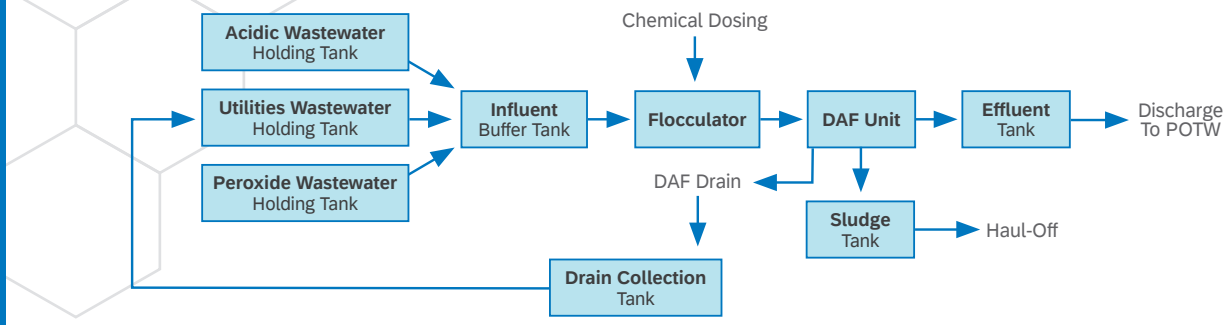
Case Study

WASTEWATER SOLUTION

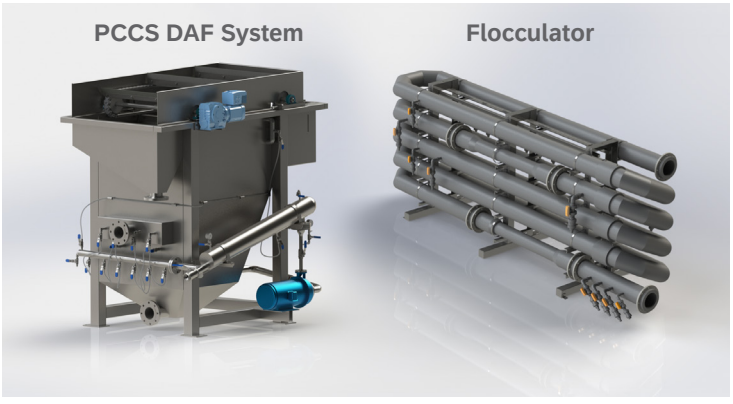
Semiconductor Parts Cleaning

FRC
A Sulzer Brand



FRC Systems designed a compact wastewater treatment solution for a semiconductor parts-cleaning facility managing a variable 25 GPM stream. The process starts with targeted chemical conditioning in the flocculator—precise dosing of acid, caustic, coagulant, and polymer to stabilize pH and precipitate dissolved and dispersed contaminants into fast-separating solids. Because the acid line included aggressive chemistries such as HF, FRC supplied Alloy-20 pumps to handle these materials safely before neutralization. With the water properly primed, the PCCS-25 DAF takes over, delivering high-clarity separation via an efficient whitewater aeration design, stainless-steel construction, and a top-skimmer that removes ultrafine particulate and metal-laden solids.

The system maintains steady performance despite the shifting chemistry typical of semiconductor cleaning. Automated controls, reliable instrumentation, and well-engineered mixing and aeration cut down on operator oversight while improving water clarity. Facilities can expand capability with optional add-ons such as a sludge-dewatering filter press, DAF cover, catwalk, or standby pumps. Engineering support, commissioning, and operator training are available to support both installation and long-term operation.



	Design Parameters	Discharge Requirements
Flow	25 GPM	----
Metals	842 mg/L	< 2.80 mg/L
pH	1.0 - 3.0	5.0 - 11.5

Equipment Supplied

PCCS-25 DAF System with Cover
F-1.5 Flocculator System
Holding Tanks
Pumps (Alloy 20)

DAF Sizing Calculations

Hydraulic Surface Loading Rate

$$HSLR = \frac{\text{Feed Flow + Recycle Flow}}{\text{Effective Surface Area}}$$

$$= \frac{25\ gpm + 8\ gpm}{35\ ft^2}$$

$$= 0.943\ \frac{gpm}{ft^2}$$

Solids Loading Rate

$$SLR = \frac{\text{Feed Flow} \bullet \text{Weight of TSS}}{\text{Free Surface Area}}$$

$$= \frac{1500\ gal/hr \bullet 0.00703\ lb/gal}{8\ ft^2}$$

$$= 1.32\ \frac{lb}{ft^2 \bullet h}$$

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