

SWMPP

(Spiral Wound Membrane Prediction Program)

Predictive Analytics for Gas Separation Membranes

SWMPP is an advanced membrane simulation and predictive analytics platform that helps operators monitor membrane health, predict performance, and optimize maintenance for gas separation systems.



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Key Features

- Performance Prediction**
Predicts membrane performance under varying operating conditions.
- Membrane Health Monitoring**
Provides continuous assessment of membrane condition and efficiency.
- Degradation Analysis**
Tracks membrane ageing and predicts performance deterioration.
- Maintenance Optimization**
Supports optimized maintenance and replacement planning.
- Plant-Wide Integration**
Integrates membrane models into full process plant simulations.

The Challenges

- Inaccurate Prediction Models**
Conventional tools rely on simplified assumptions that may not reflect actual operations.
- Limited Performance Visibility**
Difficulty in monitoring membrane health and performance in real time.
- Membrane Degradation Uncertainty**
Challenges in identifying ageing and predicting membrane lifespan.
- High Downtime & Operating Costs**
Unexpected shutdowns and off-specification products increase operational expenses.
- Manual & Fragmented Analysis**
Dependence on manual calculations, external specialists, and isolated system assessments.

Market Segmentation

- Natural Gas Processing Facilities**
- Carbon Capture Facilities**
- Gas Separation Plants**
- Petrochemical Processing Facilities**
- Membrane Technology Providers**

Competitive Advantage

- Real-World Operating Simulation**
Models actual plant conditions rather than idealised membrane behaviour.
- Integrated Predictive Intelligence**
Dependence on manual calculations, external specialists, and isolated system assessments.
- Lifecycle Management Capability**
Predicts membrane degradation to optimise maintenance and extend operating life.
- Plant-Wide Process Integration**
Supports seamless integration with commercial process simulation environments.
- Industry 4.0 Ready**
Enables digital operations, predictive maintenance, and data-driven decision-making.

