CeraMem®

ALSYS Group

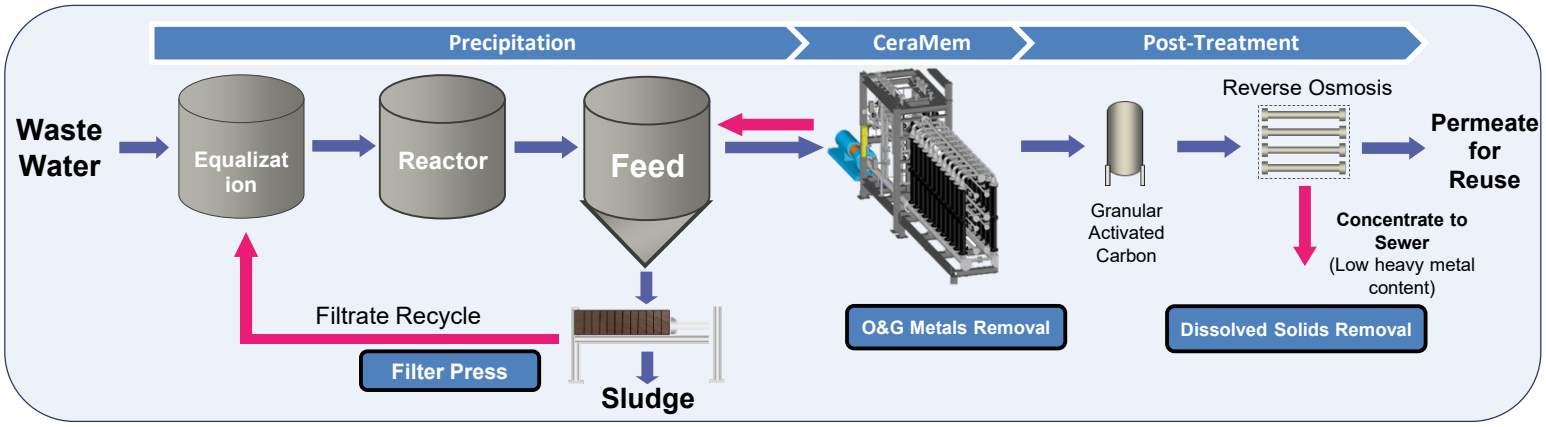
PRIMARY METAL INDUSTRY

Combined removal of Metals, Oil & Grease, and Solids

CeraMem LLC has developed a complete wastewater treatment plant (WWTP) specifically for the metals industry for a simple, effective, and robust process that provides combined solids, metals, and oil & grease removal from wastewater. The process, utilizing CeraMem ceramic membrane technology, reliably produces high-quality effluent that is suitable for reuse or direct disposal.

The key process steps include pre-treatment (e.g. for cyanide, chromate, or nickel containing streams), precipitation of the metals, followed by ultrafiltration (UF) and sludge handling. The UF system incorporates a high-efficiency solids recycle step that reduces the quantity of precipitation chemicals required to achieve metals removal.

The CeraMem membrane is intrinsically extremely resistant to varying water quality and harsh chemicals making an ideal equipment to treat Metal finishing waste water.



Key Benefits

- → **Ability to withstand and reject high levels of Oil & Grease**
- → **Constant, reliable permeate quality regardless of upsets**
- → **Compact**
- → **Compatibility with harsh chemicals**
- → **Long lifetime**
- → **Fully automated – Minimum staffing required**
- → **Flexibility to removal a wide range of metals or pollutants: Cr6+, Cr3+, Cyanides, Zn, Ni, Cd, Cu, Ag, Hg, Pb, Mo, etc.**

CASE STUDY

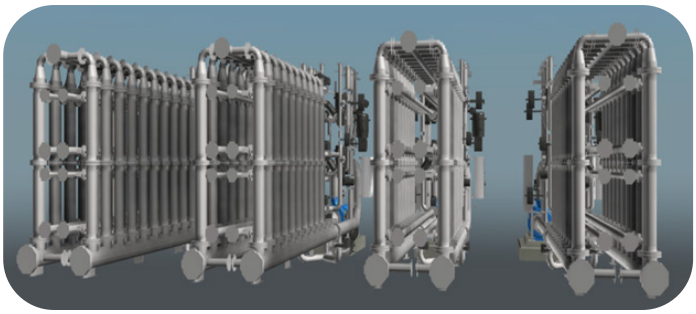
- Location: USA
- Industry: Aerospace
- Application: Combined wastewater reuse
- Design Capacity 1350 gpm
- Cr6+: 25 ppm in feed
  <0.03 ppm in CeraMem permeate
- Operating since 2016
- Reduces facility footprint from 125,000 ft2 to 7200 ft2 — 12x more compact than existing facility on pro-rated basis

WATER & MEMBRANES

Environmental Challenge

Surface coating of steel products is commonly used to extend its service life. Coating with streams rich in chrome, nickel, zinc, and other metals is widely used in the steel industry. These coating processes present an environmental challenge in that residual metals, both from coating processes as well as from uncoated steel surfaces, combined with oils from uncoated steel surfaces find their way into process wastewaters

These challenges also exist in the semiconductor, mining, and other industries involving the presence of oils and metals in subsequent waste streams. These heavy metals and oils must be removed from the wastewaters to a very low level prior to disposal or water reuse. Conventional methods to solve this problem rely on gravity and traditional separation approaches that may not achieve the removal efficiency required for water discharge limits or reuse



Left to right: Feed, concentrate and permeate

Contacts :
Europe: +33 (0)4 66 85 95 36
North America: +1 857 504 2250
Asia: +86 (0)21 6350 3377

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CeraMem@alsys-group.com
www.alsys-group.com