



COMMERCIAL PORTFOLIO | ENGLISH

Industrial technology, equipment and solutions

Thermal insulation, process additives, water treatment,
industrial supply and engineering coordination.

Connecting markets. Creating opportunities.

Solutions for industry and energy

FBM Group LLC connects businesses with international suppliers and service partners. We support product sourcing, quotation comparisons, commercial negotiations and the coordination of import, export and logistics operations.

Thermal efficiency

Silica aerogel insulation for hot processes, cryogenic equipment and thermal energy conservation.

Process additives

DAL-994-BIO for the flow and mobility of heavy and extra-heavy crude oil.

Water and wastewater

Scale Zero for scale-management applications and BioAsepsis for organic wastewater treatment.

Industrial equipment

Valves, piping, fittings, static equipment, actuators, fire protection and hot tap / line stop systems.

Instrumentation and control

Control and safety valves, instruments, control systems, cooling towers and heat exchangers.

Engineering and reliability

Partner coordination for EPC projects, fabrication, installation, maintenance and process improvement.

Product names identify third-party technologies. Availability, representation rights, service scope and technical documentation are confirmed during the quotation process.

THERMAL EFFICIENCY

Silica aerogel thermal insulation

Pyrogel®

High-temperature insulation



- Reinforced silica aerogel flexible blanket.
- Reference thicknesses: 5 and 10 mm.
- Service range in the portfolio: -40°C to 650°C.

Cryogel® Z

Cryogenic insulation



- Reinforced silica aerogel flexible blanket with an integrated vapor barrier.
- Reference thicknesses: 5 and 10 mm.
- Service range in the portfolio: -273°C to 90°C.

Product	Application focus
Pyrogel XTE	Corrosion under insulation (CUI) protection.
Pyrogel XTF	Passive fire protection.
Pyrogel HPS	High-temperature performance; reference temperatures of 400°C and 650°C.
Cryogel Z	Cryogenic applications, acoustic attenuation and protection against cold splash; onshore, offshore and marine applications.

Temperature limits, fire performance, required thickness and installation details must be verified against the selected manufacturer data sheet.

THERMAL EFFICIENCY

Insulation features and project economics

Thermal performance

The reference portfolio reports low thermal conductivity and less than 10% thermal-efficiency loss over a 20-year period.

Hydrophobic behavior

Hydrophobic properties support moisture control and CUI mitigation. Correct design and installation remain essential.

Low thickness and weight

Low density and conductivity support thinner insulation designs compared with conventional systems.

Fire performance

The portfolio cites ASTM E84 and fire-protection testing. Confirm the applicable grade and test certificates.

Reuse and storage

Flexible rolls support handling and compact storage. The portfolio reports a 1:7 storage-space ratio and reuse during maintenance.

Lifecycle evaluation

The reference portfolio reports service life over 20 years, a 7:1 benefit/cost ratio over 10 years and payback within 14 months in selected applications.

These are supplier-reported features and reference-project figures, not universal guarantees. Material safety, environmental claims, savings and payback require product documentation and project-specific review.

PROCESS ADDITIVES

DAL-994-BIO crude-oil flow additive

HEAVY AND EXTRA-HEAVY CRUDE OIL

DAL-994-BIO is described as a fluidizing additive and mobility improver for heavy and extra-heavy crude oil. The reference formulation includes organosulfur compounds, glycols and solvents.

The product is intended to modify crude-oil rheology by reducing intermolecular attraction and improving flow during extraction and transportation.

EVALUATION FOCUS

- Crude viscosity and mobility under the actual process conditions.
- Manifold discharge pressure and transportation performance.
- Potential reduction of conventional diluent consumption.
- Compatibility, application method and dosage based on technical assessment.



Technical evaluation

Request the current technical data sheet and safety documentation. Pilot testing should establish performance, dosage and compatibility for the specific crude and operating conditions.

The numerical results on the next page are from an external reference case study; they do not represent an FBM-operated installation or guaranteed project outcomes.

REPORTED FIELD RESULTS

DAL-994-BIO: reference case study

Pilot evaluation at the Petrocededño / PDVSA P4 manifold, assessing diluted-crude flow properties and the potential reduction of naphtha consumption.

Reported metric	Reference result
Manifold discharge pressure	36.1 barg to 18.5 barg
Viscosity at 20°C	18,100 cP to 3,700 cP
Naphtha consumption	Reduction of up to 50%
Dilution ratio	A change in the crude / naphtha ratio was reported.

SAMPLES AT MANIFOLD DISCHARGE AND P2 INLET

Sampling point	Date	Time	API at 60°F	Viscosity (cP)	Condition
External P4 discharge	2023-01-16	15:05	11.9	6,700	Without additive
External P4 discharge	2023-03-22	11:20	12.7	1,325	With additive
External P4 discharge	2023-03-28	23:50	13.1	1,372	With additive
P2 inlet	2023-03-26	14:20	13.3	1,136	With additive
P2 inlet	2023-03-27	16:15	13.6	1,068	With additive

The portfolio compares samples taken about 15 hours apart, 2.8 km downstream of the discharge. Sampling conditions and test methods must be reviewed before extrapolating these figures.



WATER TREATMENT

Scale Zero: water-system scale management

Scale Zero is presented as a corrective and preventive service for maintenance problems associated with mineral scale in industrial water and hydraulic circuits.

The technology uses electronic waves. The supplier describes an effect on calcium and magnesium carbonate crystallization and deposit formation. It is presented as non-invasive, without descaling chemicals, salts or resins, and without a reject-water stream.

OPERATIONAL OBJECTIVES

- Support thermal and hydraulic system performance.
- Reduce scale-related maintenance and production interruptions.
- Evaluate existing deposits and water chemistry before implementation.

DEPOSITS LISTED IN THE REFERENCE PORTFOLIO

Calcium carbonate, magnesium carbonate, calcium sulfate, strontium sulfate, barium sulfate and sodium chloride.

Listed exclusions: ferrous sulfide (FeS), paraffin and asphaltene deposits.

Mechanism and treatment claims are supplier-reported. Performance should be validated in the intended installation.



Industrial water circuits

Suitability depends on the deposit type, water conditions, circuit configuration and supplier assessment.

REPORTED FIELD RESULTS

Scale Zero: reference compressor-cooling case

Implementation example from Magdalena Medio, Colombia. The reference portfolio presents before-and-after images and the following recorded machine temperatures.

Machine	Before (°C)	After (°C)
1	80	79
2	90	85
3	90	82
4	80	78 (before shutdown)
5	80	78
6	90	82
7	80	65
8	75	83
9	70	78
10	70	Not recorded
11	80	82
12	75	80

External reference case reproduced for technical discussion. It is not an FBM customer reference or a guarantee of temperature reduction.



BEFORE TREATMENT



AFTER TREATMENT

Assessment of the reported data

The temperature records show mixed changes across the machines; they should be assessed together with loading, operating conditions, inspection findings and measurement methods.

WASTEWATER & ORGANIC RESIDUES

BioAsepsis: wastewater biostimulation

BioAsepsis is described as a natural liquid biostimulation additive formulated with seaweed extracts, amino acids and vitamins for organic wastewater, septic tanks and wastewater treatment plants.

The supplier describes stimulation of endogenous microorganisms by converting organic matter into nutrients, supporting biological activity, odor control and organic-load treatment.

REPORTED BENEFITS AND INTENDED USES

- Improved wastewater quality and reduced offensive odors.
- Support for septic tanks, wastewater lagoons and treatment-plant availability.
- Reduced ammonia concentration and increased dissolved oxygen.
- Accelerated biosolids composting and reduced insect proliferation.
- Potential reduction of biosolids treatment and transportation costs.



Applications

Hotels, restaurants, commercial facilities, lakes, ponds and streams; organic-waste composting in livestock, poultry, pig farming and aquaculture.

Treatment results, discharge, irrigation or reuse requirements depend on site conditions and applicable standards. Obtain the product data sheet and validate the treatment plan.

PARTNER SERVICES

Reliability and process-improvement coordination

FBM can coordinate access to technical partners for industrial process optimization, maintenance reliability and the assessment of new technologies. The objective is to reduce losses and chronic failure modes with measurable operating indicators.

01

Diagnosis

Review historical operating information and the causes of losses.

02

Improvement opportunities

Use Pareto 80/20 analysis and define the project scope.

03

Solutions

Implement agreed improvement actions with the responsible technical partner.

04

Sustainable results

Monitor key indicators for efficiency, reliability and economic performance.

Project priorities

Production processes, sustainable development, technology selection, energy efficiency, profitability and reduced environmental impact where supported by the project evidence.

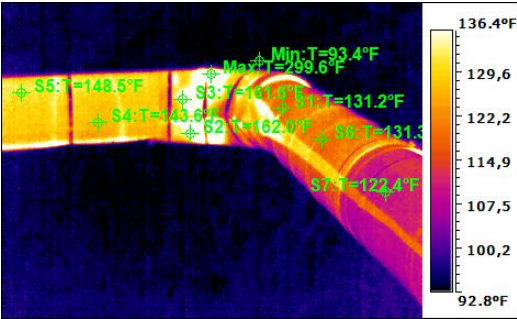
Engineering methods, deliverables, responsible parties and service coverage are agreed for each project.

REFERENCE ENGINEERING STUDY

Pyrogel: thermal-energy conservation case

Reference application: steam-injection piping in an enhanced-oil-recovery field. The source portfolio cites thermography at Jazmín / ASOC NARE on 2016-10-13, 30 days after installation, and a 10-year economic projection.

Input parameter	Reference value
Element	Steam pipe
Pipe diameter / length	8 in / 1 m
Process temperature	285°C
Pyrogel thickness	20 mm
Wind speed	1.1 m/s
Cladding	1.0 mm aluminum
Ambient temperature	27°C



Reported result	Reference value
Bare-pipe heat loss	19,841.8 W/m
Insulated-pipe heat loss	2,495 W/m
Reported heat-loss saving	17,346 W/m
Energy cost	USD 7.50 / MMBtu
10-year gross saving	USD 3,810.79 / m
Investment / net benefit	USD 444.50 / m / USD 3,366.29 / m
Reported cost-to-benefit ratio	1:7.6

Economic values are historical reference figures, not current quotations. Supplier data, calculations, energy prices and project assumptions must be reviewed.

INDUSTRIAL PROJECTS

Engineering, fabrication and EPC support

The portfolio includes Vivot Kwalitaz Alliance, combining Vivot Group in the U.S. Virgin Islands and Kwalitaz Industries with locations listed in Aruba, Bonaire, Statia, Curaçao and Costa Rica.

FBM can coordinate commercial inquiries for partner-led engineering, procurement and construction (EPC), precision equipment fabrication and industrial maintenance, subject to confirmation of project scope and partner availability.

SERVICE CATEGORIES

- Engineering, detailed design and integrated EPC project management.
- Industrial construction and installation.
- Industrial equipment fabrication, assembly and supply.
- Heavy-equipment services and maintenance.
- Turnkey projects for energy, refining, infrastructure and construction.



Tailored project solutions

Technical scope, fabrication location, transport, installation and execution responsibilities are defined in the project proposal.

Reference partner capabilities are not FBM-owned facilities or FBM project credentials. Formal representation and execution arrangements are confirmed case by case.

INDUSTRIAL SUPPLY

Valves, piping and fittings

Product categories in the PIVIEF reference range for oil and gas, upstream, midstream, downstream and offshore applications. FBM supports supplier sourcing and technical-commercial coordination.

VALVE CATEGORIES

- Ball, globe, plug and gate valves.
- Check and control valves.
- Pressure safety valves (PSV).
- RSBV and slab gate products as listed in the reference portfolio.

PVF - PIPING, VALVES AND FITTINGS

Pipes, fittings and valve assemblies for industrial process and utility systems. Material, size, pressure rating, connection type and applicable standards are selected according to project specifications.



Manufacturer, certifications, operating limits and availability are confirmed in the supplier quotation. Product images are references, not proof of stock.

INDUSTRIAL SUPPLY

Equipment and intervention systems

Static equipment

Cartridge filters; nutshell and coalescing units; high-pressure drums; heat exchangers.



Actuators

Pneumatic, gas-oil and electric actuators.



Fire protection

Fire pumps, valves, fittings and devices.



Hot tap & line stop

Systems and equipment for pipeline intervention applications.



Equipment selection, operating procedures, engineering approval, pressure ratings and service scope require supplier documentation and project review.

INDUSTRIAL EQUIPMENT

Instrumentation and control

Supply inquiries and partner coordination for instrumentation, control equipment, engineering and maintenance services.



NORRISEAL WELLMARK

Control, butterfly, relief and safety valves.



FLOWSAFE

Safety relief valves. The reference portfolio cites ASME Section VIII and soft-seat configurations; confirm the applicable certification.



AZBIL

Instrumentation products, control systems, engineering and maintenance support throughout the equipment lifecycle.



MARLEY / SPX

Cooling towers and heat exchangers for industrial process cooling, refrigeration and HVAC.

Third-party brands identify products included in the reference portfolio. Manufacturer authorization, precise models, standards and service coverage are confirmed for each inquiry.

HOW FBM SUPPORTS YOUR PROJECT

From technical need to commercial proposal

01 Define the application

Provide the process, operating conditions, location and the problem to be addressed.

02 Confirm technical requirements

Identify required data sheets, safety documents, standards, material specifications and certifications.

03 Review supply and service options

Compare partner proposals, availability, quantities, lead times and execution responsibilities.

04 Coordinate the operation

Agree packaging, delivery terms, transport, import/export coordination and any required local services.

This portfolio complements the FBM minerals, metals and industrial chemicals catalog. It presents a separate range of industrial technologies, equipment and partner service capabilities.

COMMERCIAL CONTACT

Request a quotation or technical assessment

Tell us which product, technology or equipment your operation needs. Include the application, technical requirements, quantity, delivery location and preferred timing.

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Technical documentation

Ask for current product data sheets, safety documentation, applicable certifications and a proposal tailored to your project.

Commercial coordination

FBM supports sourcing and international trade coordination. Manufacturing and specialized field services are carried out by the responsible supplier or service partner.

ABOUT THIS PORTFOLIO

Adapted from reference supplier materials. Technical features, examples and case-study figures are provided for preliminary evaluation and are not guaranteed results. Images do not imply FBM ownership of facilities, projects or brands. Product names and trademarks belong to their respective owners.

Specifications, availability, distribution rights, certifications, responsibilities and commercial terms must be confirmed in the final proposal. Historical case studies are not FBM customer references.