

Superior Paint Adhesion With Clean and Phosphate Technology Makes Customer More Competitive

Challenge

A national supplier of industrial, interior steel shelving used in the hardware and lighting industries was experiencing difficulty cleaning and pretreating areas around weld seams. This caused sporadic paint adhesion problems.

Prior to full assembly, partially assembled shelving brackets, side supports, main and side beams were sent through a two-stage clean and iron phosphate pretreatment system. These parts would then pass through a natural gas fire ring for drying, before entering the paint spray booth. Due to permit limitations, neither the cleaner stage or the rinse stage could be overflowed. The customer could not discharge any liquid from their plant and they lacked a waste plant or an industrial sewer system for discharge. Competitive clean and phosphate programs failed to provide the quality pretreatment systems this company demanded. The primary goals were to:

- Improve the rinse water quality while reducing or eliminating the rinse stage from being pumped out
- Maintain the clean and phosphate stage to provide sufficient cleaning during a short contact time
- Maintain excellent paint adhesion

Solution

It was initially anticipated that higher operating temperatures would be necessary to provide sufficient cleaning. This was due primarily to the short cleaning contact time. It was determined that a laboratory evaluation of products and operating

parameters was necessary to optimize cleaning and phosphating, especially at weld seams.

In reviewing test results, an aggressive clean and phosphate product, Permatreat* 378, was chosen. Not only did the cleaning improve, but the operating temperature could also be reduced by 30 degrees and still provide excellent results. Surface analysis confirmed the GE Water & Process Technologies chemical treatment program, Permatreat 378 is ideal for resolving the cleaning, phosphating and adhesion problems. To maintain the excellent results, a comprehensive process control program was implemented that included: operator training, bath analysis and regular coating weight checks.

Results

- First-pass part quality improved dramatically, lowering operating costs
- Improved operator understanding of the process chemistry
- Annual energy savings for lowering the washer operating temperature from 165° to 135°F (74° to 57°C)
- Return on Investment: approximately 498%
- Better, more consistent performance at reduced operating costs



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