

80 Hartford Avenue, Mount Vernon, NY 10553  
 Tel: 877-ICE-AIR-1 (877-423-2471)  
 Fax: 914-668-5643  
 email: sales@ice-air.com or vrf@ice-air.com  
 www.ice-air.com

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ICE AIR VRF  
 Anti-corrosion Solution





Coastal Area

**HIGH CORROSION AREAS**



Industrial or Corrosive-gas Generating Area

Oceans cover more than 70% of the earth's surface. While ocean water is rich in naturally occurring electrolytes, it is also highly corrosive. Commonly used metals and alloys such as iron and aluminum are very vulnerable to corrosion when near the ocean.

The marine atmospheric environment is extremely complex. As the latitude and coastal geographical conditions vary, the environmental factors such as temperature, humidity, radiation, concentration of chloride ions in the air and salinity together with their coupling effects have a great impact on the material corrosion. Corrosion due to the marine atmospheric environment will be greater with the increase of temperature. Thus, the corrosion phenomena are severe in the tropics, moderate in subtropics, and mild in north and south poles.

Factors that influence the marine atmospheric corrosion:

- Temperature and humidity**
- Solar ultraviolet**
- Air salinity and other pollutants**

In the production environment of most chemical products, there are many acidic, alkaline, salt and other corrosive gases in the air such as SO<sub>2</sub> and NO<sub>x</sub>. The gases will cause various corrosion such as oxidation corrosion, sulfide corrosion and electrochemical corrosion on metals.

Factors that influence the corrosion in chemical atmosphere:

- Temperature and humidity**
- Solar ultraviolet**
- Acidic, alkaline and other corrosive gases in the air**

**Negative Effects of Corrosion**

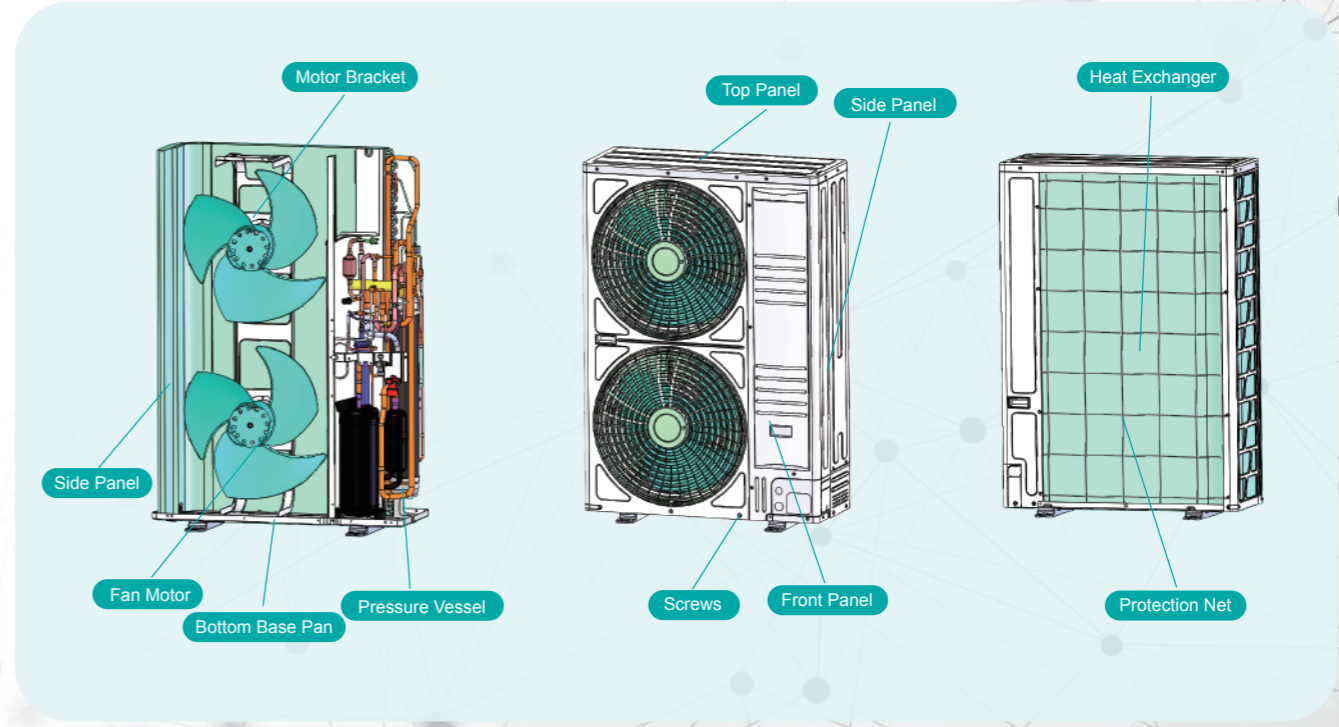
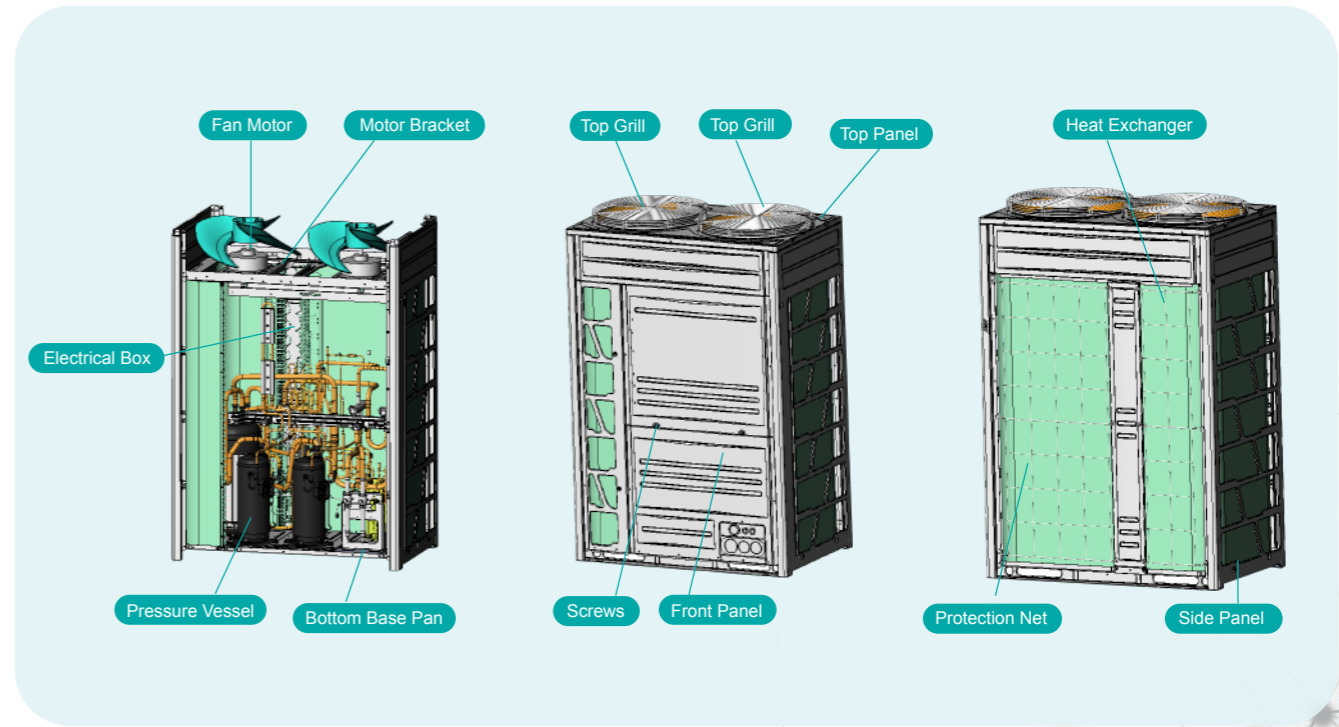


- Lower Cooling and Heating Performance
- Reduced Air Conditioning Capability
- Shorter Equipment Lifespan
- Diminished Energy Efficiency

- Increased Energy Consumption
- More Customer Complaints
- Higher Maintenance Costs
- Less Return on Investment

**Ice Air VRF Anti-corrosion Solution**

The components and parts marked on the outdoor unit are very vulnerable to corrosion. Ice Air analyzed the corrosion of these components and developed a corresponding anti-corrosion solution. When treated with Ice Air anti-corrosion solution, the corrosion resistance of the outdoor unit is greatly enhanced. All anti-corrosion outdoor units have their own decorative nameplate to indicate their identity as an anti-corrosion unit.



## Anti-corrosion Treatment Specification for Anti-corrosion Outdoor Unit

Components	Material	Anti-corrosion Treatment Solution	Corrosion Resistance Test ※1
Heat Exchanger	Anti-corrosion Black Fin	1st Step: Coated with Modified Epoxy Resin 2nd Step: Coated with Hydrophilic Film	1500 Hours (Equivalent Lifespan 60 Years in Neutral Natural Environment) Test Result: Pass
Front Panel, Top Panel, Side Panel, Bottom Base Pan, Structural Columns etc. (Sheet Metal Parts that can be seen on the outside surface)	Anti-corrosion Treated Galvanized Steel	1st Step: Zirconium-based Treatment 2nd Step: Spray Coating of Epoxy Zinc Rich Primer 3rd Step: Spray Coating of Pure Polyester Paint Total Coating Thickness: 0.004in~0.0071in	1500 Hours (Equivalent Lifespan 60 Years in Neutral Natural Environment) Test Result: Pass
Electrical Box, Motor Bracket and Fixing Plate, Connecting Plate etc. (Separator, Support Plate, Bracket Connection Plate and other Internal Sheet Metal Parts)	Anti-corrosion Treated Galvanized Steel	1st Step: Zirconium-based Treatment 2nd Step: Spray Coating of Pure Polyester Paint Total Coating Thickness: 0.002in~0.0047in	1500 Hours (Equivalent Lifespan 60 Years in Neutral Natural Environment) Test Result: Pass
Heat Exchanger Protection Net, Top Grill	Anti-corrosion Low-carbon Steel	1st Step: Zirconium-based Treatment 2nd Step: Dipped in Plastic Polyethylene Resin. Total Coating Thickness: 0.0157in~0.0236in	2000 Hours (Equivalent Lifespan 80 Years in Neutral Natural Environment) Test Result: Pass
Pressure Vessel	Anti-corrosion Treated Carbon Steel	1st Step: Zirconium-based Treatment 2nd Step: Spray Coating of Pure Polyester Paint or Electrophoresis Total Coating Thickness: 0.002in~0.0047in Electrophoresis Coating Thickness: 0.0008in~0.0016in	1500 Hours (Equivalent Lifespan 60 Years in Neutral Natural Environment) Test Result: Pass
Motor	Anti-corrosion Treated Motor	Spray Coating of Transparent Acrylic Resin Coating Thickness: 0.0004in~0.0012in	1500 Hours (case only) (Equivalent Lifespan 60 Years in Neutral Natural Environment) Test Result: Pass
Screws	Anti-corrosion Stainless Steel	Spray Coating of DACROMET® ※2 Coating	1500 Hours (Equivalent Lifespan 60 Years in Neutral Natural Environment) Test Result: Pass

※1 Test Condition and Evaluation Standard : ISO 21207 / ASTM B117 / GB 1771 / GB 6461 / GB 1766

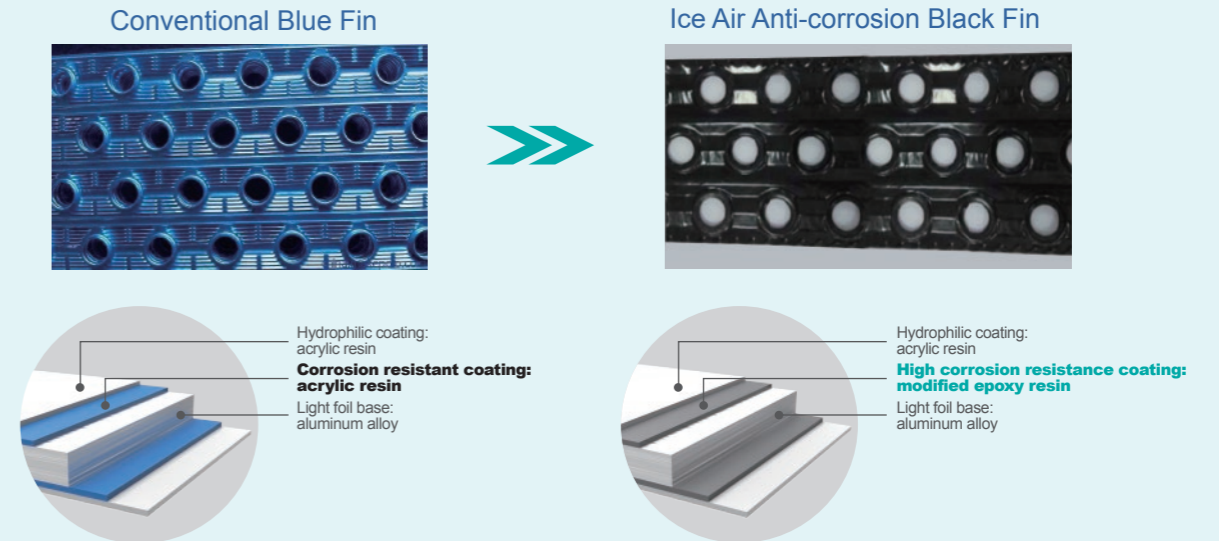
• Temperature: 95±3.5°F • NaCl Concentration: 5% • Average Spraying Volume: 6.68oz/gal±0.13oz/gal

※2 DACROMET® is a registered trademark of NOF METAL COATINGS GROUP, belonging to the Japanese Chemical Group.

★ The above data only represents the anti-corrosion performance under test conditions. The actual corrosion resistance and equipment lifespan will vary according to the actual installation environment. Test data is for reference only.

## Ice Air Anti-corrosion Black Fin

The main film forming resins of traditional blue anticorrosive fins are acrylic resins and the film forming resins of Ice Air anticorrosive fins are epoxy resins. The film thickness of epoxy resin is 1.5 times that of acrylic resin, and its acid-resistant, alkali-resistant and salt-fog resistant properties are 3 times that of acrylic resin.



Notes: This black fin can achieve 1500h corrosion resistance under the following conditions: neutral salt spray test, 5% NaCl, 95°F.



## Ice Air Anti-corrosion Surface Treatment

The corrosion of the outdoor unit is directly related to the irradiation of ultraviolet rays. Ice Air's surface treatment improves the appearance of the sheet metal parts and increases the anti-corrosion ability.



Ice Air Anti-corrosion Surface Treatment Step:

- 1st Step: Zirconium-based Treatment
- 2nd Step: Spray Coating of Epoxy Zinc Rich Primer
- 3rd Step: Spray Coating of Pure Polyester Paint

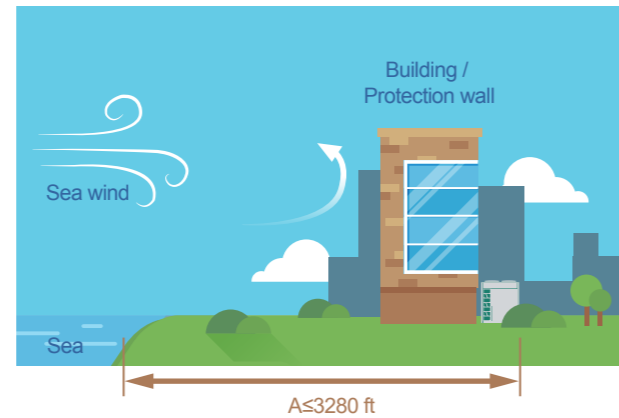
**Benefits:** After Ice Air anti-corrosion surface treatment, all of the metals and alloys panel and frame can achieve a 60 year corrosion-free lifespan.

## Installation Site and Maintenance Requirements of Outdoor Unit

1. Don't install the outdoor units in locations with direct exposure to coastal winds and mist. If possible, install units in places where winds and mist are blocked by walls or other structures.



The outdoor unit is exposed to the sea wind directly, if  $A \leq 6560$  ft, please adopt anti-corrosion unit.



The sea wind is blocked out by a wall or a building, if  $A \leq 3280$  ft, please adopt anti-corrosion unit.

2. Try to install the outdoor unit in the shade to avoid direct ultraviolet radiation.
3. If possible, please clean the outdoor unit with clean water regularly when units are installed in coastal areas.
4. Scratches which are caused by installation and maintenance need to be repaired in a timely manner.
5. Water on the baseplate of outdoor unit will increase the corrosion, so the outdoor units should be installed with a suitable slope so the drainage of the baseplate is not negatively affected.
6. Inspect the unit condition regularly. (Apply antirust treatment or change components if necessary.)

## Product Lineup



Product Series

S

G

H