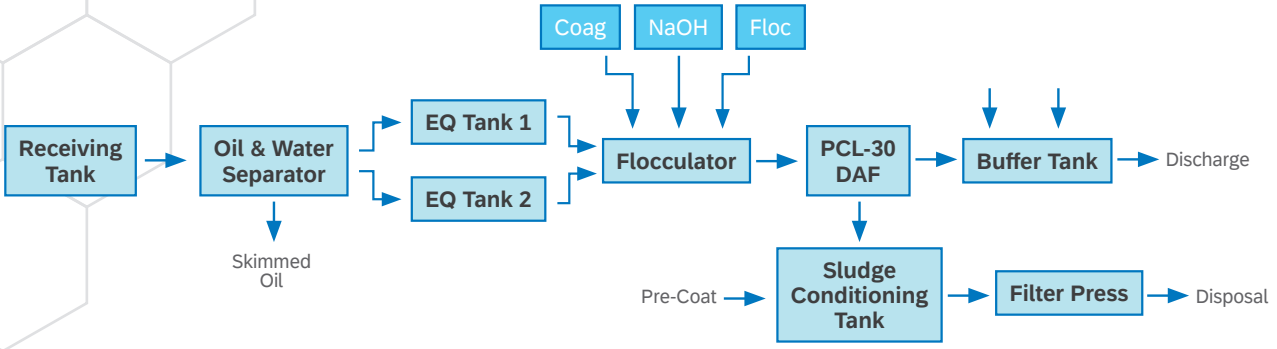
Case Study

WASTEWATER SOLUTION

Manufacturing

A Sulzer Brand



The mining truck axle facility uses various machine oils and lubricants in the manufacturing process. As with many industrial manufacturers, a substantial volume of wastewater is generated from equipment wash-down and production floor sanitation. A large volume also comes from cooling water.

Naturally, the wastewater contains high concentrations of oily materials that have to be removed prior to discharge to the POTW. A dual-stage process was implemented to reduce equipment size and minimize chemical usage in the clarification process. An oil/water separator removes free and mechanically emulsified oils and a plate-pack DAF unit removes colloidal solids and chemically emulsified oils with the aid of a coagulant and flocculant polymer. Some of the treated water is processed through an RO system for reuse in the plant.

	Design Parameters	Discharge Requirements
Flow	50,000 gal in 8 hrs	
TSS	10,800 mg/L	< 300 mg/L
FOG	125,000 mg/L	< 100 mg/L
COD	146,000 mg/L	

Equipment Supplied

50,000 gal EQ Tank (2)
CPI-RS-45 Oil Water Separator
F-6 Flocculator
Chemical Dosing Equipment
PCL-30 DAF System
Electrical & Pneumatic Controls
E-Shaped Maintenance Catwalk

DAF Sizing Calculations

Hydraulic Surface Loading Rate

$$= \frac{\text{Feed Flow + Recycle Flow in gpm}}{\text{Effective Surface Area in sqft}}$$

$$= \frac{104 + 75 \text{ gpm}}{\text{x sqft}} = 1 \text{ gpm/sqft}$$

$$= 180 \text{ sqft required}$$

Solids Loading Rate

$$= \frac{\text{Weight of TSS in feed in lbs/hr}}{\text{Free Surface Area in sqft}}$$

$$= \frac{434 \text{ lbs/hr}}{\text{x sqft}} = 2.5 \text{ lbs/sqft/hr}$$

$$= 172 \text{ sqft required}$$