AQUANEEL
SEPERATION PVT LTD

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Membrane Filtration System for Milk

* OVERVIEW:

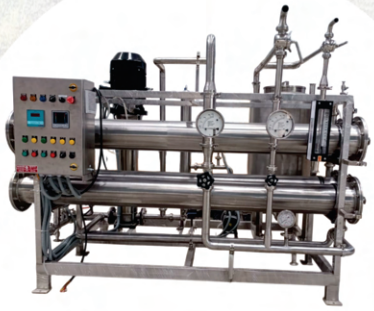
Membrane filtration technology is transforming dairy processing by offering precise, energy-efficient separation of milk components. Using semi-permeable membranes, the system separates products based on molecular size delivering superior quality, improved product consistency, and optimized production efficiency.

* APPLICATIONS IN DAIRY INDUSTRIES:

-Protein concentration for cheese and yogurt production.
-Lactose removal for lactose-free milk.
-Milk concentration to make Mawa/Khoa.
-Water removal to concentrate milk solids for transportation or further processing
-Concentration and purification of whey proteins (WPC/WPI)
-Casein/Whey Separation

* PROCESS TECHNOLOGIES:

=> Microfiltration (MF) – Bacteria/spore removal, Fat standardization, Clarification of whey, Casein separation.
=> Ultrafiltration (UF) – Protein concentration for cheese & yogurt, Whey protein isolate production, Standardized milk protein ratio.
=> Nanofiltration (NF) – Partial demineralization of whey/milk, Lactose reduction, Ash reduction.
=> Reverse Osmosis (RO) – Water removal (milk concentration), Volume reduction for transport, Pre-concentration before drying



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Membrane Type	Micro-Filtration	Ultra-Filtration	Nano-Filtration	Reverse Osmosis
Approx. Pore Size /MWCO	0.1 – 5.0 µm Largest	1,000 – 100,000 Da Medium	200 – 1,000 Da Smaller than UF	< 200 Da Smallest
What It Retains (Retentate)	Casein, Fat globules, bacteria,spores	Fat, Casein, Whey proteins	Divalent & larger salts, lactose, some organics	All dissolved solids (proteins, lactose, salts)
What Passes Through (Permeate)	Whey proteins, Lactose, salts (Ash)	Lactose, minerals	Water, monovalent salts (Na^+, Cl^-)	Only water
Main Uses in Dairy	-Bacteria/spore removal -Fat standardization -Clarification of whey -Casein separation	- Protein concen-tration for cheese & yogurt - Whey protein isolate production - Standardized milk protein ratio	- Partial demineralization of whey/milk - Lactose reduction - Ash reduction	- Water removal (milk concentration) - Volume reduction for transport - Pre-concentration before drying
Key Benefit for Dairy	Safer milk, longer shelf life, quality improvement	Ideal for cheese & yogurt production	-Improves taste, partial demineralization -Increase concentration to make milk product	-Concentrates milk -Reduces transport cost -Increase concentration to make milk product

* SUSTAINABILITY & EFFICIENCY:

-Reduce water usage and energy costs
-Minimize waste and improve yield
-Eco-friendly processing with high recovery rates

* Benefits for Dairy Plants:

- **Superior Product Quality**
  Gentle processing retains natural flavour, nutrition, and functional properties.
- **Higher Yield & Value Recovery**
  Maximizes protein capture and reduces losses in whey streams.
- **Energy Efficient & Environment-Friendly**
  Lower energy use compared to evaporation and thermal processes.
- **Consistent and Hygienic Production**
  Fully CIP-compatible designs ensure smooth operation and reduced downtime.
- **Customizable for Any Dairy Application**
  Modular configurations tailored for milk, paneer, cheese, whey, and specialty products.

* WHY CHOOSE US?

- **40+ years of expertise in membrane technology.**
- **Trusted by leading dairy manufacturers across India.**
- **Custom solutions for small, medium, and large-scale plants.**
- **After-sales support and technical training available.**

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