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Well-informed Employees Can Minimize Production Problems

A company carefully organized its training program to integrate health and safety, environmental programs, quality control and production scheduling. Even with a very detailed training program, however, problems can still arise. This company found that this old saying is still good practice: "Make sure everyone is involved."

Communication Was a Problem

During the year after the ongoing training program was started, the company still occasionally had complications on the paint line. Little quality problems seemed to appear from nowhere. As the problems were reviewed, and corrections made, it was found that there was still a lack of communication in operational procedures between the production line and production scheduling.

The first of these problems came about in the early stages of the program following a joint training class conducted by the chemical supplier about washer and paint application procedures. The key was a misunderstanding of the explanation of adjusting pH, temperature, concentrations, time, and bath filtration. These can change the properties of the iron phosphate conversion, as well as the cleaning and rinsing, and affect the life of the solution. Remember, every process has a set of parameters that will allow the process to produce a clean surface, a quality conversion coating, and create a surface for excellent paint adhesion.

An Example Of What Can Happen

When one shift supervisor felt the parts coming into the washer contained a more oily surface condition than they should, he adjusted the pH of the phosphate bath from the standard 4.3 to 4.5 (a range of 4.8 to 5.0), to better remove the oily soils. He only observed oily parts going into the washer, and did not observe them at exit to see if the oils had been removed. Because he was satisfied he had corrected a potential problem, he said nothing of the adjustment, except to note the new ranges on the production chart. Other shift personnel just followed the new ranges.

What the supervisor saw was what had been a problem, but one that had been observed earlier. The concentration of the cleaner had already been established to handle the variety of parts containing synthetic emulsion oil that was easier to remove than the petroleum oils on parts that were previously processed.

The increase in pH, however, changed the iron phosphate conversion quality to a more porous complex of iron and phosphorous-oxygen, which caused the salt spray testing to fail below the established 280 hr. The change could have been even more dangerous, except the production scheduling department had changed the volume of oily parts to be processed, because they were large. Normally, the line speed would have been slowed to allow more time through the washer and paint application stages to provide a heavier phosphate conversion.

Finding a Solution

Company management passed the word during the monthly training sessions that modifications were not to be made, unless they were presented during the sessions. This led to a series of planned changes to allow employees to question details or express concerns. The chemical supplier presented a new training class to provide information on the established parameters and how different changes would or could affect the quality of the parts processed. This new training introduced new information, which led to opportunities for making additional changes, such as automation of chemical feeding systems, pH adjustment additions, lowering temperature for fuel economy, more counterflow of rinse waters, more filtering of solutions and rinses, and more uniformity of record maintenance.

Each month, process records were brought to the meeting for review, with emphasis on quality, scheduling and economy. During the past year, the company has reduced chemical cost by about 25 percent, water consumption by about 50 percent, and cut sewer charges by about 50 percent. Quality is now very consistent.

There are many benefits for incorporating communication, application and participation into process operations. There are also many benefits to using sources available from the AESF library of information. Use the reader service card on page 83 to ask any of the *P&SF* columnists about process problems you have encountered. ***P&SF***