Neutralac®

RIMEX METALS GROUP

Case study
Neutralac® SLS45

02-10

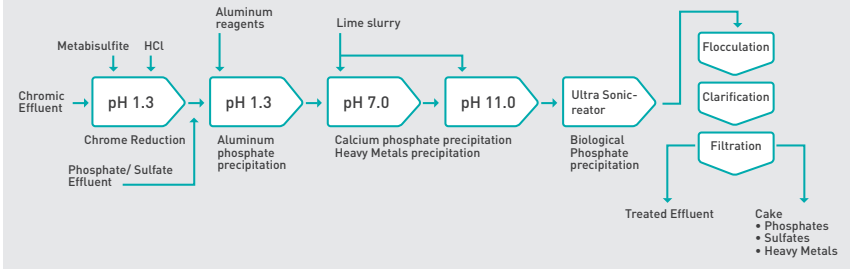
Chrome and phosphate removal from wastewater in the stainless steel finishing industry

Customer Application and Activity

Rimex specializes in metal finishing and architectural metals and has been producing surface finishes on stainless steel and other metals since 1959.

The process generates an acidic wastewater which is collected in 2 separate sumps, one for effluents containing chromic acid and another for those containing phosphoric/sulfuric acid.

Rimex Metals Wastewater Treatment



Customer Wastewater Treatment

The chromic effluent is first treated to reduce the hexavalent chrome to trivalent chrome using sodium metabisulfite in acidic conditions: the pH is limited to a level of 1.3 through the addition of hydrochloric acid.

After this treatment, the chromic and phosphoric effluents are mixed and treated to remove the phosphates. This process is based on three additional processes. Firstly, the addition of aluminum reagents precipitates aluminum phosphates. Secondly, by adding lime, the calcium phosphates are removed. Finally, by using an ultrasonic reactor, the remaining biological phosphates are eliminated.

Lime slurry is added in two steps: a primary lime treatment at a pH of 7.0 to precipitate the calcium phosphates, and a secondary treatment at a pH of 11.5 to remove the heavy metals.

The precipitated pollutants are then flocculated and finally separated by filtration.

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Conclusions

Neutralac® SLS45 allowed for effective treatment of the effluent stream and maintained discharge levels that were comfortably within consent levels. This was achieved in combination with the use of a revolutionary ultrasonic reactor to treat the effluent prior to settlement and discharge. The use of Neutralac® SLS45, a 45% solids lime slurry, has reduced reagent use by up to 30% which, of course, has economic advantages for Rimex Metals. This also reduces the handling time associated with unloading, stocking full and empty containers on site, and the time and costs associated with ordering and invoicing. Rimex Metals is also striving to reduce the carbon footprint of its site and the reduction in Neutralac® SLS45 deliveries and transport miles has played its part in the company's efforts.

VIU results

The final results depend on dosage rates but they can be as high as up to 99.7% for sulfates and heavy metals, and up to 99.9% for phosphates.

By introducing Neutralac® SLS45, Rimex has reduced its reagent costs by up to 20%. Neutralac® SLS45 has proved to be easy to handle, easy to pump and to dose. In addition, the lower number of delivery vehicles required has reduced the operators' workload considerably.

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