

**FUJIFILM**  
MEMBRANE TECHNOLOGY

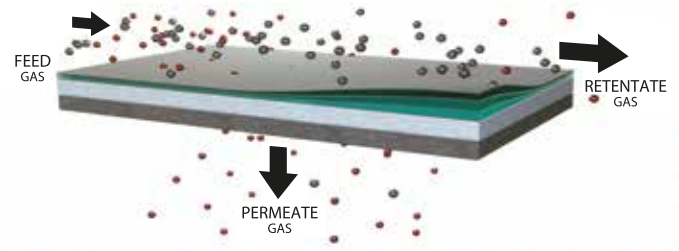
apura

Gas Separation Membrane

# FUJIFILM APURA GAS SEPARATION MEMBRANE

## INTRODUCTION

Based on Fujifilm's outstanding history in organic chemistry, thin film coating- and manufacturing excellence, we have developed a highly functional membrane element. Fujifilm Apura™ has proven itself for treatment of natural gas and distinguishes itself with high performance and robustness against contaminants like water and aromatics.



## APURA™ GAS SEPARATION MEMBRANE ELEMENT FOR NATURAL GAS SWEETENING

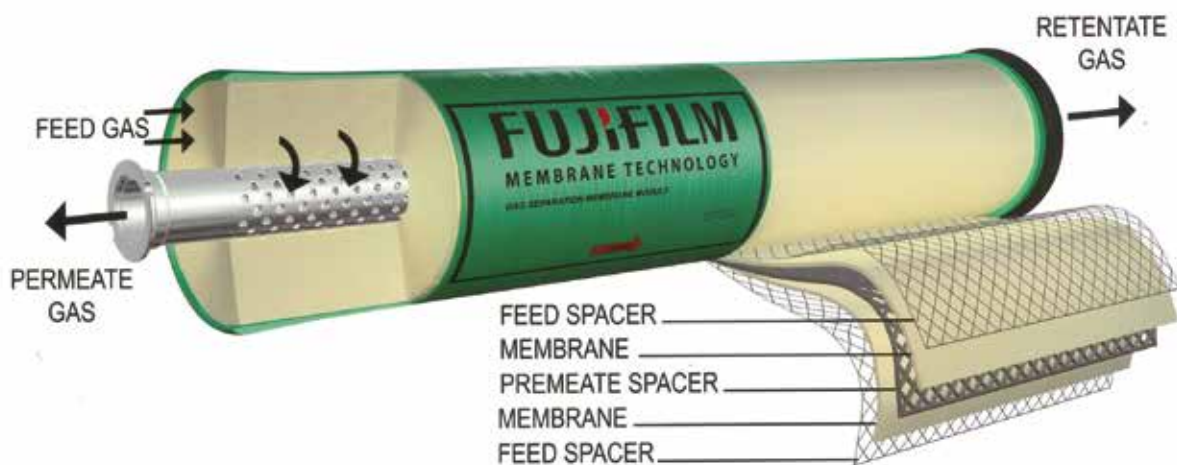
### INTRODUCTION

With Fujifilm's new gas separation element Apura™ our clients are able to sweeten their natural gas in an efficient and cost-effective manner. The elements can be used for bulk and fine removal of acid gas in natural gas processes.

Apura™ gas separation membranes include two products: Apura-1.5XF and Apura-2.0C. Such products are designed to maximize the CO<sub>2</sub> removal capacity and hydrocarbon recovery and can be combined in stages to be able to maximize the overall separation efficiency.

### FUNCTION OF APURA™

Under the influence of pressure, Fujifilm's spiral wound membrane elements (modules) remove CO<sub>2</sub>, and H<sub>2</sub>S and water from a natural gas feed stream. This membrane separation process results in an enhanced caloric product stream (also known as residue) that is low on CO<sub>2</sub>, H<sub>2</sub>S and water, and in a waste stream that is lean in hydrocarbons and rich in CO<sub>2</sub>, H<sub>2</sub>S and water.



## INNOVATIVE TECHNOLOGY

Using our proprietary technology we offer high functional and cost-effective gas sweetening membrane elements with high CO<sub>2</sub> / hydrocarbon selectivity, resulting in lower CAPEX and OPEX for our clients. Fujifilm utilizes multilayer composite membranes, which makes the modules extremely robust towards aromatics and water.

Fujifilm Apura has been proven in different worldwide installations including full replacements of conventional gas separation membrane sites. For more detailed information on Apura™, do not hesitate to contact the Fujifilm Gas Separation Membrane team.

## APURA™ GAS SEPARATION MEMBRANE ELEMENT FOR FUEL GAS CONDITIONING

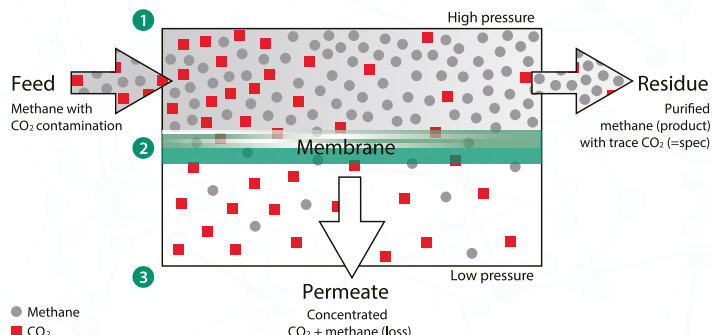
## INNOVATIVE TECHNOLOGY

Using our proprietary technology we offer high functional and cost-effective fuel gas conditioning elements with high hydrocarbon (Ethan+ ) selectivity towards methane, resulting in more efficient plant operation and reduced Volatile Organic Compounds (VOC) emissions which result from combustion of heavy hydrocarbons.

Fujifilm utilizes multilayer composite membranes, which makes the modules extremely robust towards aromatics and water.

## CUSTOMIZED MODULES

Fujifilm's membrane elements fit in the regular 8 and 8¼ inch pressure vessels.



## INTRODUCTION

With Fujifilm's new gas separation element Apura-FG our clients are able to condition their natural gas stream in an efficient and cost-effective manner.

The elements can be used for heavy hydrocarbon (Ethan+ ) and bulk H<sub>2</sub>S removal in fuel gas conditioning processes.

## FUNCTION OF APURA™

Under the influence of pressure, Fujifilm's spiral wound membrane elements (modules) remove heavy hydrocarbons and H<sub>2</sub>S from a natural gas feed stream. This membrane separation process results in a reduced caloric product stream (also known as fuel gas) that is low on high hydrocarbons, H<sub>2</sub>S, and in a waste stream that is rich in hydrocarbons and H<sub>2</sub>S.

Applications of Apura-FG include Wellhead Natural Gas Conditioning, Fuel Gas Conditioning for Gas Engine and Gas Turbine.

# CUSTOMIZED MODULES

Fujifilm's membrane elements fit in the regular 8 and 8¼ inch pressure vessels.

## TECHNICAL SPECIFICATIONS

Pressure range of operation		up to 83 bar
Temperature range of operation		up to 60°C
Removes	CO <sub>2</sub> , H <sub>2</sub> S, H <sub>2</sub> O (Apura 1.5XF, 2.0C)	Ethanes+, H <sub>2</sub> S, H <sub>2</sub> O (Apura-FG)
Performance stability at extremes		
Tolerance to:	HC, BTX, water saturated feed gas	Low flux decline Low plasticization

### Features

Low replacement-maintenance

Small process / footprint No chemicals or solvents

Pressure driven – no energy consuming solvent regeneration

No moving parts

Off grid/ standalone operation

Can be used as hybrid system

Very quick start up and shut down

### Financial / Operational

Lower Capex and Opex of gas processing installation

Higher Production Flexibility & debottlenecking

Improved plant profitability

Better fuel quality and longer engine lifetime (Apura-FG)

### Environmental

Safer and Chemical Free Process

Lower Methane and CO<sub>2</sub> Emissions (Apura 1.5XF, 2.0C)

Lower VOC emissions (Apura-FG)

### Applications

Accelerates development in new and existing gas fields

Enter remote locations more easily (offshore, desert, arctic)

Increase feed range (Higher CO<sub>2</sub> levels, more contaminants)

Examples: Wellhead Natural Gas Conditioning (Onshore/Offshore), Fuel Gas Conditioning for Gas Engine & Gas Turbine (Onshore), Pipeline Conditioning, Acid Gas Removal / Natural Gas Sweetening (Removal of CO<sub>2</sub>, H<sub>2</sub>S), Enhanced Oil Recovery (EOR), Biogas / LFG Upgrading.



# MEMBRANE PRODUCTION

Fujifilm Manufacturing Europe B.V. in Tilburg, The Netherlands produces membranes and modules for water purification and gas separation.

This company site covers 61 hectare and has production plants for:

- Photo Paper
- Offset plates
- Membranes
- Cell culture media

With more than 700 employees this is one of the largest Fujifilm production facilities of photographic and membrane materials.

## R&D MEMBRANE LABORATORY

The Tilburg Research Laboratory is located at the production site of Fujifilm Manufacturing Europe B.V.

Our R&D Centre in Tilburg has an excellent analytical laboratory. This laboratory supports customer and application activities associated to our ion exchange membranes and gas separation membranes.

The laboratory provides fast and secure root cause analysis. For the evaluation of membrane properties and membrane performance, an extensive set of validated test methods is available.



## CONTACT

For enquiries, please contact  
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<https://www.fujifilm.com/us/en/business/industrial-materials/gas-separation-membranes/overview>

[www.fujifilminnovation.eu](http://www.fujifilminnovation.eu)





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