Gas processing

For half a century, the world’s gas producers have turned to TechnipFMC for answers when facing new challenges.
A world leader in the gas sector

“When the world’s gas producers face a new challenge, they come to us. They have been doing so for 50 years”

With more than 50 years of experience, we are a world leader in the conceptual design, engineering, and construction of gas production, transport, processing, liquefaction, and storage facilities and terminals. We create grassroots facilities ranging from small, individual units to massive complexes, built in every sort of environment. We’re also experts at upgrading existing installations.

Comprehensive experience
TechnipFMC’s experience covers every aspect of natural gas production and processing, from field development and distribution pipelines to process plants for gas sweetening and sulfur production, liquefaction, and Natural Gas Liquids (NGL) recovery. Our long-term involvement in the overall gas monetization chain equips us to develop fully optimized and integrated gas processing plants.
TechnipFMC covers all segments of the natural gas industry

Production

GTL

Offshore LNG

Pipelines and compression stations

Sweetening

Sulphur recovery

LNG receiving terminals

Liquefaction

Dehydration

NGL extraction and fractionation
Sweetening

We have designed more than 50 plants to remove carbon dioxide and sulfur components from natural gas using chemical or physical solvents. The total installed capacity of these facilities is about 20 BSCFD (190 BCM), with the largest single-unit capacity at around 1.5 BSCFD. The acid gas content (H₂S + CO₂) of gases treated ranges from a few ppm to 60%.

We design gas purification plants using generic, open-art solvents and proprietary formulations such as UCARSOL (Dow Chemicals) and GAS/SPEC (Ineos). TechnipFMC also has access to most licensed technologies including AdvAmine™, HySWEET®, COSweet® or SweetSulf® (Total/Prosernat), OASE® (BASF), Amine Guard™ FS (UOP), and Sulfinol or ADIP technologies (SGS).

We have major references in CO₂ removal on membranes, and we work with the main membrane technology suppliers such as UOP, Cameron, Air Liquide, Porogen, and MTR to provide optimized solutions to our customers. Our experience also covers Natural Gas Liquids (NGL) purification for dehydration and sulfur removal using technologies from UOP, Axens, and Merichem.

Sulfur recovery

With some 80 units producing more than 35,000 t/d, we are the leading engineering contractor in the field of sulfur recovery plants.

TechnipFMC works with all major SRU technology licensors such as Worley Parsons, Black & Veatch, Fluor, AirLiquide-Lurgi, Prosernat, KT-Kinetics Technology, and Jacobs Comprimo. We also provide open-art SRU and TGTU designs, debottlenecking, and troubleshooting services.

We designed the world’s largest single train capacity (2,250 t/d) for Machino-Import at Astrakhan, Russia.
Dehydration and mercury removal

We have extensive experience in gas dehydration units using solid-bed adsorbents (zeolites, silica-gel), glycol dehydration, and hydrate inhibition systems. We also provide mercury removal units and polishing technologies (scavengers and regenerable adsorbents).

TechnipFMC has an installed capacity of more than 30 billion SCFD, with single-unit capacity ranging from 8 million to 1.5 billion SCFD.

Gas-To-Liquids (GTL)

TechnipFMC is a leader in the design and construction of GTL facilities, which convert natural gas to high-quality petroleum products such as naphtha and diesel fuel. These products are sulfur-free and contain no aromatics, and the diesel fuel has a high cetane number.

We built Qatar’s first GTL plant for the QP/Sasol joint venture (Oryx) in Ras Laffan. Completed in 2006 after three years of intense work by our engineering, procurement, and construction teams, it has the highest reactor capacity to date.

Through the acquisition of Stone & Webster Process Technologies, we are the exclusive codeveloper of Sasol Fischer Tropsch reactor technology.
Natural Gas Liquids (NGL) extraction

We have designed and built numerous plants for extraction of ethane and heavier components from natural gas.

Otway Gas Plant
Port Campbell
Australia
(Photo: Courtesy of Woodside)
NGL recovery technology

The Dual Column technology, **CRYOMAX® DCP**, is the most efficient scheme for deep propane recovery (99%+).

The Dual Reflux technology **CRYOMAX® DRE** provides deep ethane recovery up to 99% along with 99% of propane recovery.

**CRYOMAX®** is a family of processes for gas fractionation to recover C2+ and/or C3+ hydrocarbons from natural gas and refinery off-gases. Each **CRYOMAX®** process is adapted to clients’ requirements and optimised for maximum project profitability. Patented schemes are available for enhanced recovery.

The high flexibility ethane recovery process, **CRYOMAX® Flex-e**, allows matching any ethane recovery from low (2%) to high (90%) while maintaining high propane recovery of 99%.

---

**CRYOMAX® - DCP**  
(Dual Column Propane Recovery)  
(US Patents 4,690,702 and 5,114,450)

**CRYOMAX® DRE - Dual Reflux**  
Ethane Recovery  
(US Patent no. 4,689,063)

**CRYOMAX® Flex-e**  
(US Patent no. 7,458,232)
Liquefied Natural Gas (LNG)

TechnipFMC’s experience in natural gas liquefaction dates to the industry’s origins, starting with the design and construction of the world’s first base-load facility at Arzew, Algeria. We have been active in LNG ever since and are among the few major players offering the full range of services, from conceptual study to lump-sum, turnkey projects.

Since 1995, we have been awarded 19 EPC contracts including:

- 22 Mtpa capacity in 6 trains in Nigeria
- 54 Mtpa of production capacity onshore in Qatar and Yemen
- Several mid-scale plants in China
- The world’s first two FLNGs, Shell Prelude and Petronas Satu
- The Yamal LNG project, largest industrial undertaking in Western Siberia

Floating LNG solutions

Our unequaled combined experience in design and construction of liquefaction plants and FPSOs and subsea systems has made TechnipFMC an FLNG leader through three EPIC contracts:

- Shell Prelude FLNG
- Petronas FLNG Satu
- ENi Coral South FLNG
LNG technology

Calling on its lengthy experience as process designer, TechnipFMC offers alternate solutions to improve the profitability of LNG projects.

The **LNG End Flash MLP** increases the production of the LNG train without changing the main refrigeration power.

Installed in several LNG plants, this technology allows for better control of LNG nitrogen content and fuel gas production.

LNG receiving terminals

**TechnipFMC offers the complete range of services for LNG receiving terminals:**

- Conceptual design studies, including terminal siting studies
- Design services for permitting activities
- Front-end engineering and design (FEED) services
- Complete detailed engineering, procurement, and construction capabilities to execute LNG terminals on a lump-sum, turnkey basis

In 2008, TechnipFMC completed the Freeport LNG terminal on the Texas Gulf Coast. It was the first EPC contract for an LNG receiving and regasification terminal completed in the U.S. for more than two decades.