PureULTRA II

Advanced UF Solutions for Water Reuse

Leadership in Filtration

MANN+HUMMEL

Water treatment challenge

As global water challenges intensify, the need for advanced treatment technologies is becoming more important. Water resources remain one of the top environmental concerns worldwide, driving increased efforts in water recycling and reducing freshwater consumption. Deriving **safe, reusable water from wastewater** is complex and requires multiple purification steps.

Ultrafiltration (UF) hollow fiber membranes play a critical role in **advanced water reuse** systems by providing a robust barrier against suspended solids, bacteria, and viruses. They are widely used in industrial water treatment to ensure consistent water quality for critical processes and deliver high-purity water for demanding industrial operations.

ADVANTAGES OF UF HOLLOW FIBER MEMBRANES

- **Stable water quality:** Removes fine particles and microorganisms, reducing downstream contamination
- **Compact design:** Maximizes surface area within hollow fibers for space-saving installations
- **Operational efficiency:** Supports backwashing and chemical cleaning, minimizing downtime
- **Cost savings:** Reduces chemical usage and extends life of downstream membranes

The key challenges to be addressed with UF are:

WATER REUSE

Reduce freshwater consumption and minimize discharge by recycling water within the process or for external use.

- **Municipal wastewater reuse:** After secondary treatment, producing high-quality water suitable for irrigation
- **Industrial process water reuse:** Supplying treated water for boilers, cooling towers, and cleaning
- **Cooling tower makeup:** Providing recycled water to reduce freshwater demand in cooling systems
- **Potable reuse advanced treatment:** Purifying water for indirect or direct potable water reuse
- **Agricultural irrigation:** Delivering reclaimed water for crop irrigation

MINIMUM- TO ZERO-LIQUID DISCHARGE (MLD/ZLD)

Achieve complete elimination of liquid discharge to meet strict environmental regulations or sustainability targets.

- **Power plants:** Recovering and reusing cooling-tower and boiler-blowdown water
- **Textile industry:** Eliminating liquid discharge from dyeing and finishing processes
- **Chemical and petrochemical plants:** Recovering water and salts from high total dissolved solids (TDS) wastewater
- **Mining operations:** Treating and reusing water from tailings and processing streams
- **Electronics and semiconductors:** Producing ultra-pure recovered water with zero discharge

PureULTRA II hollow fiber UF modules

Solution for cleaner, more sustainable water treatment

WHY PUREULTRA II?

- **Highest filtration area per module:** With a filtration area of 107 m^2 per module, the overall footprint is reduced by 20% compared to standard modules on the market.
- **Superior filtration with advanced UF membranes:** The hydrophilic polyvinylidene fluoride (PVDF) hollow fiber membrane ensures superior removal of suspended solids (<0.1 NTU), bacteria (>Log 6), and viruses (>Log 3).
- **Robust product:** The outside-in flow module design hydraulics with integrated air diffuser enables the module to run reliably at very low pressure (~0.02 MPa/3.0 psi).
- **Stable performance:** An advanced PVDF UF membrane with a 0.025 µm pore size delivers consistent permeate quality while maintaining optimum fluxes across a range of feed water qualities.
- **NSF 61 and 419 certifications:** Modules meet regulatory drinking-water standards through certification to NSF/ANSI 61 and NSF/ANSI 419.

PureULTRA II UF modules deliver exceptional performance across diverse water sources, including:

- Water reuse (both industrial and municipal)
- Minimum- to zero-liquid discharge (MLD/ZLD)
- Tertiary wastewater treatment
- Pre-treatment to reverse osmosis (RO)
- Industrial water treatment
- Surface water treatment

Discover how PureULTRA II can transform your water treatment process.

MODULE SPECIFICATIONS AND OPERATING DATA

Parameter	PHF-60-V	PHF-80-V	PHF-107-V
Membrane and configuration	PVDF hollow fiber		
Membrane area (m^2)	60	80	107
Pore size (µm)	0.025		
Filtrate flow range (m^3/h)	2.4–7.0	2.4–9.6	2.4–12.8
Max feed pressure (bar)	6.4		
pH range	1–12 (operation) 1–13 (cleaning)		
Max feed TSS* (mg/l)	Up to 100 ppm		
Max feed COD* (mg/l)	Up to 60 ppm		

*TSS = total suspended solids; COD = chemical oxygen demand

NOTE: Only the information found in our data sheets is binding. For higher feed TSS, please contact us.

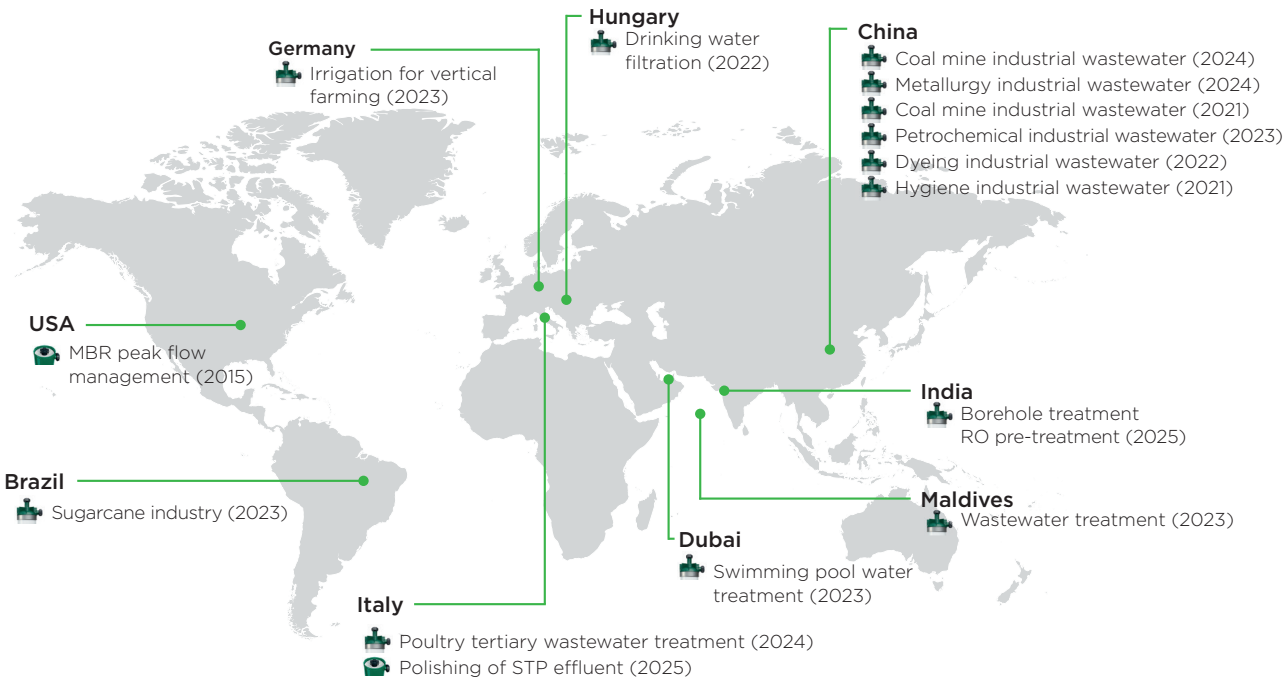
Water Reuse Use case

Project details	
Application	Textile dyeing wastewater
Treatment goal	Water reuse (40,000 m^3/day)
Product	PureULTRA II PHF-80-V
Design	528 modules (N+1) (42,240 m^2)
Commissioned	July 2023
Operational flux	45 LMH

Water quality	Feed water	Permeate water	Unit
TSS	50	<1	mg/L
Conductivity	9,000	<200	µs/cm
COD	120	<10	mg/L

Result: The PureULTRA II module delivered stable operational flux with high COD in the feed water.

Top global UF references



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