



# 5 YEAR MARINE TESTING DATA REPORT

February 2, 2014 - March 13, 2019

Report Date: January 28, 2022

Lancing Nass: President  
Joseph Curran: Chief Corrosion Engineer  
Richard Johnsson: Coating Consultant (Carnival Legend HVAC Superintendent)

## Project Summary

<b>Project type:</b>	Corrosion Protection Coating System
<b>Project Location:</b>	Carnival Cruise Ship (Carnival Legend)
<b>Project Status:</b>	<u>Test successfully completed:</u> 5 years with no indication of corrosion, where applied, in this Marine Environment

## IMAGES of Carnival Legend Ship in Drydock



Date: February 2, 2014

Drydock: Freeport, Bahamas

Project: HVAC (air handling components) on the Carnival Legend Cruise Ship.

# ACRYLA TEC

## Images

### Carnival Legend Ship: Deck 4, Air Intake



**Before Coating**

Extensive Corrosion Throughout



**After ATC Application**

Proper Application



**Results, 5 years later**

No Indication of Corrosion

### Carnival Legend Ship: Galvanized Ducts

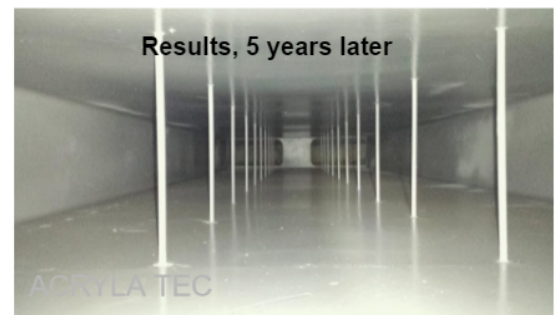


Acryla Tec Coating System encapsulates rust and prevents further corrosion utilizing an advanced closed cell coating system technology.



# ACRYLA TEC

## Carnival Legend Ship: Stainless Steel Air Intake



5 years after application, you can see ATC looks the same as the day it was applied with no rust.

Acryla Tec Coating System has extended the life cycle of this HVAC system by many years. Eliminating the need for costly replacement with the associated downtime and reduction of worker exposure and labor costs.

### ATC Coating Description

Acryla Tec Coating (ATC) is a multi-resin water-based single component advanced coating system ready to use on a wide range of surfaces for superior substrate protection, thermal heat reduction, waterproofing, corrosion, and long-term asset protection.

Specifically designed to restore, renovate and extend asset life for equipment, facilities, infrastructure, and properties. Applying this coating system during construction and/or during refurbishments, will improve the corrosion resistance for both new and old substrates significantly reducing acquisition costs, lowering future maintenance costs, reducing downtime, and reducing labor/material costs.





## **Common paint and Coating Problems (Why ATC is Different?)**

**The issue is:** All other paints are OPEN-Cell and will deteriorate quickly.

OPEN Cell meaning liquids, gasses, and toxins slowly penetrate through the paint/coating.

But under certain conditions or when the preparation or application has been less than ideal, there are a number of common problems that occur that cause a paint/coating to start to deteriorate. Every few years a surface needs to be reapplied with a coating or it will progressively break down until it needs to be rebuilt, repaired, or replaced.

### **Common issues of Paints / Coatings**

Natural aging, Blistering, Checking, Efflorescence / Leaching, Chalking, Sagging / Running, Delamination, Cracking, Popping, Mold / Mildew, Rust Discoloration, Peeling Paint Due to Poor Adhesion, Peeling Paint Due to Exterior Moisture, Peeling Paint Due to Interior Moisture, Color fading, etc.

Coatings need a clean prep surface free from dirt, grease, oils, and rust. The result is increased labor and material cost. Whether, for new build, rebuild, repair, or frequent reapplication.

### **Continuously protecting a substrate is:**

Vital for function and readiness

Ensures longevity of critical components

Costly and time-consuming

Necessary for avoiding unpredictable breakdowns and malfunction of equipment

## **ATC Coating Performance**

Acryla Tec Coating System is designed to meet and exceed the performance aspects of providing an advanced closed cell coating system that stops any further corrosion on metal substrates and reduces both long-term and short-term costs associated with corrosion repairs.



- Safety: Metals/materials are kept structurally sound ensuring no injuries from rusty sharp edges and falling pieces. Reduces worker exposure to hazardous conditions.
- Down Time: Eliminates downtime from both structural material failure and reduction of reapplication frequency. Eliminates the impact on other critical components.
- Water-Based Coating: No additional or special disposal requirements. ATC Coating products (7 items) are multi resin water-based single component and is considered “dried/cured” once the water evaporates with heat & air flow leaving behind a 100% pure high performance resin protection layer.
- Application frequency: Doubles or triples reapplication periods

## **The Project**

The HVAC (air handling components) onboard the Carnival Legend cruise ship in 2014 had heavy corrosion issues and needed to be replaced shortly or a product to stop and repair the damages. The coating formula was mentioned as a solution to encapsulate the rust and help lengthen the life expectancy (15 years to +20 years) to reduce the cost overall. The Coating formula successfully completed a complete 5 years with NO Failure in a harsh Marine Environment, meaning no signs of corrosion, no delamination, and no continuation of corrosion underneath the surface of the coating.

The Acryla Tec Coating System allows:

- Application over multiple substrates
- Long-term barrier & asset protection
- Corrosion protection
- Waterproofing
- UV-stable
- Chemical resistant Coating System

## **Overview & Summary by Joseph Curran (NACE/AMPP) CIP level 3, CP level 2**

Visual Inspection of a 5-year exposure for this coating application to a shipboard HVAC system.

Thank you for the opportunity to review and comment on this report.



As you may well know this real-life, real-time exposure is the ultimate test of any coating system. By themselves, HVAC systems are a very corrosive environment internally and externally. Place the system in a marine environment and it is a great challenge to keep them operational.

At the Space Center great effort was extended to these units for a number of reasons:

- A constant harsh environment affecting the substrate, that necessitated the frequent application of protective coatings.
- Human comfort.
- Equipment operation requires cool temperatures and a dry atmosphere.
- As evidenced from the photos, I am pleased to see this protective coating outperform other coating systems. I cannot see any failure points and it is expected that this protective coating will last significantly longer than other coating systems.
- I would like to supplement this report with my experience. During my career at the Space Center and elsewhere, I was responsible for maintaining assets. I have had the opportunity to specify and test/evaluate many coating systems. I specified this ATC Coating for HVAC systems and has outperformed many coating systems. Annual inspections showed the ATC to be performing better than expected as it had little to no signs of deterioration and protected the substrate as planned. I cannot say this for many coating systems at the Space Center.

In short, as the report shows and with my personal experience, I am greatly pleased with this Acryla Tec Coating System.

Sincerely,

Joseph Curran