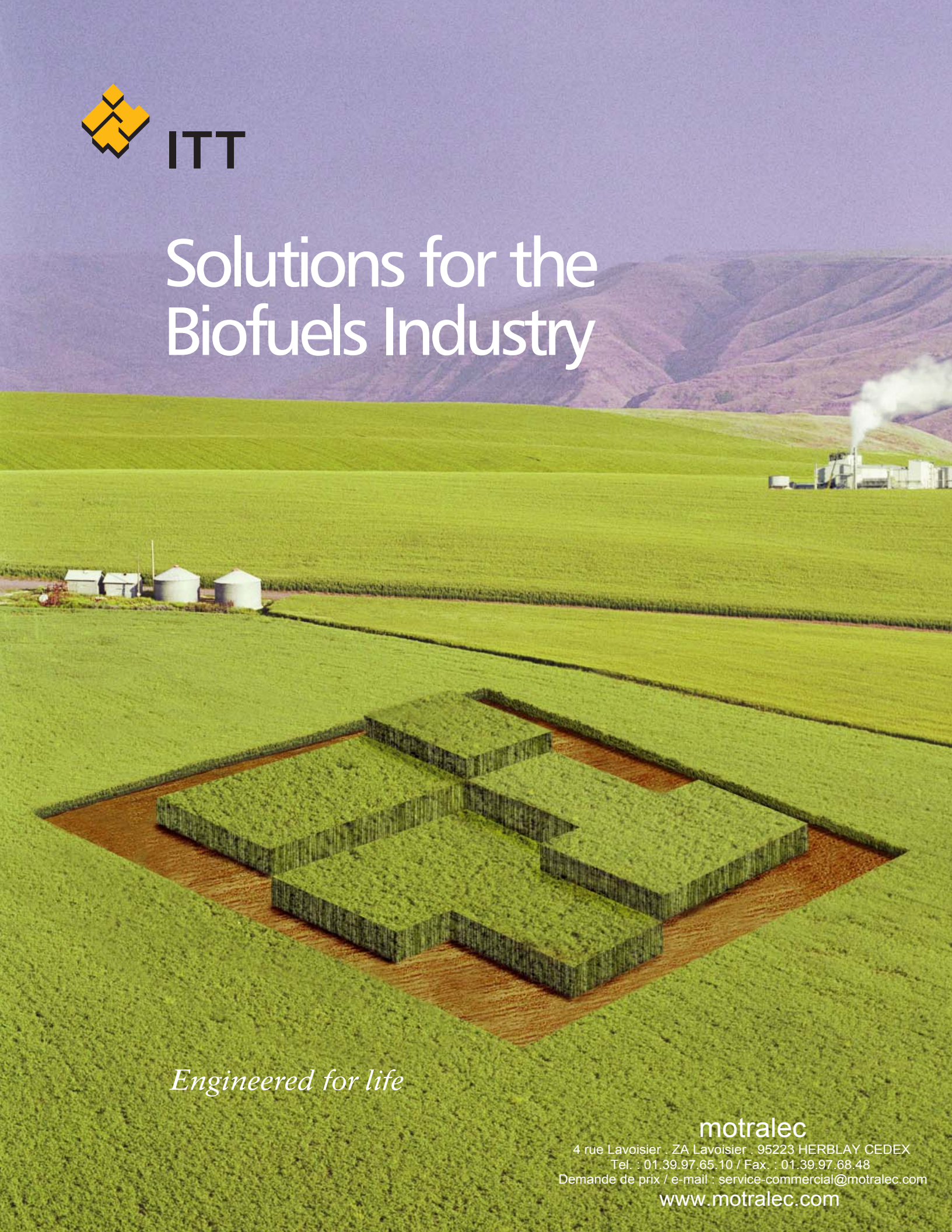




ITT

Solutions for the Biofuels Industry



Engineered for life

motralec

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Industry Leading Solutions

Expertise

For over 150 years, our engineers have worked closely with process plants to develop innovative products and technologies that improve process reliability and optimize the life cycle of equipment. ITT is recognized as a leader in the Biofuels market and has solutions for all fluid applications. ITT not only supplies process pumps but also has best in class offerings in heat exchangers, valves, mixers, controls, monitoring and services aimed at improving your plant's performance.

Reliability

ITT is recognized worldwide for our brands such as Goulds, Flygt, ITT Standard, Fabri-Valve®, Dia-Flo®, PRO Services® and ProSmart®. We have products to meet the process needs of Biofuels customers. The latest foundry and manufacturing technologies, world class engineering capabilities, and demanding quality control processes and procedures ensure the highest quality and innovative products.

Technological Leadership

ITT, the largest pump manufacturer in the world, is synonymous with technological leadership. We invest in research and development to design for reliability, ease of maintenance, safety, and low cost of ownership. ITT has invested heavily to ensure our products will not only perform to the needs of our customer but enhance plant performance. ITT Goulds is industry-acknowledged for the best design impeller design, patented seal chambers, rigid baseplates and severe duty bearings with an onboard condition monitor, giving a visible indication of general pump health.

ITT Flygt's submersible pumps and mixers are known for the highest hydraulic performance, the most reliable mechanical seal system, the best motor for submersible application, and the complete solution for liquid handling.

Customer Focus

ITT's market, product, and service teams create and implement technical, and commercial solutions. ITT provides applications support and technical assistance encompassing reliability, innovation, and global support.

Complete Range of Process Equipment

Process Pumps

ANSI/ISO Process Pumps

(model 3196 i-Series, IC, ICM, 3296 EZMAG)

- Capacities to 7000 GPM (1364 m³/h)
- Heads to 730 feet (223 m)
- Temperatures to 700° F (371° C)
- Solids handling capabilities
- Features i-Series intelligent pump monitoring
- Magnetic drive sealless pumps for mechanical seal or environmental problems

Large End Suction Process Pumps

(model 3180/3185)

- Capacities to 26,000 GPM (6000 m³/h)
- Heads to 410 feet (125 m)
- Temperatures to 446°F (230°C)

Horizontal Split Case, Double Suction Pumps (model 3410)

- Capacities to 8,000 GPM (1817 m³/h)
- Heads to 570 feet (174 m)
- Temperatures to 250°F (177°C)
- Axial and radial balance for long life, low maintenance

Axial Flow (model AF)

- Capacities to 200,000 GPM (45,430 m³/h)
- Heads from 2-30 feet (.60960 - 09.14400 m)
- Temperatures to 600°F (315°C)
- Available in various materials as required by biofuels services
- Tapered bore stuffing box for longest seal life
- Robust bearing frame and shaft for long life on critical, continuous duty services

Pump Options

- Seal flush plans to control emission levels and meet installation requirements
- Explosion proof motors
- Most products available in 316SS, Duplex Stainless Steel and other high alloys
- TaperBorePLUS
- Double mechanical seals

Submersible Agitators

(model SR4600)

- Submersible agitators offer unlimited freedom of positioning and orientation
- In-house designed plug-in shaft seals protect motor from media intrusion
- Up to 40 hp
- Temperatures to 196°F (91°C)



3196 in Ethanol Evaporator Service

Heat Exchangers

Gasketed Plate Heat Exchangers

- Flow rates up to 20,000 GPM
- Over 35 models available
- Seven wide gap models
- Six semi-welded models
- Stainless steel, high alloys and titanium
- ASME code and API

Engineered Shell and Tube

- Shell diameters up to 60 inch
- Tube lengths to 40 feet
- Stainless steel, high alloys and titanium
- ASME code, API and TEMA

Standard Shell and Tube

- Shell diameters up to 8 inch
- Tube lengths to 12 feet
- Brass, steel, and stainless steel
- ASME

Process Valves

ITT Fabri-Valve

- Knife gate valves to 96" diameter (DN2400)
- Pressures to 740 PSI
- Temperatures to 1500° F (816°C)

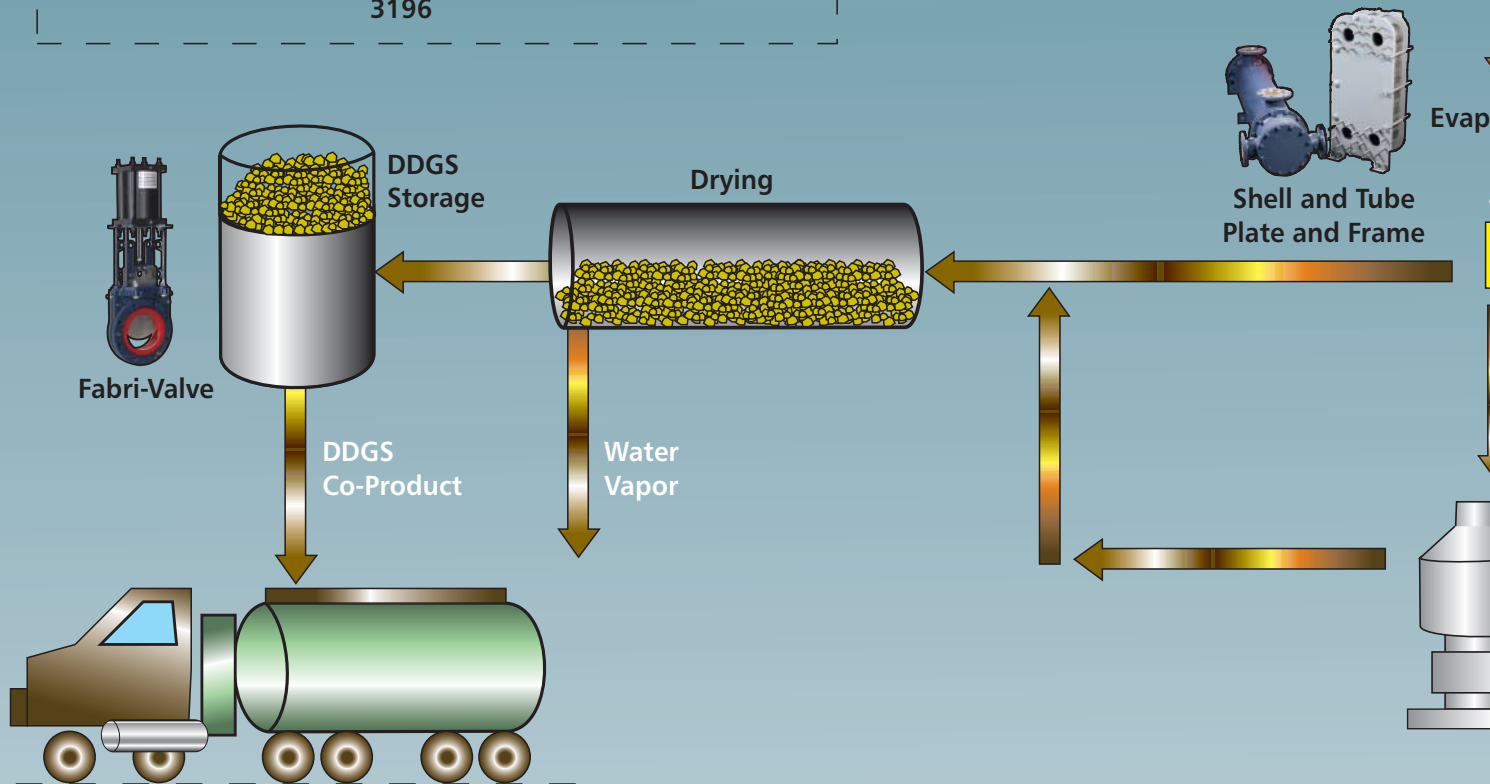
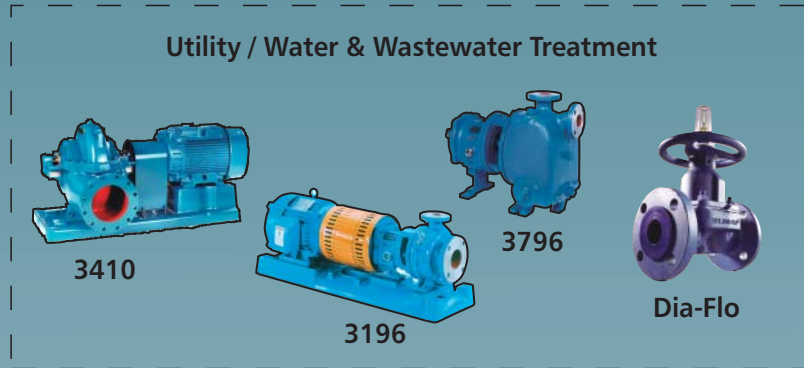
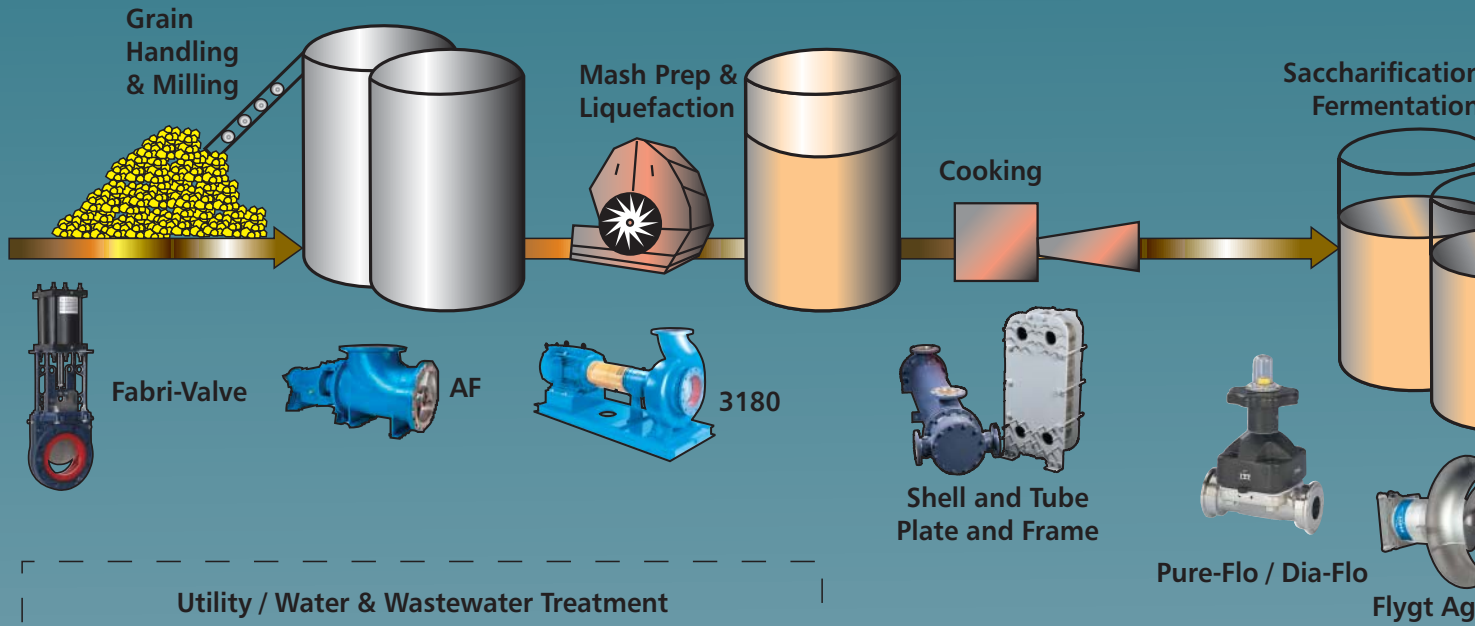
ITT Dia-Flo

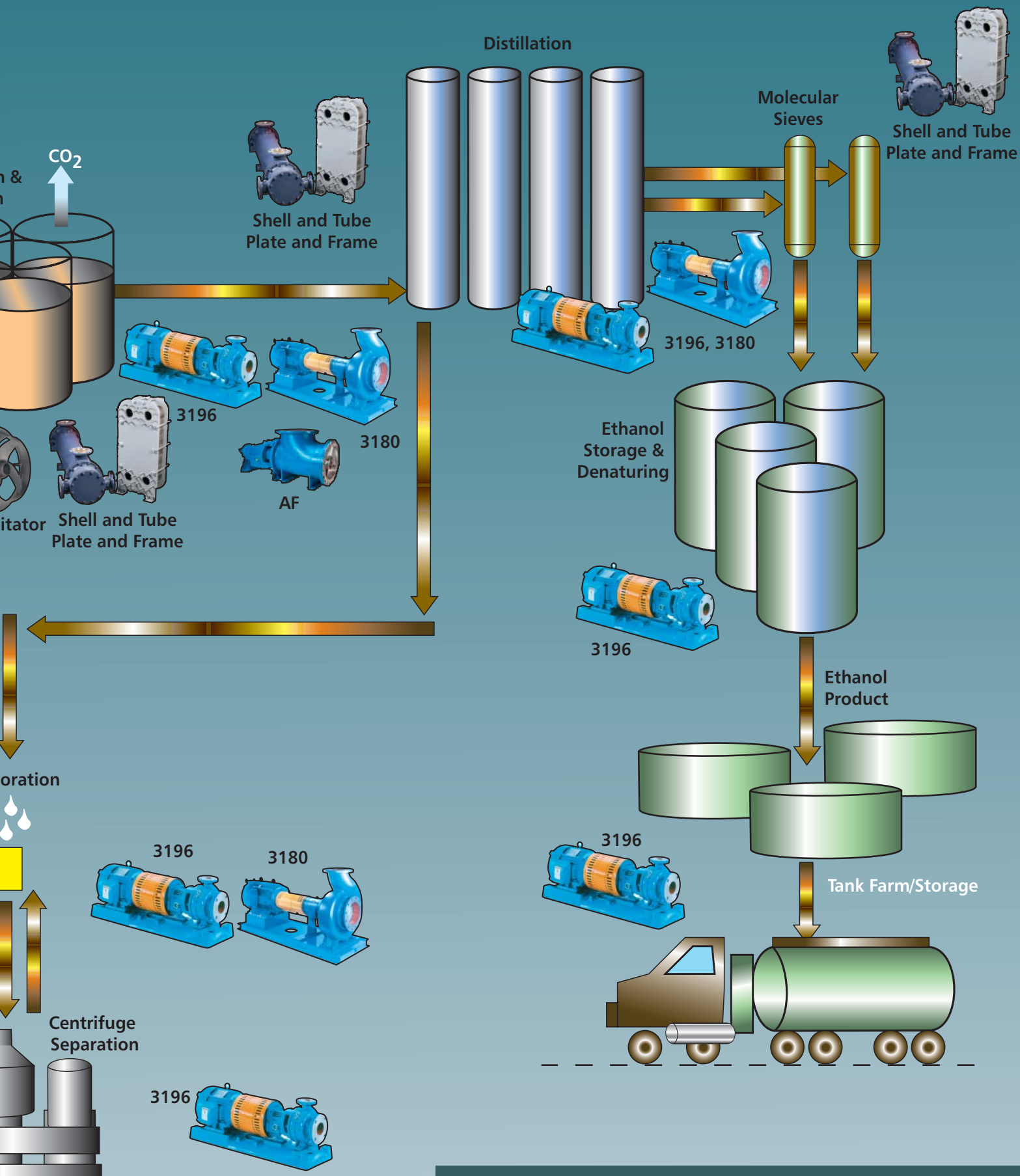
- Diaphragm valves to 12" diameter (DN300)
- Temperatures to 350° F (177°C)
- Full vacuum to 150 PSI
- Stainless and high alloy materials
- Lined bodies available

ITT Pure-Flo

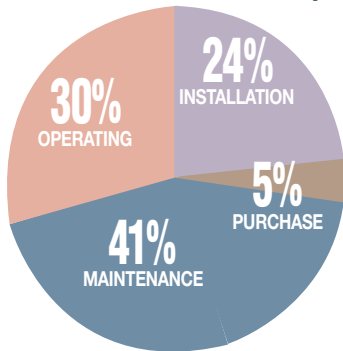
- Hygienic diaphragm valves to 6" diameter (DN150)
- Temperatures to 350° F (177°C)
- Full vacuum to 150 PSI
- Stainless and high alloy materials

Ethanol Process Solutions





Total Cost of Ownership Focus



20 year lifecycle costs. Based on 6000 hr/year. That \$5,000 ANSI pump can cost \$150,000-\$200,000 over 20 years!

ITT recognizes your needs go well beyond the purchase of our equipment. We have developed, and continue to invest in, technologies and services that are focused on your objective - maximizing profits! Plants that use our technologies in their processes typically experience improvements in throughput and reduced operating costs.

Condition Monitor

The heart of the i-Series is the condition monitor unit that continuously measures vibration and temperature at the thrust bearing and automatically indicates when pre-set levels of vibration and temperature have been exceeded. Changes to the process or machine can be made before failure occurs. A visual indication of pump health makes walk-around inspections more efficient and accurate. The result is a more robust process to monitor and maintain your ANSI pumps so that your plant profitability is maximized.

PUMPSMART

PumpSmart® is the latest advancement in pump control and protection to reduce energy consumption, increase uptime, and decrease maintenance cost. It allows the pump to be right-sized to the application by dialing in the speed and torque which increases flow economy, reduces heat and vibration, and improves overall system reliability.

- **Simplified Pump Control** — PumpSmart was designed specifically to optimize pumping applications and can be used to control a single pump or coordinate between multiple pumps without the need for an external controller.
- **Pump Protection** — PumpSmart guarantees to protect the pump from upset conditions with patented sensorless pump protection algorithms.
- **Smart Flow** — PumpSmart features a sensorless flow function for centrifugal pumps that can calculate the flow of the pump within $\pm 5\%$ of the pump rated flow.
- **Drive for the DCS** — While most VFDs can only provide basic information, PumpSmart offers unparalleled insight to the pump operation which allows for smoother process control and efficiency.
- **Pump Experts** — PumpSmart is a variable speed drive with pump specific algorithms imbedded into the drive. With over 150 years of pump knowledge, let the pump experts take responsibility of your pump system.

PROSMART

ProSmart® provides continuous machinery monitoring to identify little problems before they become big problems...like downtime. Using wireless technology, advanced signal processing capabilities, and easy to deploy sensors, ProSmart offers an affordable means to monitor all of your rotating equipment anywhere in the world. By identifying and alerting you to changes in operating conditions, ProSmart increases your time to respond to either correcting the upset condition or properly plan its repair.



Key Features include:

- Continuous data acquisition and analysis – ProSmart collects vibration, temperature, and available process conditions every five seconds, saving you time from routine data collection.
- Automatic notification and accessibility – By alerting when a machine goes into distress, you're able to focus your resources on recovery activities. The ProNet web-hosted solution allows access to information anywhere in the world through a standard internet browser connection.
- Advanced diagnostic tools – More than simple overall data, ProSmart provides advanced analysis capabilities such as time-waveform, spectral, and spectral windowing.
- Easy to deploy – Using plug and play sensors, wireless connectivity, and an industrially hardened enclosure, ProSmart can be easily deployed throughout your plant including hazardous areas.



Repairs and Service



ITT Aftermarket

All equipment requires repair or rebuilding eventually – no matter how well it is designed or maintained. It might also need to be upgraded to the latest specifications. That's where PRO Services® comes in. When your pump, blower, compressor, or any rotating or reciprocating equipment does need service or after-sales support, you can turn to PRO Services with complete confidence.

No other service company can match PRO Services' total customer care. PRO Services also helps customers develop effective maintenance and asset management programs to lower maintenance costs, improve uptime, and reduce inventory costs. Our highly experienced PRO Services team provides:

- Quality service alternatives (repair, rebuild, or re-engineer).
- Equipment maintenance (on or off site).
- Equipment upgrades for older equipment.
- Hydraulic re-rates to run equipment at its designed operating point.
- Equipment and system assessment and troubleshooting using the latest state-of-the-art techniques and instrumentation.
- Systems analysis.
- Scheduled maintenance and plant shutdowns (parts, manpower, and complete turnkey support).
- Rationalize parts inventory and develop reduction options.
- Complete takeover of maintenance at customer's site.

PRO Services provides a totally integrated solution to industry through its network of service centers, bringing a total commitment to quality, service, repair and parts to its customers worldwide.

Parts: Goulds has over one hundred stocking locations worldwide ready to supply replacement parts for your business and a 95,000 sq.ft. distribution center near Memphis, Tennessee.

- 10,000 unique parts in stock
- 98% On-Time Performance for parts
- \$100 million in worldwide inventory
- 24 Hour, 7 days a week, emergency breakdown service

Plant Performance Services

ProActivitySM is a program that identifies and eliminates inefficiencies in pump reliability, energy, and maintenance. It is based upon ITT's unrivaled application knowledge and pump system expertise. And it has been proven time and again to deliver dramatic savings.

ProActivity Results

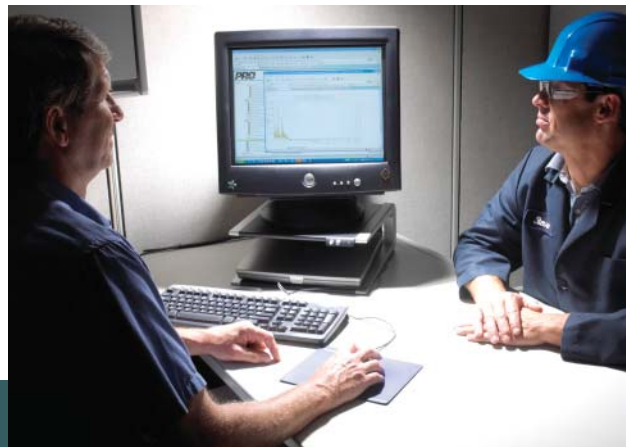
- Extend equipment life
- Reduce maintenance labor cost
- Reduce parts/inventory costs
- Provide technical support to resolve key equipment issues
- Improve quality of repairs
- Reduce turnaround time on equipment repairs

ProActivity Process

ITT has created a three-phase path to full implementation of ProActivity to minimize up-front investment costs and risk to your company.

Phase Description

- **PHASE 1 - Survey**
Determines if ProActivity will generate enough return on investment (ROI) given your plant's environment.
- **PHASE 2 - Assessment**
Creates a detailed road map to optimization for your consideration and approval.
- **PHASE 3 - Implementation**
ITT helps deliver the results.





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