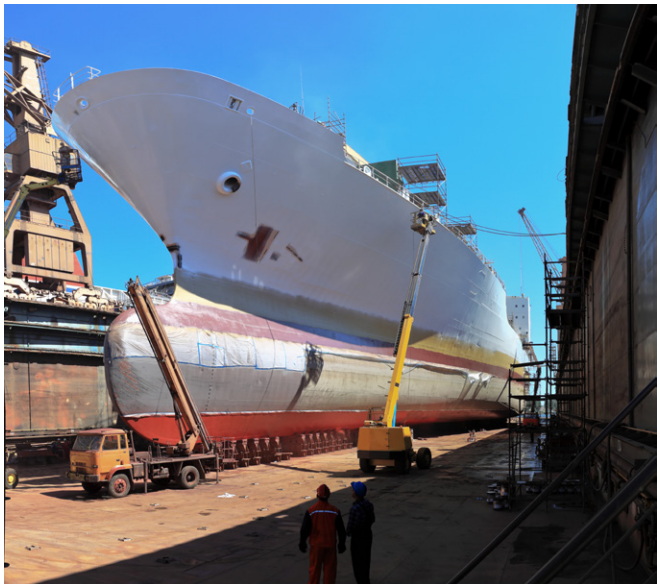
CORROSION SOLUTIONS FOR THE SHIP BUILDING INDUSTRY

ZERUST® is a product of
Northern Technologies
International Corporation

NTI®

Corrosion: The Hidden Enemy of Shipbuilding and Marine Operations

In the shipbuilding industry, corrosion is one of the most persistent and expensive problems. Marine environments are among the most aggressive, with high humidity, salt-laden air, and temperature fluctuations that accelerate rust and the degradation of critical components. Corrosion not only weakens ship structures but also leads to:



- Increased repair and maintenance costs
- Reduced efficiency of propulsion and onboard systems
- Loss of valuable resources and potential cargo contamination
- Downtime and shortened vessel lifespan

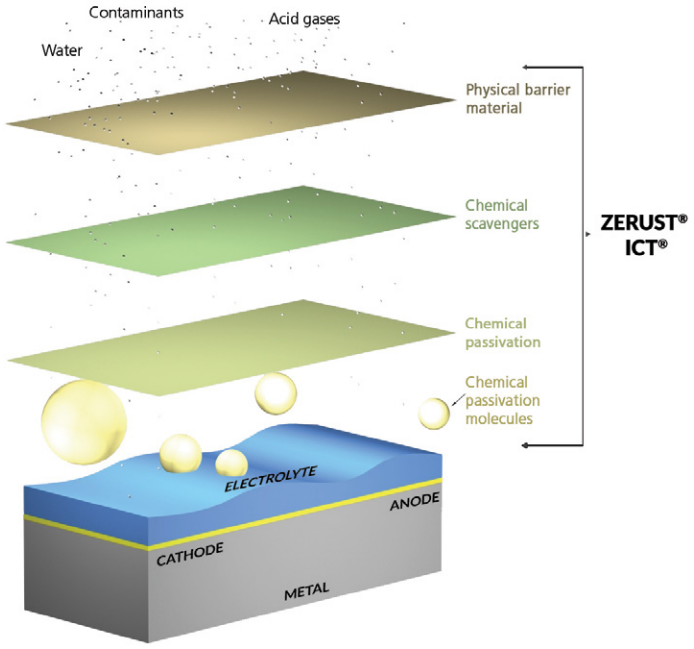
Industry studies estimate that the global cost of corrosion is approximately US $2.5 trillion annually, equivalent to about 3.4% of global GDP. Research shows that 15% – 35% of corrosion-related costs could be avoided by applying proven corrosion prevention and management best practices.[1]

ZERUST® VCI (Vapor Corrosion Inhibitor) Technology provides an innovative, proven solution to eliminate corrosion at its root, protecting even the most hard-to-reach areas of ships, boats, and offshore equipment.

[1] Source: NACE International IMPACT Report: https://blogs.ampp.org/protectperform/the-value-of-a-corrosion-management-system-in-500-words-or-less

Molecular-Level Protection for Shipbuilding & Marine Applications

ZERUST® Vapor Corrosion Inhibitors (VCIs) release protective molecules that diffuse into enclosed or open spaces and adsorb onto metal surfaces, forming an invisible, monomolecular layer that prevents corrosion.



How it Works:

1. **Release:** ZERUST® VCI molecules volatilize from films, powders, or diffusers.
2. **Transport:** The molecules travel through the air to reach exposed and hidden surfaces.
3. **Protect:** A thin, uniform molecular layer forms, interrupting the electrochemical corrosion process.
4. **Retention:** The VCI layer remains on metal surfaces as long as the enclosure remains closed and a VCI source is present.

Why It's Ideal for Shipbuilding:

- Reaches inaccessible voids, crevices, and structural recesses.
- Protects metals during fabrication, assembly, storage, and operation.
- Safe for ferrous and non-ferrous metals, electronics, and mixed-metal assemblies.

Popular Marine-Grade Products:

ZERUST® ICT® VCI Films provide clean, dry corrosion protection for metals during shipbuilding, export, and storage. These polyethylene films release proprietary VCIs that protect ferrous and non-ferrous metals without leaving residue. Available in sheeting, tubing, shrink film, bags (flat, gusset, zipper) and more.

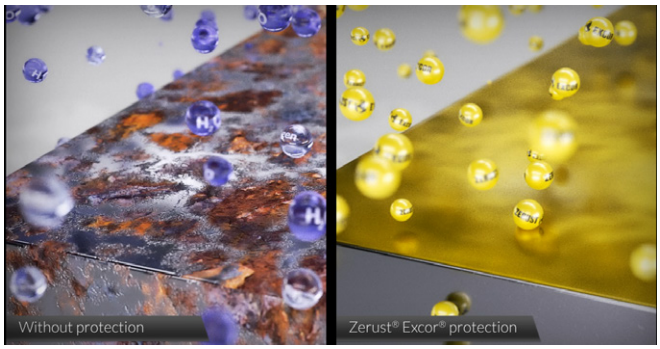
ZERUST® ActivPowder™ Series are VCI powders that are fogged into void spaces to protect internal ship structures, such as rudders, keels, and ballast voids. They combine fast-acting Flash Corrosion Inhibitor (FCI™) technology with vapor-phase protection to suppress flash rust and provide long-term protection in hard-to-access areas.

ZERUST® Axxanol™ Rust Preventative Oils provide corrosion protection for bare metals, assemblies, and internals such as gearboxes and hydraulic systems. Ideal for shipbuilding layup, export, and long-term storage, they displace moisture and leave a protective film that can remain in place or be cleaned off as needed.

ZERUST® VCI Emitters & Diffusers, including Vapor Capsules, protect sensitive electronics in enclosed spaces such as bridge consoles, control panels, and radar systems. These devices release corrosion-inhibiting vapors that shield metal surfaces without leaving residue on the metal surface or affecting electrical performance.

Benefits of ZERUST® VCIs in Shipbuilding

Corrosion protection in shipbuilding demands more than just coatings and routine maintenance; it requires targeted, engineered solutions that address both environmental conditions and metal types at every stage of construction, storage, and deployment. ZERUST® VCIs deliver effective, field-proven protection that integrates seamlessly into shipyard workflows, offering a cleaner, safer, and more cost-effective alternative to traditional preservation methods.



- **Engineered for Hard-to-Reach Areas**: VCI vapors migrate within enclosed spaces to protect interior surfaces of rudders, keels, ballast tanks, and other voids without requiring direct line-of-sight application.
- **Ease of Use:** Products are applied via fogging, spraying, or wrapping to clean and dry metal surfaces, minimizing labor while ensuring optimal VCI protection.
- **Targeted Metal Protection:** ZERUST® offers specific VCI chemistries for ferrous, non-ferrous, and multimetal assemblies to maximize compatibility and performance.
- **No Need to Remove Before Use:** VCIs leave parts clean, dry, and ready for immediate use, without the need for cleaning or degreasing.
- **Environmentally Safe:** Most formulations are nitrite-free, RoHS-compliant, and designed for safe use in marine and shipyard environments.
- **Extended Equipment Life:** ZERUST® reduces corrosion-related failures and helps protect your investment over time.
- **Reduced Costs:** Lower maintenance, fewer replacements, and less downtime translate to long-term savings across your fleet or facility.


Crankshaft Shipped Without Deploying Effective Corrosion Prevention Control


Crankshaft Shipped With ZERUST® Corrosion Control Deployed

Corrosion Challenges Across the Ship Structure

Shipbuilding involves an extensive range of metal structures, components, and systems that are exposed to highly aggressive marine environments. Corrosion typically forms where:

- **Salt spray and condensation accumulate, particularly under decks, in bilges, and on internal stiffeners.**
- **Crevices and joints trap moisture, especially in welded areas, voids, and behind bulkheads.**

Marine corrosion manifests as uniform rusting, pitting corrosion, or galvanic attack in multimetal assemblies, leading to:

- **Structural weakening of hull and deck plates.**
- **Increased maintenance time and cost.**
- **Premature failure of pipelines, valves, and electrical equipment.**

ZERUST® Integrated Approach for the Entire Vessel

ZERUST® corrosion prevention technologies offer comprehensive coverage, protecting ships at every stage, from construction and outfitting to active service, layup, or decommissioning.

Key application areas include:

1. Hull Interiors and Ballast Compartments
   - ZERUST® ActivPowder™ Series can be fogged into sealed hull compartments to protect uncoated steel.
   - Ideal for ballast tank stiffeners, keel boxes, and structural voids where coatings are impractical.
2. Rudders, Keels, and Appendages
   - Internal rudder and keel spaces are inaccessible after fabrication and vulnerable to corrosion.
   - ZERUST® ActivPowder™ Series provides reliable protection of void spaces with long-lasting VCI coverage.
3. Deck Equipment & Loading Ramps
   - Ship cranes, mooring winches, ramps, and hatch covers require temporary protection between assembly and commissioning.
   - ZERUST® ICT®510-C Shrink Film and Axxanol™ Spray-G provide outdoor-ready coverage against condensation and salt spray.
4. Pipelines, Valves, and Hydraulic Systems
   - Fuel, water, and hydraulic lines are prone to internal corrosion during hydrostatic testing and idle periods.
   - Adding ZERUST® hydrostatic testing additives (AxxaVis™ HST-10 or Axxatec™ HST-M100) to water prevents flash rust and protects for months.
5. Marine Electrical & Navigation Equipment
   - Salt-laden air rapidly damages sensitive electronics in switchboards, communication devices, and radar units.
   - ZERUST® Vapor Capsules and Plastabs® protect enclosed electronics without impacting performance.

Integrated Multi-Product Solutions

By combining fogging powders, VCI films, hydrostatic testing additives, and diffusers, ZERUST® provides a versatile corrosion protection system that adapts to the diverse challenges of shipbuilding.

Protection of Void Spaces

Marine vessels are filled with void spaces: keel boxes, bilges, structural stiffeners, ballast tank interiors, and enclosed cavities. These areas experience:

- **High humidity levels from seawater proximity.**
- **Trapped condensation from temperature fluctuations.**
- **Limited ventilation prevents drying.**

Conventional coating methods cannot reach these confined areas after welding or assembly. Uncoated steel surfaces within voids become corrosion hotspots, leading to hidden structural damage.

ZERUST® Fogging Solutions

ZERUST® ActivPowder™ Series is specifically designed for fogging into sealed shipboard voids. Once applied:

1. The fine powder disperses as a dry fog through the cavity.
2. VCIs vaporize and migrate throughout the enclosed volume.
3. Molecules adsorb onto exposed metal surfaces, forming an invisible, dry, and protective molecular layer.

Key Benefits:

- **No Surface Prep Required:** Apply directly without cleaning or degreasing
- **Long-Term Protection:** Up to 1 year‡ in tightly sealed spaces.
- **Easily Replenished:** Access hatches can be reopened to reapply fogging as needed.
- **No Residue Removal:** VCIs dissipate harmlessly when the void is opened.

Practical Example – Ship Void Protection Case Study

A leading naval vessel manufacturer needed a cleaner and more reliable method to protect internal ship voids during construction. Previous coating methods were time-intensive, messy, and interfered with welding due to surface contamination. ZERUST® recommended ActivPowder™ for corrosion protection in hermetically sealed structural voids, leveraging its fast-diffusing Flash Corrosion Inhibitor (FCI™) technology.

The solution provided immediate and long-lasting protection, reduced labor and surface preparation time, and avoided welding constraints associated with traditional coatings. Post-application, the voids were sealed and protected throughout the shipbuilding process, delivering a cleaner, more efficient corrosion prevention method.

Common Void Space Applications:

- Structural framing and welded compartments
- Keel voids and box sections
- Ballast tank stiffeners
- Pipe tunnels and ducting corridors
- Storage lockers and underdeck enclosures

ZERUST® ActivPowder™ is also ideal for use during layup, retrofits, or construction delays, where temporary yet effective protection is needed.

Temporary Equipment Protection During Ship Construction

Ship construction is a multi-phase, long-duration process. Components like engines, pumps, hydraulic systems, and navigation equipment are often staged outdoors or left uninstalled in shipyards, exposed to:

- Salt-laden humidity
- Rain and condensation
- Dust and airborne contaminants

Standard plastic wraps trap moisture and can accelerate corrosion. ZERUST® temporary protection solutions prevent this damage and ensure critical components arrive at installation rust-free.

ZERUST® Temporary Storage Solutions

1. VCI Films and Shrink Wraps

   ZERUST® ICT® VCI Films provide active corrosion protection along with durable physical barrier properties. Available in flat film, sheeting, tubing, and shrink film formats, they protect large assemblies and equipment awaiting installation. Unlike standard poly films and bags, ZERUST® films neutralize moisture that enters the packaging.

2. VCI Kraft Papers

   ZERUST® ICT® VCI Paper Series includes a range of corrosion-inhibiting kraft papers designed for wrapping, interleaving, or lining trays and crates. These clean, dry papers emit VCIs that protect ferrous and multimetal parts during storage and shipment, making them ideal for protecting toolkits, assemblies, and steel components awaiting installation.

3. Spray-On Rust Preventatives

   ZERUST® Axxanol™ Spray-G (sprayable grease) and Axxanol™ A35-8030 (long-term rust preventative oil) provide effective, direct-contact corrosion protection for bare metal surfaces. These products are ideal for machinery, shafts, structural steel, or fabricated parts that remain exposed during ship construction or staging. Both options displace moisture and form protective films, with Spray-G being ideal for heavy-duty coverage and A35-8030 for thinner, oil-based protection that's easy to remove prior to installation or coating.

4. Containerized Storage Protection

   For export crates, sealed storage containers, and staged toolkits, use ZERUST® ICT® VCI Films to line interior surfaces and add ActivDri™ PWA Packets to actively control both corrosion and moisture. These packets combine vapor corrosion inhibitors with a desiccant to combat condensation and humid environments. Ideal for marine logistics, containerized spares, and electrical kits in transit or long-term storage.

Shipyard Efficiency and Cost Savings

By using ZERUST® temporary protection solutions, shipyards can:

- **Reduce rework:** No need for re-cleaning or re-machining corroded parts before installation.
- **Shorten commissioning time:** Equipment remains installation-ready.
- **Lower total costs:** Fewer damaged components mean fewer delays.

Internal Corrosion Risks in Marine Systems

Marine vessels rely on extensive internal systems, including piping networks, tanks, and heat exchangers, to manage ballast water, fuel, hydraulics, cooling, and process fluids. These systems are especially vulnerable to corrosion due to:

- Flash rusting after hydrostatic testing with untreated water.
- Pitting corrosion in stagnant water pockets.
- Residual moisture corrosion during inactive periods or layup.
- Complex internal geometries in heat exchangers and piping that are difficult to dry or coat.

If corrosion develops prior to commissioning, shipyards may face costly cleaning, re-testing, delays, or component replacement before systems can be placed into service.

ZERUST® Internal Protection Methods

1. Hydrostatic Test Water Additives

   During hydrostatic testing of piping systems, tanks, and heat exchangers, ZERUST® offers corrosion inhibitor additives (AxxaVis™ HST-10, Axxatec™ HST-M100) specifically designed for test environments. These additives are introduced directly into the test water to:

   - Reduce water corrosivity during pressure testing.
   - Prevent flash rust on carbon steel and other susceptible alloys.
   - Protect internal surfaces during fill, hold, and drain cycles.

   ZERUST® hydrostatic testing solutions are nitrite-free, compatible with common test waters, and suitable for systems that require later draining and drying prior to commissioning. These products are widely used in shipyards to protect piping systems, valves, heat exchangers, and storage tanks during construction and testing.

2. Fogging Powders for Tanks & Void Pipelines

   For tanks, voids, and pipelines that require protection outside of hydrostatic testing, such as during construction delays, layup, or when systems will remain dry, ZERUST® ActivPowder™ Series provides an effective corrosion-inhibiting solution. These VCI powders are fogged into enclosed volumes where they release vapor corrosion inhibitors that settle onto exposed metal surfaces, forming a protective molecular layer. Ideal for:

   - Cargo and ballast tanks.
   - Void piping and fuel lines.
   - Heat exchanger shells and channels.
   - Incomplete or idle systems awaiting commissioning.

   ActivPowder™ products are especially useful when internal surfaces cannot be coated or easily accessed, offering flexible, dry protection without residue removal.

3. Additives for Circulating Systems

   For systems that remain filled or partially filled, such as cooling loops, closed-loop piping, or circulating test systems, ZERUST® Axxatec™ 8110C can be added directly to the circulating fluid.

   Axxatec™ 8110C is a water-based, nitrite-free corrosion inhibitor designed to protect internal metal surfaces while systems are idle or operating intermittently. It helps control corrosion by forming a protective molecular layer on metal surfaces, making it well-suited for temporary protection of piping networks and heat exchangers during construction, testing, or delayed startup.

Surface Prep & Coating Integration

Shipyards often use high-pressure water jetting (HPWJ) or wet abrasive blasting for surface prep. These methods effectively remove rust and old coatings while minimizing hazardous airborne dust. However, they leave steel bare and highly reactive, resulting in flash rust within hours, especially in humid coastal environments.

Surface Prep & Coating Integration

ZERUST® AxxaVis™ HST-10 was originally developed as a corrosion-inhibiting additive for hydrostatic testing water. However, its chemistry also makes it well-suited for use in high-pressure water jetting (HPWJ) and wet abrasive blasting, common surface preparation methods in shipyards. These processes effectively remove rust and coatings without generating hazardous dust, but they leave bare steel surfaces highly reactive and prone to flash rust, especially in humid marine environments.

ZERUST® Surface Prep Solutions

When added to wash water systems, AxxaVis™ HST-10 neutralizes corrosive ions and forms a temporary protective layer that suppresses flash corrosion during and after cleaning. It supports clean steel surfaces that meet preparation standards and are ready for downstream coatings, without interfering with adhesion.

ZERUST® recommends confirming that all cleaned surfaces are free of salts, oxides, and contaminants prior to applying protective coatings or paint systems.

24 Hours after High-Pressure Blasting

Without ZERUST®

With ZERUST®

Long-Term Corrosion Protection After Cleaning

Following surface prep, ZERUST® AxxaCoat™ 90B HFS can be applied as a long-term rust preventative coating. This solvent-based barrier is designed for use in harsh outdoor conditions and provides extended protection during staging, shipping, or between work phases. It dries to a durable film that resists moisture and salt spray, making it ideal for exposed steel surfaces awaiting final coating or assembly.

Layup & Non-Operational Conservation

Marine vessels placed into warm or cold layup are exposed to significant corrosion risks across nearly every critical system. Whether docked, anchored offshore, or in long-term dry storage, inactive vessels suffer from increased humidity, limited airflow, and stagnant fluids. These conditions lead to widespread corrosion challenges, including:

- **Residual moisture and humidity accelerate oxidation in closed systems.**
- **Unventilated compartments trap condensation, especially in fluctuating temperatures.**
- **Fuel, lube, and hydraulic oils become acidic over time and attack metal surfaces.**
- **Electrical components suffer from salt-laden air ingress and surface oxidation.**

If these areas are not properly protected, shipowners may face costly delays and equipment failures upon reactivation. ZERUST® provides a comprehensive layup preservation approach tailored to the specific protection needs of electrical systems, mechanical internals, fluid circuits, and topside equipment.

ZERUST® Layup Preservation Solutions

1. Electronics & Control Systems

Bridge consoles, switchboards, radar enclosures, and navigation electronics are especially vulnerable to corrosion during idle periods. Ingress of humid, salt-laden air can result in surface oxidation, leading to signal interference or failure.

- **Install ZERUST® Vapor Capsules or Plastabs® in sealed control panels and consoles.**
- **VCIs form a protective molecular layer on exposed terminals and PCBs.**
- **Protection lasts up to 1–2 years‡ depending on capsule size and enclosure volume.**
- **Safe for use in energized or de-energized systems, with no interference to electronics.**

These products preserve critical electronics during both short-term and long-term layup. They help reduce corrosion-related failures and ensure systems remain operational upon restart.

2. Sealed Mechanical Systems & Gear Housings

Internal combustion engines, gearboxes, and hydraulic systems feature complex internal geometries that are difficult to coat and susceptible to internal corrosion during layup. If stagnant lubricants break down or water ingress occurs, metal surfaces may corrode even in a closed system.

- **Use ZERUST® Axxanol™ 707C or Axxanol™ 710C as oil additives in sealed, lubricated systems.**
- **Protects ferrous metal surfaces from oxidation during extended shutdown periods.**
- **Maintains compatibility with most base oils used in marine engines and drivetrains.**
- **May be left in the system or drained upon reactivation, depending on OEM recommendations.**

These oil-based corrosion inhibitors are ideal for preserving critical engine components and gear internals. They help minimize rework, re-lubrication, and costly wear during recommissioning.

Layup & Non-Operational Conservation

3. Internal Piping and Tanks

Idle ballast systems, cargo lines, fire mains, and mud circulation loops often retain residual moisture even after draining. These conditions make internal surfaces highly vulnerable to flash rust and pitting corrosion if not properly passivated.

- Fog ZERUST® ActivPowder™ Series into dry pipes, tanks, and void spaces to establish vapor protection.
- For systems remaining filled or holding fluid, add Axxatec™ 8110C or HST-M100 to provide corrosion protection without draining.
  - Compatible with glycol-based fluids or water for wet layup applications.
  - Effective in carbon steel pipe networks, heat exchangers, fuel handling systems, and filtration skids.

By selecting the appropriate method for wet or dry layup, ZERUST® ensures thorough protection of metal surfaces in hard-to-access fluid systems. These products help prevent corrosion in areas that cannot be coated or inspected during layup.

4. Deck & Structural Equipment

Exposed steel components such as cranes, hatches, anchor windlasses, and stored spare parts are subjected to daily UV exposure, salt spray, and temperature-driven condensation. Corrosion of these surfaces leads to premature failure or extensive cleaning before recommissioning.

- Apply ZERUST® Axxanol™ Spray-G or Z-Maxx to unpainted or lightly coated steel surfaces for long-term outdoor protection.
- Forms a grease-like barrier film that resists water intrusion and salt crystallization.
- Remains stable for up to 1 year‡, depending on environmental conditions and application thickness.
- Easy to apply via spray, brush, or roller, and removable with alkaline cleaners before service.

These preservative coatings are ideal for equipment that cannot be shrink-wrapped or is frequently accessed. Axxanol™ Spray-G and Z-Maxx allow for flexible coverage of irregular geometries and protect structural assets during seasonal or extended layup.

5. Extended Vessel Preservation Strategy

ZERUST® layup protection products can be used individually or combined into a full conservation program. Shipyards, operators, and maintenance teams can develop a layup protocol that addresses corrosion risks across the vessel. When applied correctly, these solutions help:

- Extend equipment life by preventing internal and external rust.
- Reduce unplanned maintenance, inspections, and part replacements.
- Shorten recommissioning time by preserving components in service-ready condition.
- Lower total layup cost by reducing labor and material rework.

With proven field performance and a wide range of format options, ZERUST® provides shipowners with the tools to manage corrosion proactively and efficiently during vessel layup.

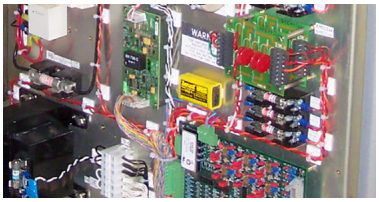
Electrical & Electronics Protection

Marine electrical and electronic systems operate in one of the most corrosive environments in the world. Salt-laden air, high humidity, temperature fluctuations, and confined enclosures create ideal conditions for corrosion on contacts, terminals, and circuit boards. Even when systems are sealed, airborne chlorides and condensation can lead to performance degradation, intermittent failures, or complete system outages during construction, storage, or vessel layup.

ZERUST® VCI Protection for Marine Electronics

ZERUST® provides non-conductive, electronics-safe vapor corrosion inhibitor solutions designed specifically for enclosed electrical and electronic environments. These products protect metal surfaces without coatings, oils, or residues, making them ideal for sensitive marine electronics.

1. ZERUST® Vapor Capsules

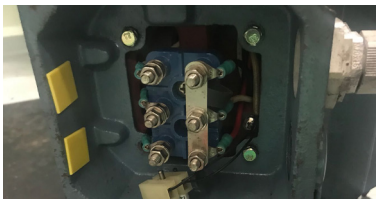


Vapor Capsules are designed to protect larger enclosures that house electronic and electrical systems on marine vessels. These capsules emit a corrosion-inhibiting vapor that forms an invisible barrier on metal surfaces.

- **Protects enclosed volumes up to 900 cubic feet‡ per capsule.**
- **Leaves no residue and does not require removal before use.**
- **Provides up to 2 years‡ of continuous protection.**

Vapor Capsules are ideal for use inside switchboards, bridge consoles, and navigation cabinets to maintain system integrity throughout storage and service.

2. ZERUST® ICT® Plastabs®

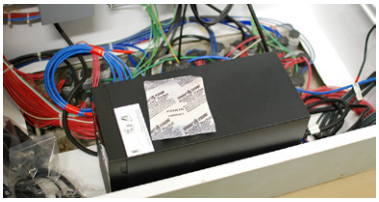


Plastabs® are small, credit card-sized emitters that provide targeted VCI protection in compact spaces. Designed for small enclosures and delicate electronics, they offer targeted corrosion prevention.

- **Suitable for junction boxes, communication gear, cameras, and sensors.**
- **Protects up to 1 cubic feet‡ of sealed volume.**
- **Delivers up to 2 years‡ of protection in closed environments.**

Plastabs® offer compact and effective defense against corrosion for marine electronics stored in confined or sensitive spaces.

3. ZERUST® ActivDri™ PWA Packets



ActivDri™ PWA Packets combine VCI with desiccant technology to protect electronics from both moisture and corrosion. These dual-action packets are ideal for sensitive devices that require low humidity and corrosion control.

- **Absorbs ambient moisture while emitting VCI vapor to protect metal surfaces.**
- **Suitable for sealed containers, control boxes, and electronics storage.**
- **Does not interfere with electrical conductivity or insulation resistance.**

ActivDri™ Packets are especially valuable in coastal or high-humidity environments where moisture and salt exposure accelerate corrosion.

Boatbuilding Protection

Smaller vessels such as fishing boats, recreational craft, and leisure yachts face unique corrosion challenges compared to commercial ships. These boats are often stored in harsh outdoor environments and feature compact electronics, lightweight structural metals, and enclosed lockers and compartments where salt, humidity, and condensation accumulate.

ZERUST® provides targeted solutions for boatbuilders, marina operators, and private owners looking to protect their vessels during storage, layup, or seasonal downtime.

1. **Engine Compartments and Outboards**
   Protect outboard motors by wrapping them with ZERUST® ICT®510 VCI Film prior to shrink-wrapping.
   - **Film can be used to line enclosures or wrap engines and mechanical assemblies.**
   - **Compatible with most common marine metals, including aluminum and steel.**
   - **Simple to apply and remove with no cleanup required.**

2. **Full-Boat Shrink Wrapping**
   Use ZERUST® ICT®510-OPS Film to shrink-wrap boats for off-season storage or transport.
   - **Provides a physical barrier and corrosion-inhibiting atmosphere.**
   - **Used by boatyards for vessels in dry dock or on trailers.**
   - **Ideal for seasonal layup or during overseas shipment.**

3. **Electrical Panels and Battery Compartments**
   Place ZERUST® Plastabs® or Vapor Capsules in switch housings, GPS enclosures, and battery compartments to protect connections.
   - **Prevents oxidation on terminals and contacts without interfering with signal or power.**
   - **Protects small enclosed volumes for 1 to 2 years‡.**
   - **Simple to install and requires no maintenance.**

4. **Toolkits, Spare Parts, and Hardware Storage**
   Line drawers and bins with ZERUST® ICT® VCI Kraft Paper or seal parts in ZERUST® zipper bags.
   - **Ideal for toolkits, outboard spare parts, fasteners, and engine components.**
   - **Keeps items clean, dry, and rust-free during seasonal downtime.**
   - **Papers and bags are clean, odorless, and recyclable.**

Whether you're a boatbuilder, marina operator, or recreational boater, ZERUST® marine-grade solutions help protect your investment from corrosion year-round. From the engine room to the electrical box, ZERUST® delivers clean, dry protection for small vessels in storage, layup, or transit.

The Z-CIS® Approach

Corrosion failures in shipbuilding and marine operations rarely result from a single isolated issue. Instead, they stem from interconnected risks across fabrication, storage, assembly, transport, commissioning, and layup. Applying isolated corrosion products without understanding the broader system often leads to incomplete protection, rework, and recurring failures.

To address this, ZERUST® developed Z-CIS® (ZERUST® Corrosion Inhibiting System), a structured, engineering-driven methodology that identifies corrosion risks and applies the right combination of technologies to eliminate them.

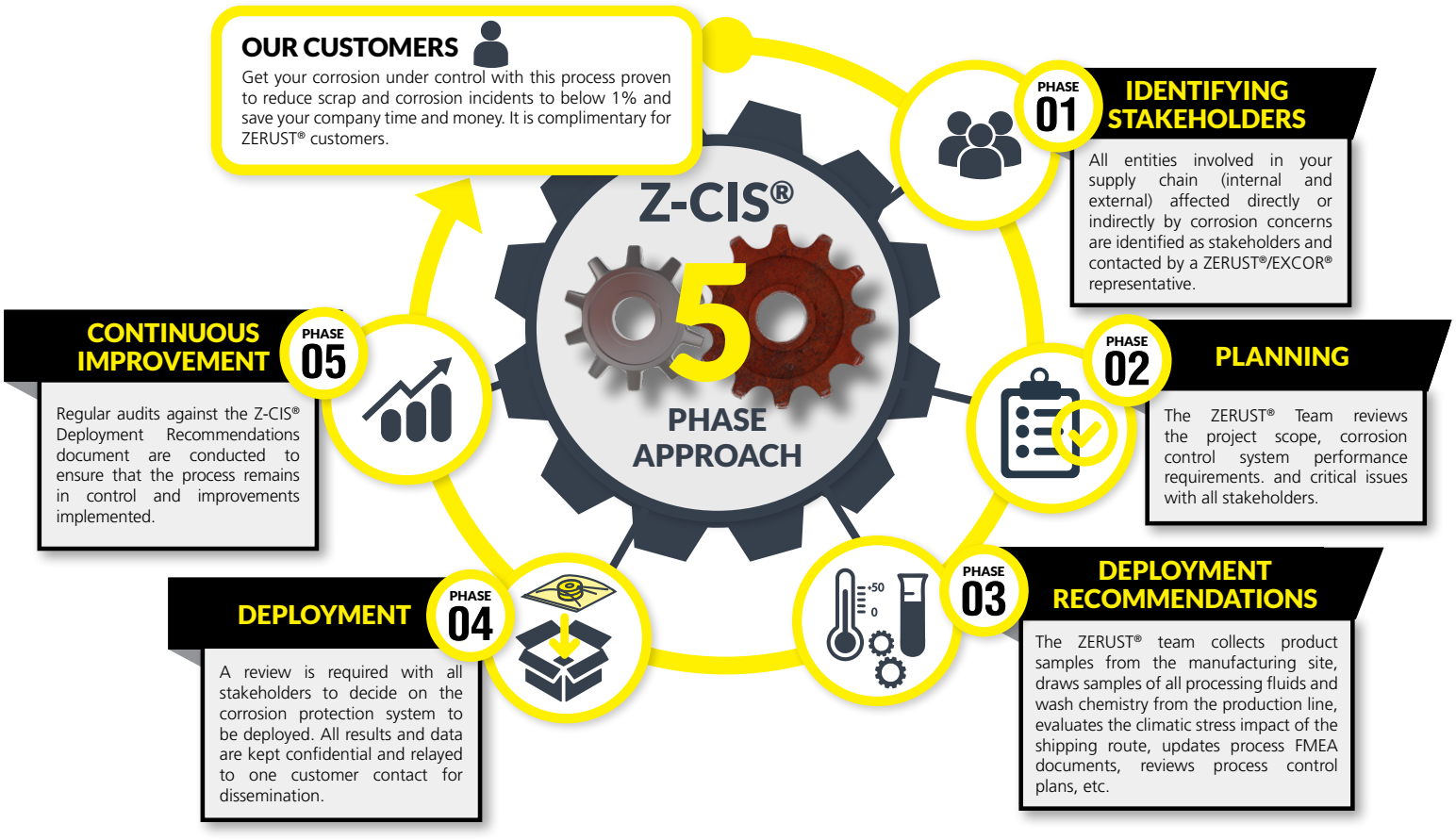
What Is Z-CIS®?

Z-CIS® is a holistic corrosion management framework that integrates:

- Risk assessment
- Product selection
- Process optimization
- Validation and ongoing improvement

Rather than selling a single product, ZERUST® delivers a complete corrosion protection system, customized to your shipyard, vessel type, and operational environment.

Z-CIS® ensures corrosion protection is designed in, not reacted to later.



Why Choose ZERUST®?

For over 50 years, ZERUST® has helped manufacturers and asset owners protect high-value equipment in the world's most corrosive environments. In shipbuilding and marine operations, ZERUST® stands apart by combining advanced chemistry, field engineering, and global support.

What Sets ZERUST® Apart

Industry-Proven Technology

ZERUST® VCIs are used worldwide in:

- Shipyards and drydocks
- Offshore platforms
- Naval fleets
- Commercial and recreational vessels

Our technologies protect metals at the molecular level, reaching areas that coatings and oils cannot.

Complete Corrosion Solutions

Unlike single-product suppliers, ZERUST® offers:

- VCI films, papers, bags, and shrink wraps
- Fogging powders for voids and tanks
- Water-based inhibitors for testing
- Oil additives and temporary coatings
- Electronics protection systems
- Corrosion management services and trial audits

One supplier. One system. Total corrosion protection.

Environmentally Responsible

ZERUST® products are designed to meet modern environmental standards:

- Nitrite-free options
- RoHS and REACH compliant
- Minimal waste and reduced solvent use

Global Reach, Local Support

With operations and partners in 70+ countries, ZERUST® supports:

- Global shipbuilders
- Multinational fleets
- Local repair yards and OEMs

Our experts provide fast, region-specific technical support wherever your vessels operate.

Measurable Cost Savings

ZERUST® customers routinely achieve:

- Reduced rework and cleaning
- Fewer corrosion-related failures
- Shorter commissioning times
- Extended asset life

Corrosion prevention isn't a cost, it's an investment!

Certified Quality You Can Trust

Northern Technologies International Corporation (NTIC), the parent company of ZERUST®, is certified to the ISO 9001 Quality Management Standard. This certification reflects our commitment to delivering high-quality corrosion-inhibiting products and services while continuously improving our operations. Through our Quality Management System (QMS), we focus on productivity, innovation, regulatory compliance, and customer satisfaction to support sustainable growth and global excellence.

Global Support

Algeria
Angola
Argentina
Australia
Austria
Bangladesh
Belarus
Belgium
Bhutan
Bolivia
Brazil
Canada
Chile
China
Colombia
Czech Republic
Democratic Republic of the Congo
Denmark
Ecuador
Estonia
Finland
France
Gabon
Germany
Hungary
India
Indonesia
Ireland
Italy
Japan
Kazakhstan
Korea
Latvia
Lithuania
Luxembourg
Malaysia
Mexico
Monaco
Morocco
Nepal
Netherlands
Nigeria
Norway
Peru
Philippines
Poland
Portugal
Republic of Congo
Romania
Singapore
Slovak Republic
Slovenia
South Africa
Spain
Sri Lanka
Sweden
Switzerland
Taiwan
Thailand
Tunisia
Turkey
Ukraine
United Arab Emirates and MENA (Middle East & North Africa)
United Kingdom
United States
Uruguay
Vietnam

Visit www.zerust.com for more information!

Contact Us

Northern Technologies International Corporation
ZERUST® Business Unit | Corporate Office
4201 Woodland Road, P.O. Box 69
Circle Pines, MN 55014 USA
Toll-Free: 1-800-328-2433 | Phone: 1-763-225-6600
sales@zerust.com | www.zerust.com

‡ **DECLARATION**
Corrosion protection claims are based on Northern Technologies International Corporation (NTIC) internal laboratory testing performed under controlled parameters on contaminate-free substrates. Real-world application corrosion protection duration on different substrates will vary and depends on factors such as, but not limited to, the application or use, environmental / storage conditions, surface cleanliness, type of substrates, and coating thickness (where applicable). The use of the term "Up to" in reference to time is defined as any time duration from zero up to a specified time frame, but in no event beyond the specified time frame. The use of the term "for years" is based on NTIC's experience with its products but is in no way guaranteed. The use of the term "Up to" in reference to volume is defined as any volume from zero up to a specified volume but in no event beyond the specified volume of protection. It is the customer's / user's obligation to evaluate product performance, corrosion protection duration, safety, and suitability for intended use within the scope advised in the data sheet and to comply with all applicable laws and regulations. **LIMITED WARRANTY/DISCLAIMER** Warranty is limited to the replacement of a product that fails to meet specifications. For full warranty and disclaimer information, visit www.zerust.com/warranty.