PuraMem® VOC
Membrane technology for separation of volatile organic compounds
EVONIK IS ONE OF THE WORLD LEADERS IN SPECIALTY CHEMICALS. THE COMPANY IS ACTIVE IN MORE THAN 100 COUNTRIES AROUND THE WORLD. EVONIK GOES FAR BEYOND CHEMISTRY TO CREATE INNOVATIVE, PROFITABLE AND SUSTAINABLE SOLUTIONS FOR CUSTOMERS.

MORE THAN 32,000 EMPLOYEES WORK TOGETHER FOR A COMMON PURPOSE: WE WANT TO IMPROVE LIFE, DAY BY DAY.

With our polymer-based membranes for efficient gas separation and organophilic nanofiltration, SEPURAN® and PuraMem®, we offer high performance solutions for your business.

The brand PuraMem® stands for spiral wound membrane modules with excellent robustness that enable highest purity.

Evonik. Leading beyond Chemistry.
PuraMem® VOC
VALUE CHAIN

EVONIK BUSINESS
Monomer

Polymer

Membrane

Module System

EVONIK TECHNOLOGY SUPPORT
OEM Partner

APPLICATION

CONTENT

Applications
- Optimized processes

PuraMem® VOC
- We boost the Chemistry

How does it work?
- Product Functionality
OPTIMIZED PROCESSES

PuraMem® VOC reduce emissions and increase economic return by recovering organic vapors.
PuraMem® VOC offers a safe and efficient process for natural gas processing with the lowest operating cost of any technology available. The membrane separates Natural Gas Liquids (NGL), water or hydrogen sulfur from Methane, while keeping the Methane at pressure.

Typical applications are:
- NGL separation before gas sweetening
- Fuel gas conditioning to reach optimum Wobbe index
- Reducing flare gas and increasing methane yield

By combining our SEPURAN® NG membrane with a PuraMem® VOC stage, the overall number of membrane cartridges can significantly be reduced.

You can also combine PuraMem® VOC with other technologies. The membrane can for example:
- Reduce temperature for a cryogenic distillation
- Optimize PSA separation by reducing operating and investment cost

For chemical processes, the use of PuraMem® VOC is especially rewarding. You can use it to condition raw material streams for a more efficient process or to recover remaining organic raw materials in your off-gas stream to improve yield and offer high payback.
Main applications are in polymer production such as:
- Polyethylene (PE)
- Polypropylene (PP)
- Polyvinylchloride (PVC)
- Polymethylmetacrylate (PMMA)

But PuraMem® VOC can improve processes in many other applications.

**Emission control and recovery of vapors in tank farm operation**

PuraMem® VOC can help you to reach ambitious VOC emission targets by fully recovering the VOCs which can be fed back to the tanks. This gives membrane technology a significant advantage over the widely used VOC destruction technologies like thermal or catalytic oxidation.

Normally a membrane module and a vacuum pump on the permeate side are sufficient to clean the exhaust stream from your storage tanks of most organic liquids.

**Typical examples include:**
- Gasoline, Diesel, Jet Fuel
- ETBE, MTBE and other types of additives
- Ethanol, Methanol
- Other types of hydrocarbons

But also the combination of a membrane with other technologies offers significant advantages reducing the overall cost of ownership.
WE BOOST THE CHEMISTRY...

... of our high performance polymers to create especially selective and robust membranes, that can withstand extreme pressure and temperatures. The spiral wound module setup stands for a robust, durable and high performing membrane system.
PuraMem® VOC allows bigger VOC molecules to pass through the membrane while holding small molecules back.

This specific effect is perfect for the separation of a small amount VOC from a process stream as the main stream experiences only a small pressure drop.

Did you know?

PURA MEM® VOC is an especially robust, spiral-round module membrane, which is based on Evonik high-performance polymers, optimized for the specific applications. It features a stable performance over long time periods and challenging operating conditions.

Consistently high performance

Flexible diameter

Our membranes have been designed for conventional, membrane-based natural gas processing plants. As plug-in replacement for all standard membranes (7.95 to 8.3”) no further adaptations are required to the existing equipment.
PERMEATE

FEED

VOC involves a membrane and a gas stream that contains at least two components ("feed"). The feed is pushed through the membrane with an applied pressure of up to 25 bar. Due to the specific properties of the membrane, the VOC component passes through the membrane and becomes the "permeate" whereas the concentrate is retained by the membrane ("the retentate").

For initial membrane screening and proof-of-concept testing, the PuraMem® VOC membranes are available in flat sheet format.

PuraMem® VOC

HOW DOES IT WORK?

Our product

PuraMem® VOC | 8” Cartridge
--- | ---
Module materials | Stainless Steel (1.4404/316L & 1.4571) and FKM (Viton) sealing
Trans membrane pressure | 25 bara / 360 psia
| | 80 bara / 1160 psia
Temperature | 0 - 50 °C / 32 - 122 °F

Your benefits

- Reduced operating costs
- Reduced processing time
- Environmentally friendly processing
- Safe process and simple start-up
- Increased product value
- Lower energy consumption
- No auxiliary materials such as water or sorbents required
- No emissions into the environment
- Separation at ambient temperature is possible
- Low space requirements
- Continuous separation process
- Simple, modular setup
- Flexible and easily expanded
- Very high selectivity
- High yields and purity

Functionality

VOC involves a membrane and a gas stream that contains at least two components ("feed"). The feed is pushed through the membrane with an applied pressure of up to 25 bar. Due to the specific properties of the membrane, the VOC component passes through the membrane and becomes the "permeate" whereas the concentrate is retained by the membrane ("the retentate").

For initial membrane screening and proof-of-concept testing, the PuraMem® VOC membranes are available in flat sheet format.
Plug-in replacements for all standard 8" membranes make further adaption unnecessary.
This information and all technical and other advice are based on Evonik’s present knowledge and experience. However, Evonik assumes no liability for such information or advice, including the extent to which such information or advice may relate to third party intellectual property rights. Evonik reserves the right to make any changes to information or advice at any time, without prior or subsequent notice.

EVONIK DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES, WHETHER EXPRESS OR IMPLIED, AND SHALL HAVE NO LIABILITY FOR, MERCHANTABILITY OF THE PRODUCT OR ITS FITNESS FOR A PARTICULAR PURPOSE (EVEN IF EVONIK IS AWARE OF SUCH PURPOSE), OR OTHERWISE. EVONIK SHALL NOT BE RESPONSIBLE FOR CONSEQUENTIAL, INDIRECT OR INCIDENTAL DAMAGES (INCLUDING LOSS OF PROFITS) OF ANY KIND.

It is the customer’s sole responsibility to arrange for inspection and testing of all products by qualified experts. Reference to trade names used by other companies is neither a recommendation nor an endorsement of the corresponding product, and does not imply that similar products could not be used.

* = registered trademark