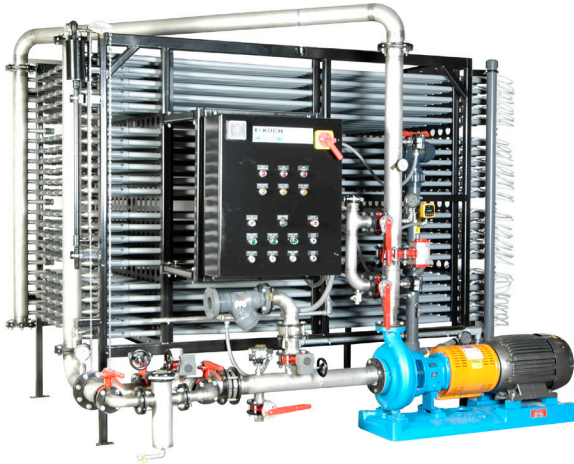




BUSINESS UNIT: INDUSTRIAL WATER &  
WASTEWATER TREATMENT



**KONSOLIDATOR™**

**Family of Tubular Systems**

Used with FEG™ Plus or ULTRA-COR® ultrafiltration membranes, KONSOLIDATOR systems are specially designed for wastewater with high solids concentration or fibrous material.

# Application of Ultrafiltration to Aqueous Cleaner Baths

## Overview

Ultrafiltration (UF) membranes provide an efficient, compact way to treat industrial wastewater to make it pure enough for a variety of applications. Water is treated to meet stringent discharge regulations and is often clean enough for reuse within the factory, a safe, economical alternative to disposal. UF technology is also successful in the treatment, recovery, and recycling of aqueous cleaner baths used in industrial environments. UF membrane systems are well suited for concentrating and removing the oils, greases, and solids that bind to and contaminate the aqueous bath used in heavy duty applications.

## The Challenge

Provide a cost-effective method of extending the life of aqueous cleaner baths used in industrial wastewater treatment.

## The Solution

The treatment of aqueous cleaner baths with membrane technology significantly increases bath life and reduces waste and chemical usage costs. Bath quality and the resulting production yields remain consistently high.

True solutions, i.e. aqueous cleaner, will not be retained by a UF membrane and so will be the same concentration on both sides of the membrane. Surfactants, emulsifiers, and detergents are of low enough molecular weight to pass freely through a UF membrane. Waste components are non-dissolved and will be retained by the UF membrane.

Tubular UF membranes have an open channel configuration capable of handling extremely high suspended loads. They are well-suited for applications in heavy industrial wastes including oily wastewaters.

FEG™ PLUS tubular membranes are

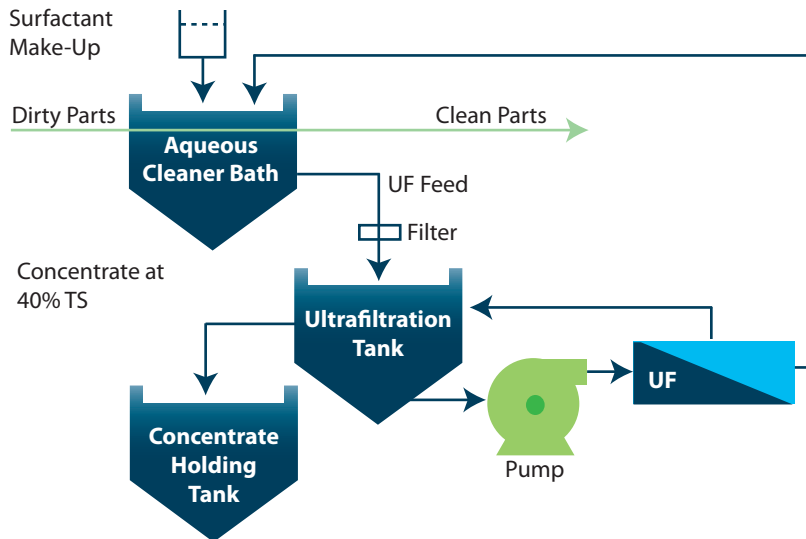
designed to optimize performance in terms of cleanability, energy efficiency, and maximum solids concentrate. This membrane is capable of repeatedly concentrating oils, greases, and solids to concentrations as high as 60% while producing clear stable permeate that is recycled to the bath.

## Customer Benefits

- Extended bath life
- Reduced waste and operating costs
- Consistent bath quality
- Increased bath efficiency
- Reduced costs on downstream effluent treatment processes

## APPLICATION BULLETIN AQUEOUS CLEANER BATHS

### Membrane System in Kidney Operation



### Maximizing Product Yield

The FEG PLUS UF membrane acts as a kidney on aqueous cleaner baths. As parts are cleaned, the dirt and oils removed remain in the bath with the cleaner. These contaminants are bound in a chemically stable form—an ideal feed for tangential flow membrane separation. As the contaminated bath is fed to the UF system, the system retains and concentrates the oil emulsion, dirt, and suspended solids, taking them out and away from the bath. Permeate, essentially purified cleaner bath at the same temperature and containing valuable chemicals, is returned to the bath.



KMS FEG PLUS  
Ultrafiltration Membrane

### Overview of Product Used

The FEG PLUS is the standard in treating wastewater and concentrating valued solids in applications including:

- Automotive parts manufacturing
- Electronic production
- Food processing
- Industrial laundering
- Latex production
- Metal fabrication and finishing
- Printing industry
- Pulp and paper solids reduction and water recycle
- Surfactant production
- Textile processes
- Chemical Processing Industry (CPI)
- Transportation and bulk transport
- Minerals processing industries
- Parts cleaner recovery

### FEG PLUS Recovery of Cleaner Solution Benefits

- Point Source Waste Treatment
- Reduced City Water Usage
- Water Recovery
- Heat Energy Recovery
- Purified Cleaner Recycle
- Green Technology

### Product Advantages

- High strength, heavy duty industrial applications
- Resists plugging
- Tolerates system upsets
- Mechanically cleaned with spongeballs
- Available with CPVC or SS shell in 10' lengths
- No elastomeric seals
- Available in a neutral and negatively charged chemistry



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