

RECORDED BENEFITS

- A twelvefold reduction in coagulant use
- A fivefold increase in water reuse
- An 86 mt/year reduction in CO₂ emissions due to reduced energy use
- A \$24,000/year reduction in aeration electricity costs
- A \$86,000/year reduction in sludge transportation and disposal costs
- Discharge limits are now consistently met

Optimized Coagulant Program Enables Refinery to Increase Water Reuse, Reduce Energy Use and Decrease Costs

ChargePac™ 312 Liquid Coagulant

Customer Challenge

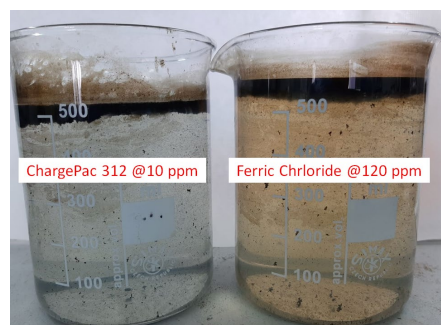
A large petroleum refinery in Europe was challenged to meet the strict water quality discharge limits for its 450 m³/h wastewater treatment plant, which consists of a dissolved air flotation (DAF) system and a secondary biological process. A tertiary polishing step allowed half of the water (225 m³/h) to be recycled for cooling make-up and other applications. The refinery was using a ferric chloride coagulant in the DAF; however, due to the low pH of the coagulant and high chloride content, the refinery experienced performance and corrosion problems in the DAF system and poor pH control in the biological system. The coagulant also precipitated out phosphates, which put the COD, N and P ratio out of balance. As a result, the outlet effluent was frequently close to being out of limit.

Recommended Solution

After performing extensive lab analyses, Solenis wastewater specialists recommended that the refinery switch its existing coagulant to ChargePac 312, a proprietary liquid coagulant product.

Results Achieved

The new coagulant program significantly improved the performance of the refinery's wastewater treatment plant and enabled the refinery to reduce its use of a coagulant by twelvefold. Additionally, sludge was reduced by 8,000 mt/year and an extra 960,000 m³ of water was able to be recycled annually. The health of the biomass in the biological reactors also improved, improving COD removal efficiency and aeration in the biological unit. This enabled the refinery to reduce its energy use by 113,880 kWh/year.



Comparison of Effluent Water Quality

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