

AquaCarbon™

Multi-walled Carbon Nanotube Blended Polyvinylidene Fluoride Membranes for Membrane Distillation Desalination Technology

“Desalinate, conserve energy.”

Technology

AquaCarbon™ introduces a high-performance membrane technology designed for membrane distillation desalination. The innovation integrates multi-walled carbon nanotubes (MWCNTs) into polyvinylidene fluoride (PVDF) membranes to create a robust, highly hydrophobic, and porous structure capable of achieving up to 80% water recovery.

Unlike conventional pressure-driven desalination systems, AquaCarbon™ operates at low temperatures and low pressure, resulting in reduced energy consumption and lower operational costs. The unique nanocomposite design minimises membrane fouling and wetting, ensuring long-term operational stability and reducing maintenance and replacement costs.

This technology represents a major advancement in water treatment, offering an efficient and sustainable solution for the desalination of brackish and seawater, particularly in arid or off-grid regions.

Market need

AquaCarbon™ meets the growing demand for sustainable and cost-effective desalination driven by global water scarcity and rising energy costs. Traditional systems are often energy-intensive, prone to fouling, and costly to maintain, limiting their use in remote or resource-constrained areas. By integrating carbon nanotubes into PVDF membranes, AquaCarbon™ offers a low-energy, high-recovery solution with superior fouling resistance and long-term stability, making it ideal for municipal, industrial, agricultural, and off-grid water treatment applications.



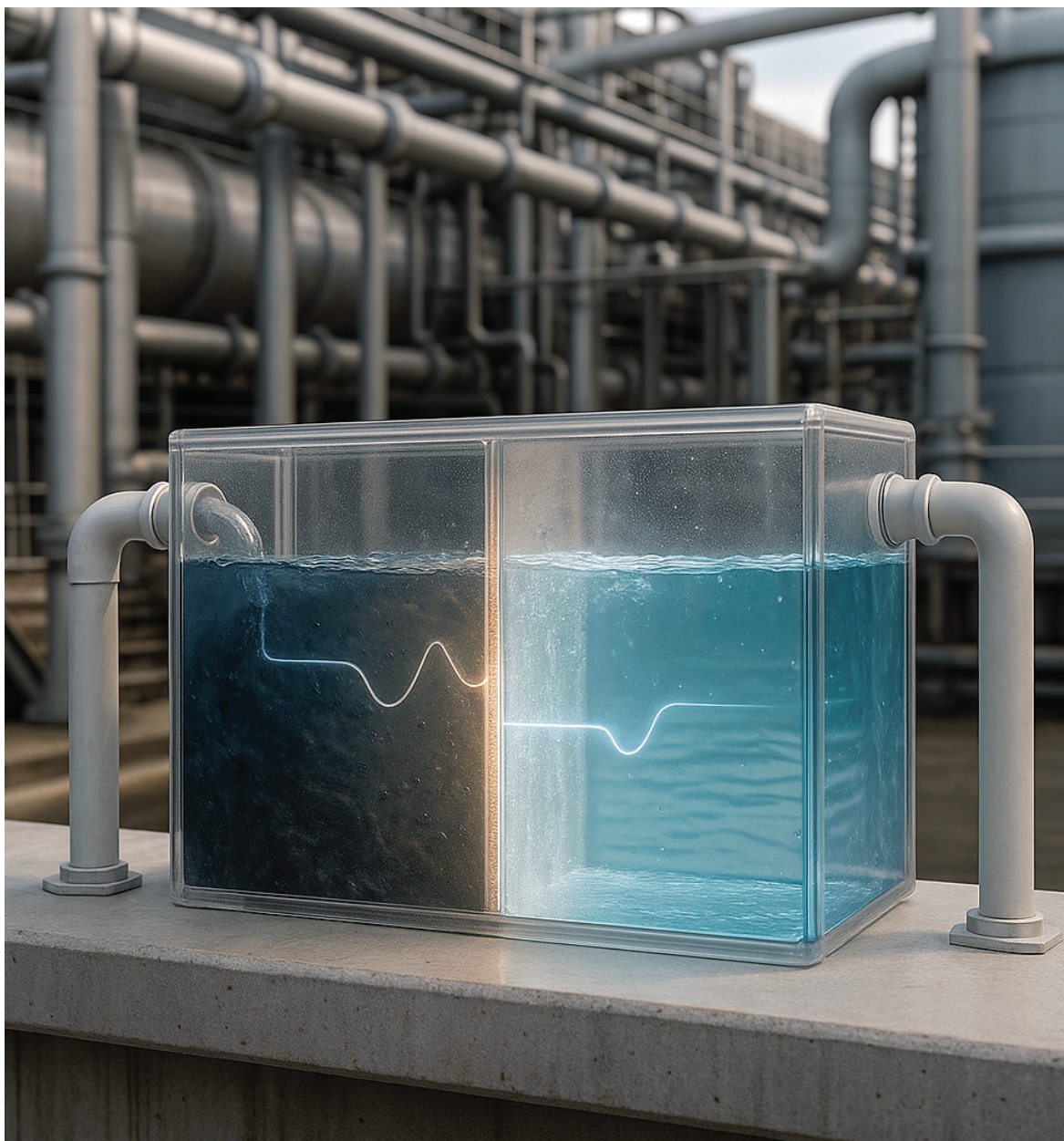
Features

- Membrane with superhydrophobic and superoleophilic mechanisms.
- Membrane is developed using waste-expanded polystyrene.
- Membranes can be used multiple times before being replaced.



Benefits

- Operates at low temperature and pressure, reducing energy use
- Up to 80% water recovery with minimal fouling
- High hydrophobicity and porosity for enhanced performance
- Durable and cost-effective membrane with extended lifespan
- Scalable and compatible with existing desalination systems



Industry

Water

Potential Applications

- Desalination of seawater and brackish water
- Industrial wastewater treatment and reuse
- Off-grid and decentralised water purification systems
- Integration into renewable-powered desalination units

Creators

Edgar Mapunda

Prof Msagati

Prof Mamba

Stage of Development

Prototype

Intellectual Property

Patent Protection

Desired Relationship

Co-development, Investors