FluoroGrip®

Fluoropolymer Linings and Coatings

Case History: Cold Storage Chiller-Pan Protection

The following study illustrates the use of Integument's new FluoroGrip "peel-and-stick" fluoropolymer films for preventing corrosion and extending equipment life for a California cold storage facility.

The company operates facilities that store fresh fruits at temperatures down to 34°F. This allows the goods to be sold during more profitable times of the year. The equipment used to keep the rooms chilled includes chillers and aluminum drip pans employed to collect condensation that is generated by the chillers. The acidic (H_2SO_3) condensation is collected in the pans and then piped away for proper handling.

Installing Film

The Problem

- New and existing collection pans are constructed of aluminum which rapidly corrodes when exposed to acidic environments.
- The cold rooms utilize SO_2 gas to fill the room in order to eliminate insects and prevent fungi from growing.
- The moist environment found in the rooms, combined with the SO_2 gas, produces a weak sulfurous acid (H_2SO_3) solution when moisture condenses on the chillers. This weak acidic solution is destroying the oxidized surface layer of the aluminum which is what provides corrosion resistant properties of aluminum.
- The result is a rapid destruction of the pans – in less than two years.
- Each pan measures approximately 34' long by 2.5' wide by an average depth of 2".
- Each pan costs $6,000 and currently requires replacement every two years or less. The facility owners were faced with a challenge: "How do we extend the life of the collection pans from 1-2 years, to 6-10, years with minimal costs and operational disruptions?"

The FluoroGrip Engineered Solution

The facility owner actively experimented with traditional epoxy-phenolics and other conventional paints and coatings. Traditional coatings were unsatisfactory for several reasons: The operational downtime, combined with application costs for sandblasting and metal preparation was prohibitive. The pans are constructed of a relatively thin gauge of aluminum, which sandblasting permanently damaged by warping. The coatings did not withstand the corrosive environment and failed to protect the aluminum from corrosive attack.

Working with Integument engineers, the customer selected a ***FluoroGrip® - P*** (PTFE), 10-mil fluoropolymer film which incorporates a proprietary plasma surface activation and acrylic adhesive technology to create a "peel-and-stick" fluoropolymer film. After a simple solvent wipe (isopropyl alcohol) surface preparation, the film was applied to both the interior and exterior pan surfaces -- much like "wallpaper." The project was finished by sealing all film edges with ***FluoroGrip® SB-100*** brushable fluoroelastomer edge sealant.

Layout and Installing 10-mil PTFE Film

Integument

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Case History: Chiller-Pan Protection continued...

System Benefits

- **Minimal downtime & disruptions** – no extensive sandblasting or other surface preparations, no multi-coat paint systems or cure times were required.
- **Cost effective** – each pan required minimal labor and material costs compared to other, less effective, options.
- **Performance** – Fluoropolymers commonly referred by trade names such as Teflon®, Halar®, and Kynar®, are the most chemically inert plastics known to man. Combined with Integument's, state-of-the-art plasma surface activation and adhesive technologies, the system is expected to exceed the desired 6-10 year service life.

Completed Lining of Drip Pans

Film is Conformable for Detail Areas

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