



# Company Brochure

Engineering, Fabrication and Installation



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# We realize the transformation of **challenging ideas** to **unique products**.

FB Group provides customers worldwide with complete modules, process packages, piping systems, sub-sea structures and various types of equipment.

Located near open water facilities we have excellent opportunities for direct shipment to any place in the world.

The FB Group is a young and dynamic organization where flexibility, enthusiasm, quality and good workmanship are combined with a 'no-nonsense' philosophy.

With experienced and well trained personnel we are able to provide unique and high quality products with competitive delivery times to our customers.

Our 'custom made' units include for detailed engineering, project-management, procurement, in-house fabrication and are fully assembled and tested prior to shipment to minimize site construction time, reduce safety risks at site and shorten project execution times.

Interested in how FB Group could contribute to a successful performance of your projects?

Please contact us and we will be pleased to advise you on our capabilities.

Good workmanship creates new technical opportunities.



“

*“Every day using the hands of a surgeon and the genius of an artist. I fuse metal together using electricity and fire to build the world...”*

# About Us

**Everything we do, we believe in. Based on the expertise of our engineers and maximum use of our fabrication capabilities we commit ourselves to challenging goals as set by our customers.**

Our energy and drive derives from our passion for technology and people. We like to be the solution for your technological problem. In this our enthusiasm is the drive in project realization.

Although our approach could be challenging and ambitious, we remain realistic. A no-nonsense and straightforward philosophy fits in our type of business.

We aim to be easy accessible for our clients and we value their input and expertise. We believe in strong customer relationships based on mutual trust and respect.

For each project requirement we try to find a suitable approach and solution whether it has been done before or not. "You name it, we build it..."

We offer a full engineering and project management service. As a young and innovative internationally-oriented Dutch company, we design and fabricate custom-made process packages at our own facilities. You can count on the FB Group to manage your entire project, from the design stage to shipment anywhere in the world.

Where required we take single source responsibility for the complete prefabrication, installation, testing, reinstating and commissioning of the project at your construction site.

FB Group has for many years implemented Quality certification (ISO 9001), Manufacturer Construction Certification (EN 1090) and Welding Certification according to ISO 3834 to ensure we comply to the highest quality standards.

From its offices and workshops located in The Netherlands the FB Group serves clients worldwide. Located in the Industrial Area Dintelmond between Rotterdam and Antwerp, there are excellent opportunities for direct shipment to any place in the world.

"YOU NAME IT, WE BUILD IT..."



# Our Products

“Custom made products: because you need your product to be better than anything else”.

Due to our combined engineering and fabrication capabilities we are able to provide a comprehensive range of products. This makes FB Group a reliable supplier, able to offer tailored and optimized solutions to meet any client specifications and project challenges.

Our product range varies from modular process units, subsea structures to process packages and gas treatment systems. As an independent system integrator FB Group is flexible to use various suppliers which enables us to select the best solution for our client's specific applications and/or specifications.

Included in our portfolio is the supply of specialized equipment such as water treatment units, seal gas panels, filtration units and pressure equipment.

Taking into account our clients specific requirements we deliver high quality products.



## Process Packages

Design and supply of 'custom made' process packages for Chemical and Petrochemical Industry. The process packages are often skid mounted on a structural steel frame and fully assembled and tested prior to shipment to minimize site construction time.



## Subsea Structures

Fabrication, testing and supply of various types of Subsea Structures. Our fabrication projects comprise; project management, procurement, structure and piping fabrication, surface treatment and assembly/ test activities (FAT). We can handle designs of subsea structures for any water depth, climate and installation method, anywhere in the world.



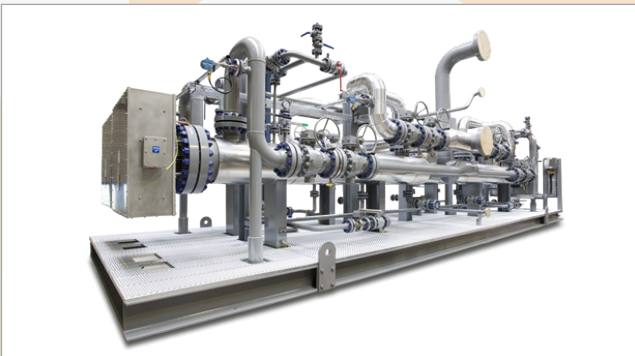
### Modular Plant Design

Modular systems are complete process units, pre-fabricated to the maximum extent possible in our workshop remote from the customer's plant site. Modular systems are typically built in a controlled environment with all of the added efficiencies. This minimizes the amount of work and resources needed by the customer in the field to construct an operational process unit and provides a considerable reduction of safety risks, construction time and overall project costs.



### Flow Metering Systems

Design and in-house fabrication of (Custody/Fiscal) Flow Metering Systems. For both gas and liquid applications and various types of flow meters (Ultrasonic, Turbine, Coriolis etc.) we offer full system responsibility.



### Gas Treatment Systems

Complete packages for the processing and conditioning of natural gas and hydrocarbon liquids. The packages include Fuel Gas Systems and Glycol units together with associated separation, filtration, storage, transfer and auxiliary equipment.



### Pig Launchers and Receivers

FB Group supplied Pipeline Pig Launchers and Receivers are custom engineered products that meet customer, environmental and industry standards. The Pig Launcher and Receiver is built for ease of operation and longevity of service and can be offered with multiple options.





# Process Packages

Skid mounted design philosophy: “Engineered smarter, Built modular”.

**FB Group is specialized in the design, fabrication and installation of skid mounted process packages for a variety of applications. These packages are always specifically designed and fabricated in line with the requirements of our customers.**

Specific know-how has been built-up for many years by supplying hundreds of skid mounted packages world-wide. Skids are assembled in our modern, purpose-built workshop.

Maximum skid sizes are usually determined by transport limitations or plant space.

When required larger packages consist of more than one module.

The modular assembly of process packages includes the installation of:

- Steel structure
- Equipment
- Piping and valves
- Instrumentation
- Cabling and junction boxes
- Insulation

Advantages of skid mounted units are:

- Short delivery time through an integrated fast track execution.
- Low overall investment costs.
- Reduced on-site erection and hook-up time and thus minimal site disruption.
- Manufacture of the complete plant under workshop conditions ensuring the highest quality.
- Completion of the Factory Acceptance Test (FAT) prior to delivery.
- Qualification tests prior to plant delivery.

The packages are designed to seamlessly integrate into new or existing systems with easy to install features such as single connection points for mechanical and electrical connections.

Systems can include components such as vessels, pumps, valves, heat exchangers, control panels, complete instrumentation and other accessories. From simple pumping stations to complex automation, every system is custom fabricated to meet individual customer requirements.

We offer systems that utilize advanced PLC based control systems with custom programmed state of the art software that can be fully integrated into your network.

Certified control panels can be provided for use in hazardous area locations.

To learn more about our skid mounted process systems please contact our offices.





*We would like to welcome you to our offices to discuss the opportunities for your project.*

# Subsea Structures

**The offshore industry is experiencing a continuous move into deeper waters, more remote and hostile environments and more complex field developments. This trend presents new challenges which are being met through innovative technology.**

Our expertise is in the detailed engineering, qualification, fabrication and testing of tailor-made subsea structures fully in compliance with the highest level of client's specifications and international standards.

Manifolds are the key building blocks for subsea infrastructure, connecting wells to export pipelines and risers, and onwards to receiving floater, platforms and onshore facilities. Subsea manifolds are used to merge the flow from multiple subsea wells for transfer into production flowlines and to manage distribution of injected water, gas and chemicals.

In an environment that is both harsh and fragile, key challenges for these technologies are long-term reliability and safety – with the flexibility to meet each field's unique characteristics and enable expansion over time.

For these applications we can supply a variety of pipeline integrated structures, such as in-line tees (ILT's), in-line valves (ILV's) and pipeline end terminations (PLET's), but also free-standing structures such as manifolds (PLEM's) and temporary equipment like subsea launchers and receivers, A&R heads and further auxiliary fabricated items.

WE CAN MAKE IT HAPPEN..





*"It always seems impossible until it's done".*

# Modular Plant Design

FB Group is specialized in the design and supply of modular process units. We custom engineer each modular system specifically for its application.

**Modular systems are complete process units, pre-fabricated to the maximum extent possible in our workshop remote from the customer's plant site. Modular systems are mainly built indoors in a controlled, assembly-line fashion with all of the added efficiencies afforded by that practice/procedure. This, in turn, minimizes the amount of work and resources needed by the customer in the field to construct an operational process unit.**

The typical modular system will include equipment like pressure vessels, reactors, heat exchangers, pumps and other types of process equipment, all mounted within structural steel frame. The structural steel frame serves as a shipping support and provides access to the equipment during normal operation and for maintenance purposes. After the process equipment is installed within the structural frame, the piping components, the field instrumentation, and the electrical wiring are completed. It is also typical for items like tracing, thermal insulation, lighting, control system, safety showers and fire protection systems to be installed in the module at the assembly shop. A rigorous testing program is conducted of all these components before shipment to the field. The customer's mechanical specifications, standards and guidelines are followed in every respect, assuring each customer that the system provided will meet all of their expectations.

As a single-source supplier we can provide you with the following services:

- Detailed engineering (piping, vessels, structural, instrumentation, electrical).
- Project management.
- Fabrication of vessels, piping, structural items.
- Complete modular assembly incl. piping, E&I, insulation and or tracing.
- Full automation and control system supply.
- Startup assistance and operator training.
- Continued services and advice.



*What are the advantages to choose for modular construction over conventional field construction?*

Here are some of the most common reasons our customers give:

- Shorter Schedules.
- Modular skid mounted systems construction occurs in parallel with site civil and facilities work in-plant.
- Start-up time is minimized since modules are shipped fully assembled and tested.
- Lower Cost/Lump Sum Bid.
- Construction Proceeds While Waiting for Permits.
- Minimal Plant Site Interruption / Less exposure to safety issues.
- Superior safety.
- High quality assembly & fabrication.
- Reduced resource requirements.
- Single Source Responsibility.



# Flow Metering **Systems**

FB Group has an extensive experience in the design and fabrication of (Custody/Fiscal) Flow Metering Systems.

**For both gas and liquid applications and various types of flow meters (Ultrasonic, Turbine, Coriolis etc.) we offer full system responsibility.**

Our scope includes project management, mechanical and instrument engineering, fabrication, metering cabinets including flow computers and supervisory systems, software programming, certification and integration with clients' control system. For flow meters, flow computers and supervisory systems we are flexible

to use various suppliers, enabling us to select the best solution for our client's specific applications and/or specifications. Flow metering skids are completely manufactured in our own premises and supplied as completely assembled packages with electrical components, instruments and insulation installed and tested.

After delivery of the systems, our engineers are available to provide installation, commissioning, start-up assistance and training where required. Upon request our systems can be supplied with filtration, pressure reduction, flow control and analyzers with enclosures.



# Gas Treatment Systems

Design, fabrications and supply of various process packages for the processing and conditioning of natural gas and hydrocarbon liquids.

**The processes include Glycol Absorption Dehydration and Solid Desiccant Dehydration together with associated separation, filtration, storage, transfer and auxiliary equipment.**

## Glycol Dehydration

Most natural gas producers use Triethylene glycol (TEG) to remove water from the natural gas stream in order to meet the pipeline quality standards. This process is required to prevent hydrates formation at low temperatures or corrosion problems due to the presence of carbon dioxide or hydrogen sulfide (regularly found in natural gas).

Dehydration, or water vapor removal, is accomplished by reducing the inlet water dew point (temperature at which vapor begins to condense into a liquid) to the outlet dew point temperature which will contain a specified amount of water.

Absorption of water vapor in the TEG is the common method. The wet gas is brought into contact with dry glycol in an absorber. Water vapor is absorbed in the glycol and consequently, its dew point reduces. The wet rich glycol then flows from the absorber to a regeneration system in which the entrained gas is separated and fractionated in a column and reboiler. The heating allows boiling off the absorbed water vapor and the water dry lean glycol is cooled (via heat exchange) and pumped back to the absorber.



## Fuel Gas Systems

A Gas Conditioning Skid is designed to pre-treat natural gas and other combustible gasses prior to injecting into a critical process or a Gas Turbine. The skid performs two functions; remove all liquid droplets and solid contaminants from the gas, and adjust the gas pressure and temperature to the injection requirements. Different styles of filter elements can be used in the pressure vessels. The liquid contaminants are collected in a sump and automatically drained from the system for easy operations. Usually electric heaters, controlled by means of thyristor control will be used for temperature adjustment. All of the system components and piping are skid mounted for transport and installation.

The proper removal of moisture and solid particles from the gas prior to critical usages is shown to improve the operation of the rotating equipment. Different levels of automation and controls can be accommodated based on client's specific requirements.

All main items like Fuel Gas Scrubber, Heater vessel and Filter vessels are fabricated in-house with skid frame and piping. A sophisticated (FB developed) Thyristor Control Panel design allows maximum control and flexibility under all operating conditions.







### Mol sieve dehydration units

Mol sieve dehydration units provide an effective means to remove water vapor from a natural gas stream. Achieving cryogenic temperatures (-50°F and less) in natural gas processing requires the inlet gas to be free of water vapor. High water vapor can freeze at low temperature forming hydrates, and these hydrates can be problematic in a cryogenic process. Use of a mol sieve is an effective method to combat this issue.

The mol sieve design usually consists of a silicate compound containing very small pores of precise uniform size. The space between the silicate molecules act as a “trap” for the water vapor as it passes through the silicate.

Basic design consists of two or more identical mol sieve units. In a simple two-unit design, one unit operates in dehydration mode while the other in regeneration mode. Switching from dehydration to regeneration is done by use of automatic switching valves. As the dehydrated unit becomes saturated with water vapor, it is automatically switched to regeneration mode while the regeneration unit becomes active in dehydration mode.



# Pig Launchers & Receivers

**We design and fabricate various types of Pig Launcher and Receivers systems in a variety of materials (carbon steels, stainless steels and duplex) and design pressures up to 2500# rating. Sizes commonly vary between 4" and 52" nominal line size.**

**When required we can supply the pig launchers and receivers skid mounted, complete with associated piping, valves, instruments and interlocking devices..**

Today, more and more pipeline operators are realizing the value of maintaining a regular pigging program. Batching products, displacing liquids from the line or continuously cleaning a line to achieve maximum flow efficiency and to reduce corrosion are some of the benefits.

Whether your operation requires cleaning, batching, displacement or special applications, the success of your pigging program depends a great deal on the system you install to launch and receive the pigs or spheres.

FB Group designs and builds complete, standard launching and receiving systems that offer you many important advantages in the installation and maintenance of a successful pigging operation.

Our standard launching and receiving systems are complete packages. Valves, piping and handling equipment are already assembled and tested, ready to be installed in the field.

Pig launchers / Receivers can be supplied as single standalone equipment but also as skid mounted configuration completely assembled with valves, pig signalers and further accessories.

Each unit is skid-mounted with all the outlets properly sized and located. All has to be done is to provide a site to set it, tie in the main line and the bypass line, and a working system is available. FB launching and receiving equipment functions efficiently and easily as a complete working unit to minimize manpower and time requirements.

When required a 'mobile' assembly can be provided to easily transport the pig launcher/receiver for use on different locations.

We have extensive experience in designing and manufacturing and are capable in supplying various types of launching and receiving systems. This experience is also available for designing and building systems that are custom made for your particular application. Several options are available on our standard units.

We welcome the opportunity to inform you more about our complete launching and receiving systems for pipeline pigging.





# Specialized Equipment

Due to our extensive experience in design and fabrication of skid mounted process packages we can, besides the aforementioned systems, offer a wide range of other packages and specialized equipment like pressure vessels, pig launchers/receivers, flare systems, water treatment packages, seal gas panels, filter skids etc.



## Flare Systems

FB Group has a long lasting experience in supplying various types of flare systems.

We can provide you with the complete process design, sizing, engineering and fabrication of flare systems based on the individual process specifications of our clients, the applicable project specifications and the local site conditions.

Various types of flare stacks like self supporting stacks, guyed, derrick supported, multi stack flares and derrick supported multi retractable flares are included in our scope of supply.

We are also capable of supplying following types of flare tips, both new or replacement: steam injected, sonic, staged flare and air blown. The design includes for process calculations, noise and heat radiation calculations, structural design and foundation loadings.

Where required low noise level flare tips with steam injection for smoke suppression will be supplied. Ignition systems can be supplied with electronic ignition or flame front generation or both.

Again we can act as single source supplier of all auxiliary custom-built equipment such as seal drums, knock-out vessels and molecular seals which are fabricated in our workshops.

## Gas conditioning for combustion

To eliminate emissions of acid gasses, ammonia or nitrogen rich gas streams will be conditioned by using combustion air, natural gas, steam and nitrogen before entering the process burners.

These conditioning processes are typically applied at oil refineries, chemical plants and natural gas processing facilities worldwide.





## Water treatment packages

FB Group has fabricated a large range of water treatment units. These units are applied to treat produced water, oily-rich effluent water or waste water. The following technologies can be selected depending on the location and requirements: coalescing plate separation, cyclonic de-oiling and de-sanding, dissolved air flotation unit, filtration by nutshells.

*We highlight two technologies:*

### Coalescing plate separation

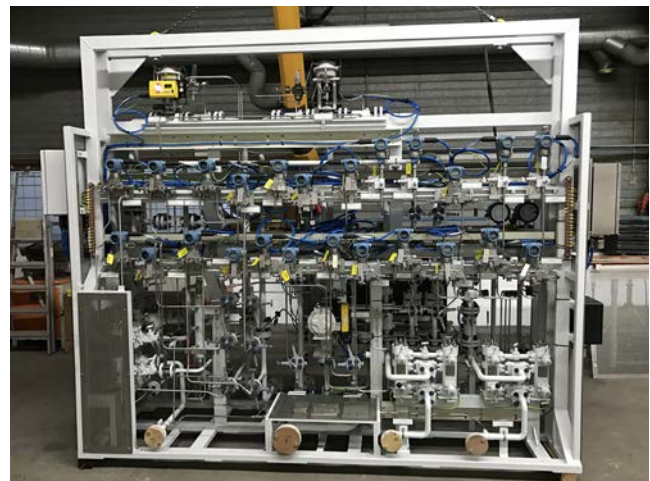
Produced water coming from upstream separators is saturated with dissolved gas, which will partially evolve when it enters the separator vessel. The inlet distributor and inlet section of the vessel are designed to allow this gas to be flashed out, and to reduce turbulences of the incoming liquids. The inlet section contains an inlet distributor and a distribution baffle to evenly distribute the liquids over the cross-sectional area of the vessel. When the water has passed the inlet section, it is treated by a coalescing plate package that enhances the oil/water separation process. The following step consists of a separation compartment that allows the agglomerated oil droplets to float to the oil layer. The oil is skimmed off by an oil weir, designed as a bucket. The water passes underneath the bucket and over a water weir into the water compartment.



### Dissolved air flotation unit

Dissolved air flotation units are designed to remove oil and greases from wastewater streams. Contaminants are removed through the use of a dissolved air-in-water solution produced by injecting air under pressure into a recycle stream of clarified DAF effluent. This recycle stream is then combined and mixed with incoming wastewater in an internal contact chamber where the

dissolved air comes out of solution in the form of micron-sized bubbles that attach to the contaminants. The bubbles and contaminants rise to the surface and form a floating bed of material that is removed by a surface skimmer into an internal hopper for further handling.



### Seal Gas Panels

Gas conditioning is also applied as seal gas for non-contacting gas seals and separation seals. Dry gas seal problems are responsible for many shutdowns of compressors or pumps. To obtain the best service from these systems, it's important to have a quality solution that provides clean, dry, consistent seal gas.

The panel consists of pressure or flow control valves, filters, various instruments to condition, control, and monitor the gas into and out of the dry gas seals. If required a high pressure (gas) leak test can be executed at our facilities. FB Group provides extensive knowledge of industry standards, along with the design and fabrication expertise to ensure that the client requirements for this particular application will be met.

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