Steel wheel manufacturing
Optimization of wastewater treatment
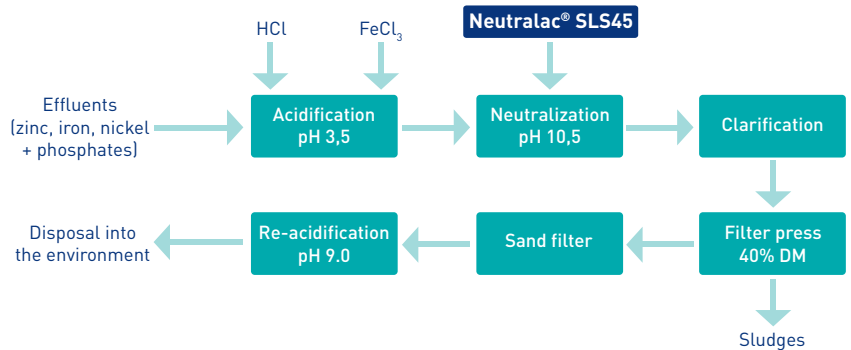
Customer Application and Activity

Hayes Lemmerz International is a world leader in the production of steel and aluminum wheels for the automotive industry. Its site at Königswinter (Germany) specializes in the manufacture of steel wheels and has a daily discharge of 150m³ of effluents containing heavy metals (zinc, iron and nickel), as well as phosphates.

Problem to be solved

The on-site treatment station was regularly disrupted by an excess of solids in suspension. Moreover stopping the plant resulted in odors being produced. A solution was sought to optimize the elimination of phosphates and heavy metals in the effluents, to avoid solids forming in suspension and to eliminate odors.

Neutralac® SLS45 Solution

In order to capture the heavy metals and neutralize the effluents, Rheinkalk, the Lhoist Group's German affiliate, suggested a complete treatment using Neutralac® SLS45. After a series of laboratory tests to validate the technique, the process was installed at Hayes Lemmerz's premises. This new treatment has led to a continuous improvement in the process.

Process flow diagram:

HCl → / FeCl₃ → **Neutralac® SLS45** →

Effluents (zinc, iron, nickel + phosphates) → Acidification pH 3,5 → Neutralization pH 10,5 → Clarification → Filter press 40% DM → Sludges

Filter press 40% DM → Sand filter → Re-acidification pH 9.0 → Disposal into the environment

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VIU results

Switching over to Neutralac® SLS45 has led to the following benefits for Hayes Lemmerz:

- A faster removal and better elimination of heavy metals (zinc, iron and nickel)

- An optimum elimination of the solids in suspension thanks to better sedimentation after neutralization and, as a result, a lower consumption of flocculants ($FeCl_3$).

- A filter cake which is more easily detachable from the filter press and a major increase in the percentage of dry matter in the sludges

- Elimination of phosphate build-up through the precipitation of an easily removable calcium phosphate

- A reduction in the frequency of reagent deliveries and the associated transport costs

Conclusions

Since its switch to Neutralac® SLS45 several years ago, Hayes Lemmerz has been treating its effluents successfully.

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