

Process Metering Pumps for the Oil/Gas, Petrochemical and Chemical Industries

ProMinent[®]

For highest levels of reliability in sensitive production processes



Highest Levels of Quality and Safety

You can rely on us!

The oil/gas, petrochemical and chemical industries demand process and safety technology of the highest standard from their equipment suppliers. Productivity, quality and production safety are among the factors that determine a company's success.

We measure our work against these factors and utilise innovative products, industry-specific solutions and services to achieve more efficiency and safety for our customers – worldwide.

With its process metering pumps, ProMinent has been a reliable partner for the oil/gas, petrochemical and chemical industries for many years. As a global company, you can rely on us in every respect: from consultation to the implementation of the package solution and provision of worldwide support.

We can also support you from the outset, in terms of adapting to difficult application conditions. Our complete application-orientated solutions cover all of the process steps: from dosing, through control technology to the storage of inhibitors, drag reducers, additives, and other chemicals.

Worldwide applications experience, plus knowledge and expertise gained in practical applications, combined with the exceptional flexibility of our experts in meeting customer requirements, all ensure a smooth operation. Personal proximity and committed service, global competence and expertise, many years of experience and intensive research and development work – these are the strengths that ProMinent offers the oil/gas, petrochemical and chemical industries.



Safe Complete Solutions for the Oil/Gas and Petrochemical Industries

Customisation and high availability

ProMinent provides tailor-made solutions for almost all dosing applications in the oil/gas and petrochemical industries: from pumps through skids and storage tanks to control equipment – all from a single source. This means that interface problems simply never arise.

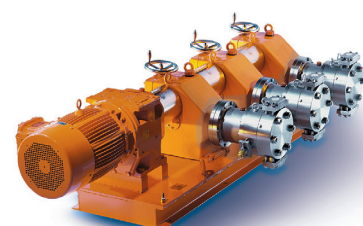
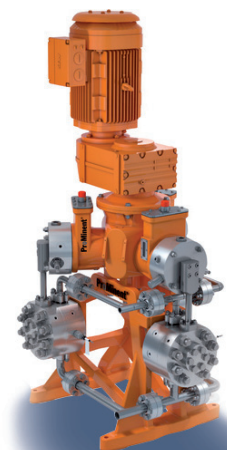
That doesn't just save our customers around the world time and money. It also guarantees them the one thing that really matters in oil and gas handling: the greatest possible availability.

Oil industry

- **Wells:**
dosing of various chemicals/MF, MH pumps
- **Platforms:**
dosing of inhibitors, methanol and additives/MF, MH pumps
- **Transport:**
dosing of inhibitors, drag reducers, etc./all pump types
- **Refineries:**
dosing of inhibitors, additives, catalysts, colourants, etc./all pump types
- **Petrochemicals:**
dosing of various chemicals for support and initiation of chemical and physical processes/all pump types

Gas industry

- **Wells:**
dosing of various chemicals/MF, MH pumps
- **Gas treatment/gas drying:**
dosing of inhibitors, methanol and glycol/MF, MH pumps
- **Transport:**
dosing of inhibitors, methanol, etc. in gas pipelines and removal of residue from LPG tankers/MF, MH pumps
- **Gas storage tanks, mainly underground:**
dosing of methanol, glycol, acids and other chemicals/MF, MH pumps
- **Local distribution:**
natural gas odourisation



Economical Package Solutions for the Chemicals Industry

Efficient, cost-effective and process capable

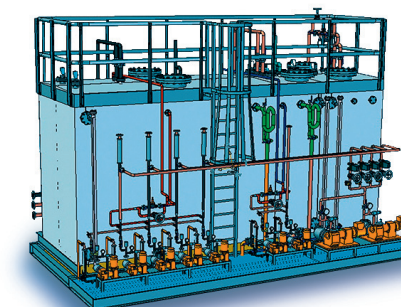
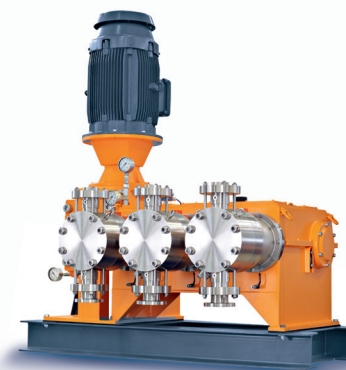
ProMinent offers economical package solutions for the handling of fluids in the chemicals industry. This includes all the processes run through by a chemical in a company: from storing and transferring, to dosing, measuring and controlling and ultimately to waste

water treatment – everything from a single source. With powerful process pumps and metering systems from ProMinent, the process and product quality can be optimised thanks to reliable dosing. At the same time, the specific demands of the chemicals industry

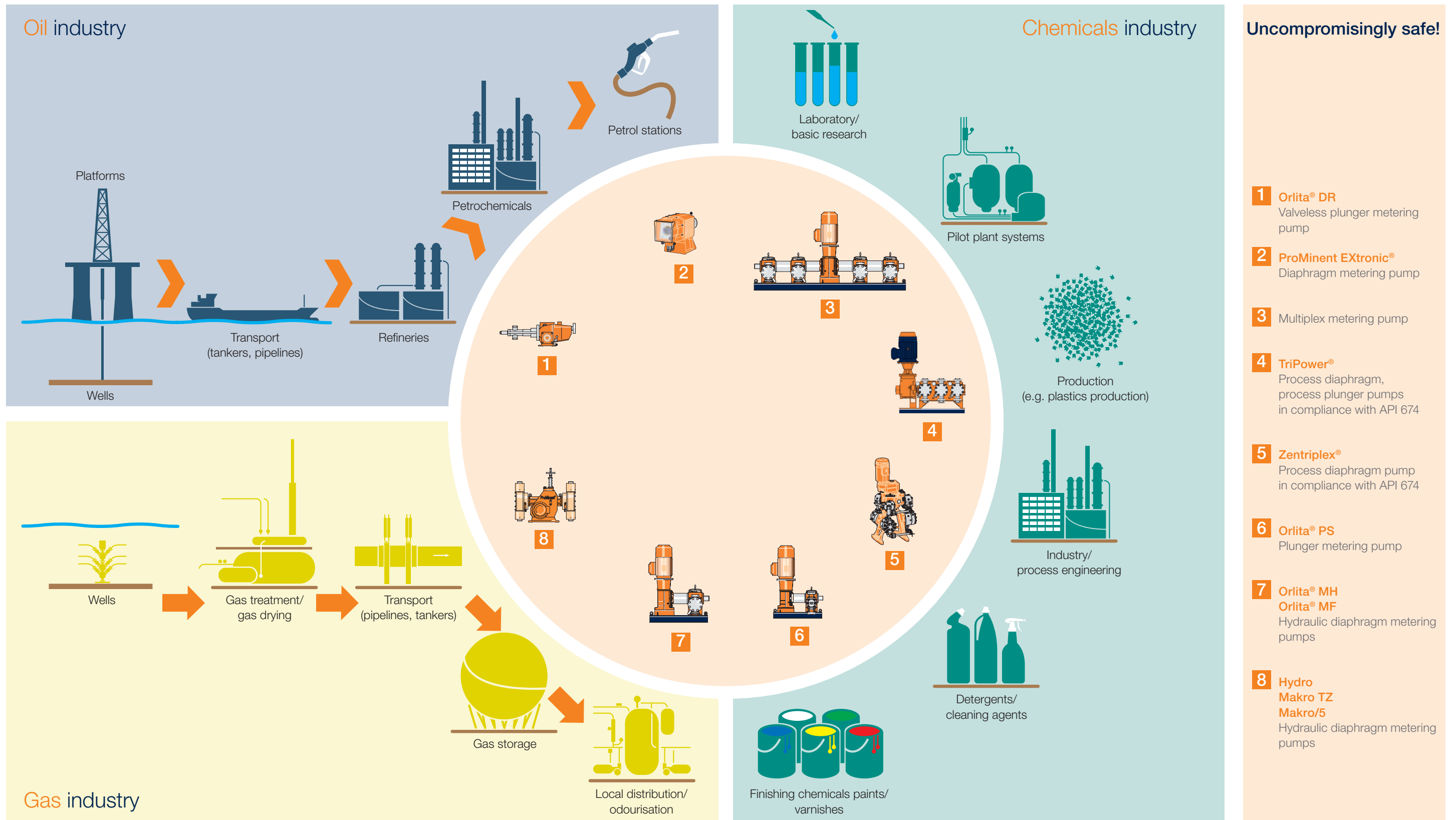
and environmental protection can be met. Process safety during the dosing and transferring of flammable, toxic, solids-containing or highly viscous fluids is guaranteed with a high level of availability.

Chemicals industry

- **Laboratory:**
dosing of smallest quantities (0.03–1 l/h) of heptane at 60 bar. Dosing of water, toluene, and cyclohexane at 500 bar and 0.1–1.0 l/h. Automatically controlled metering of organic solvents in extraction processes, at 100 bar
- **Pilot plant systems:**
dosing of tar and pitch at 100 bar and approx. 400 °C. Dosing of diesel with polyethylene at up to 200 °C and 20 bar
- **Production:**
e.g. plastics production: 6-end mixing pump for 6 different components with a metering quantity of 13–638 l/h at 2 bar. Addition of chemicals during caprolactam production with 40 bar at 160 °C
- **Industry/process engineering:**
dosing of paraffin/amine at increased temperatures with a metering quantity of 1.200 l/h at 10 bar. Delivery and metering of resin at 200 °C. Dosing of H₂O + acetone + phenol
- **Detergents/cleaning agents:**
dosing of soap compounds at 130 °C. Bottling of skin care cream. Bottling of hair shampoo in bulk containers with an output of > 2.000 l/h
- **Finishing chemicals paints/varnishes:**
systems for dosing and mixing of resins, paints, catalysts and hardeners with multiplex pumps. The largest liquid end doses 3.000 l/h, the smallest one approx. 9 l/h



Perfect Solutions for Complex Processes



Specialists for Peak Performance

Process pumps

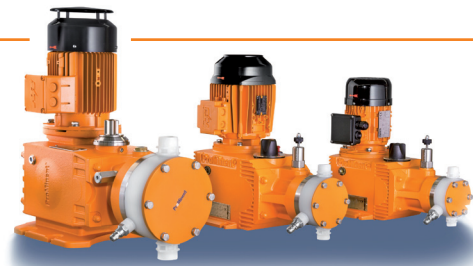
Diaphragm metering pump ProMinent EXtronic®

This product range is approved for the dosing of liquid media in gas-explosive operating sites as well as for firedamp-endangered mining operations pursuant to the new EU EX Directive 94/9/EU (ATEX). Proven dosing heads, either made of plexiglass, polypropylene (PP), PTFE Teflon®, stainless steel, material no. 1.4404, depending on requirements, and SB for flammable media, guarantee the highest possible operating safety.



Hydraulic diaphragm metering pumps Hydro/ 2 / 3 und / 4

The key features of this product range are its high functionality and long life cycle. The Hydro/ 4 expands the existing field of use to considerably higher dosing performances and thus, is the optimal solution for up to 1,400 l/h. The product ranges can be flexibly combined as single-head, double-head and multiplex units. In the standard version equipped with multi-layer diaphragm and integrated relief valve, the metering pumps meet highest safety requirements.



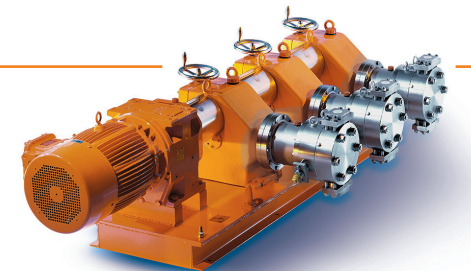
Diaphragm, hydraulic diaphragm plunger metering pumps Makro TZ und Makro/5

The right modular solution for every application, whether it be mechanical diaphragm pumps, high-tech hydraulic diaphragm pumps or extremely robust piston-type pumps. The low-pressure range – up to 10 bar – includes standard dosing head versions in highly chemical resistant-plastics, e.g. PP, PVC, PTFE.



Hydraulic diaphragm metering pumps Orlita® MH/MF

The pumps have a modular design and consist of transmission gearing, crank drive and liquid end unit. In addition, the MF series is designed for highest pressures (up to 3,000 bar). Relief valves protect the pumps against overload. Automatic bleed valves for the hydraulic chamber as well as an integrated rupture indicator complement the features of this product range.



Process metering pump Zentriplex®

The process pump is an oscillating multi-cylinder process diaphragm pump offering high output and high efficiency yet requiring minimal footprint. Due to its completely new design, the pump achieves high pressures and performances with significantly less material and lower driving power yet being very compact and lightweight.



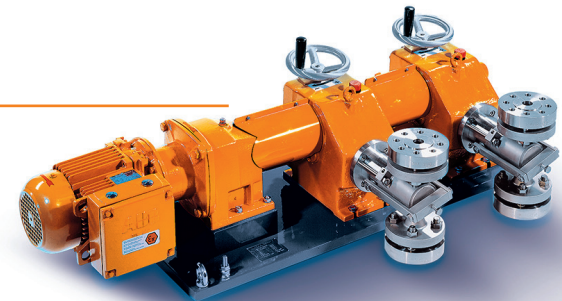
Process diaphragm, process piston pump TriPower®

The process diaphragm pump provides highest performances: Delivers up to 38 m³/m at pressures up to 400 bar. The proven MF liquid end offers optimal safety with a PTFE dual diaphragm system and integrated relief valve. On the other hand the process piston pump TriPower P delivers up to 50 m³/h at pressures up to 1.000 bar.



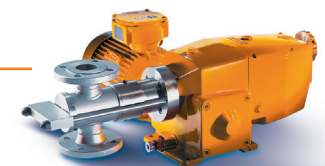
Plunger metering pump Orlita® PS

Key features of the PS range of pumps are their exceptionally high hydraulic efficiency combined with outstanding self-cleaning and low pressure loss. PS pumps can be used in a wide range of temperatures (up to 400 °C) and are easy to maintain, attractively priced and robust.



Valveless plunger metering pump Orlita® DR

Highly accurate dosing of highly to extremely viscous media (up to 1.000.000 mPas). Even liquids with a high solid fraction are no problem for these valveless plunger metering pumps. Products with temperatures of as low as – 40 °C and up to + 400 °C can be pumped with infinite 0–100% capacity adjustment.



Made for the Harshest Industrial Applications

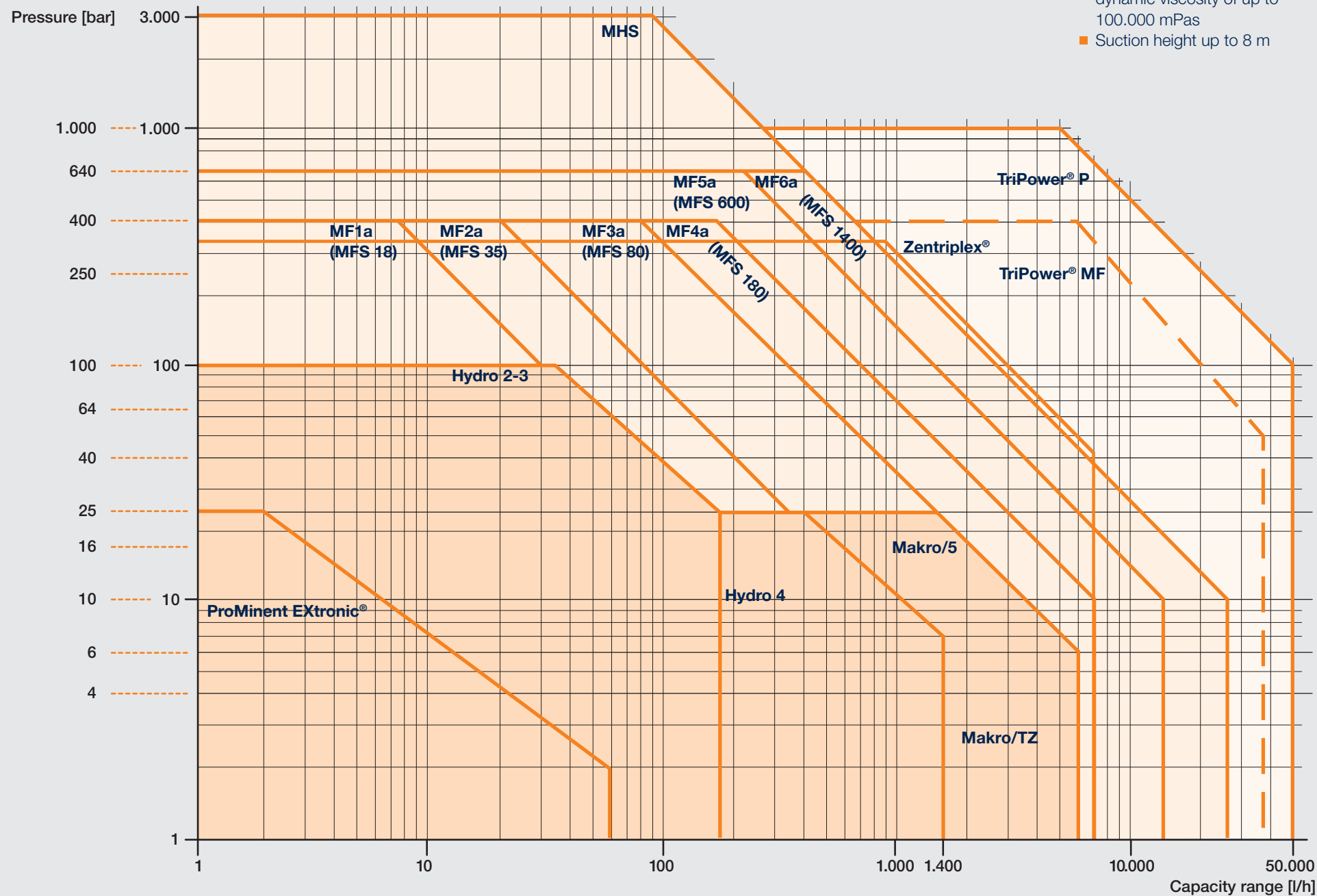
Performance overview of process metering pumps

Process metering pumps from ProMinent prove themselves even under the most arduous conditions. Their robust construction and the applicational flexibility provided by

their performance profile take good care of that. Depending on requirement, they can be adapted to practically any customer specification.

- Excellent safety thanks to PTFE dual diaphragm and integrated relief valve
- Maximum pressure of up to 3.000 bar

- Design according to API 674, API 675, VDMA, ATEX etc.
- Product temperatures from -40 °C to +400 °C
- Special solutions for liquids with a dynamic viscosity of up to 100.000 mPas
- Suction height up to 8 m



Proven Process Safety

Testing of process pumps in compliance with API 675



specific test documents are produced. All of the requisite parameters entered are monitored, analysed and documented by an operating data acquisition system.

Highly accurate performance testing
The test bench from ProMinent is designed to comply with the state of the art. The test bench can be used for performance testing of process pumps with the following motor outputs:

- 0,37 to 90 kW (400 V)
- 5,5 to 160 kW (690 V)

The measuring range for the flow ranges from 20 l/h to 90.000 l/h at an accuracy of 0.1 % of the measured value. High-precision Coriolis flow meters ensure precise and reliable test results at all times.

A brand new, state-of-the-art test bench means that ProMinent is able to carry out tests on process metering pumps in accordance with API 675.

The Heidelberg-based test bench means that pumps can undergo performance testing with high-precision accuracy at maximum volume and maximum operating pressure. A high level of flexibility can be ensured, thanks to the option of parallel testing.

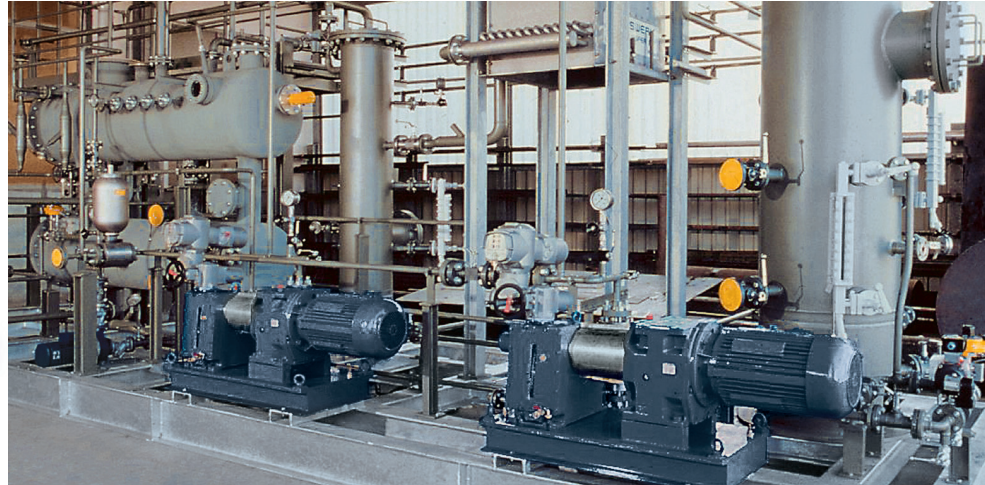
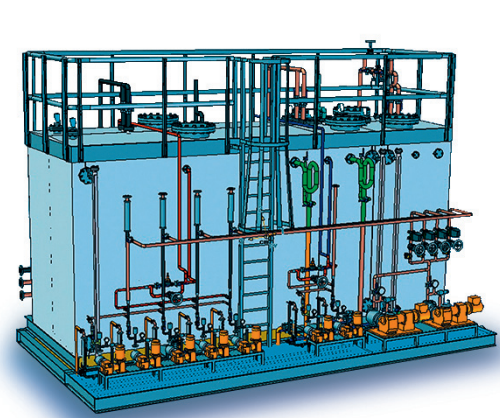
Depending on customer requirements, additional tests can be carried out including pressure testing, performance curves and testing in accordance with API 675 guidelines (American Petroleum Institute guidelines for oscillating displacement pumps for use in the crude oil, chemical and gas industries). Testing of pumps in accordance with API 675 guarantees ultimate process safety when dosing and handling flammable, toxic, solids-laden or highly viscous fluids.

Manufactured throughout from stainless steel 1.4301, the test bench comprises two independently operated test stations. Data is automatically generated for each pump being tested and

Complex water treatment processes ensure a constant quality of water – the basis for reliable test results. The custom-made water treatment system guarantees that the test items are always supplied with a medium of extremely high purity.



Complete Solutions to Customer Requirements



Customer specific dosing systems

ProMinent offers customer-specific, complete and ready-for-operation dosing systems for use in the oil and gas industries. We are able to quickly realise any customer requirement thanks to our own production facilities. We also undertake commissioning on site, if desired. Our spectrum covers everything from simple, decentralised systems through to explosion-proofed systems in accordance with ATEX

regulations with interfaces to process control systems and from proportional flow dosing systems to complex systems with reaction vessels. A broad output range as well as a diverse application of chemicals goes almost without saying. Our range is rounded off with complete dosing systems built in walk-in containers with heating and/or air conditioning systems.

Possible features

- Accommodated in a dosing cabinet
- Panel or frame mounted
- With chemical feed container and collecting pan
- Installed in a container

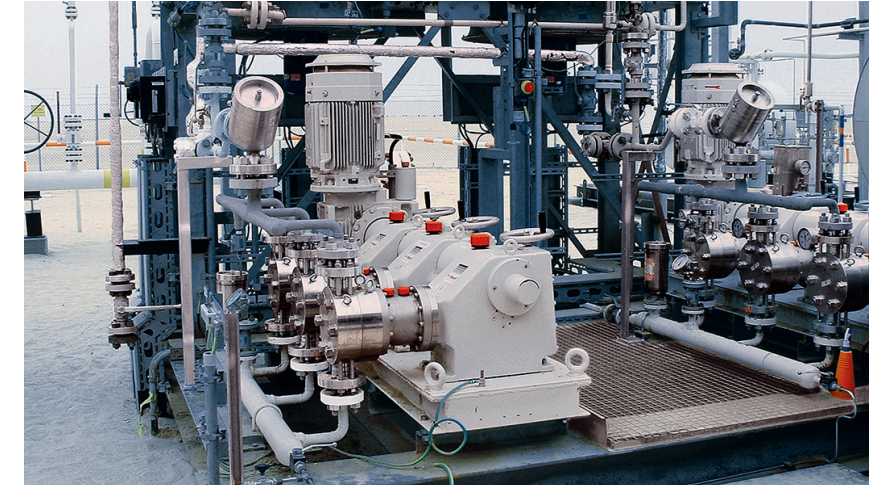
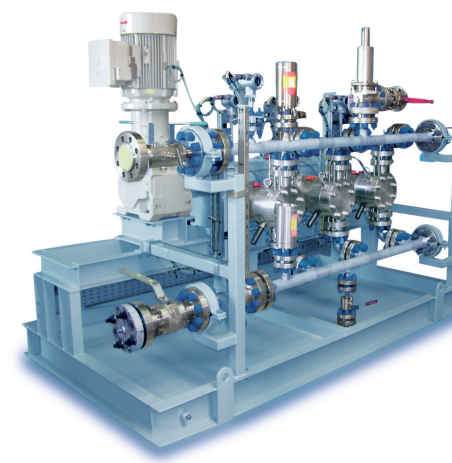
Materials (other materials possible)

- PVC, PP, PVDF, PTFE
- Stainless steel
- Duplex stainless steel
- Hastelloy
- Alloy 20
- Titanium

Control systems on request

- Terminal boxes
- Relay control systems
- Compact controllers
- ProMinent controllers
- PLC with operator panel and PROFIBUS® interface

For Special Applications



Packages for specific requirements

Special applications need special dosing systems. We can provide special packages that are precisely tailor-made for our customers processes specifically for the oil and gas industry: highly practical, attractively priced and extremely reliable. Based on its many years of experience, ProMinent is a reliable and competent partner for work involving the metering of liquids in the oil and gas industry.

Task

- Methanol injection in underground deposits and pipelines
- Glycol injection in gas drying plants
- Dosing of various additives and inhibitors in oil and gas treatment, transportation and processing
- Injection of high-viscosity drag reducers (DRA) to reduce pipe friction in pipelines
- Injection of chemicals for conditioning

Design

- Conforms to current worldwide specifications:
- API 674 and API 675
 - ASME, DIN, VDMA, etc.
 - Explosion-proof to ATEX
 - Compliance with customised factory standards
 - Versions of all components suitable for onshore and offshore applications
 - Certified to ISO 9001



References

All around the world, dosing systems from ProMinent are making a vital contribution to the productivity of the oil and gas industry.

We would like to thank our customers for their trust in our products and look forward to further successful cooperation in the future.

Oil and gas

- Agip
- ARAMCO
- BP
- British Gas
- Burullus Gas
- Chevron
- Conoco
- ELF
- Exxon Mobil
- Gasprom
- Gaz de France
- Mærsk Oil
- ÖMV
- Pemex
- Perenco
- Petro Canada
- Petro SA
- Petrobras
- Romgas
- RWE DEA
- Shell
- Texaco, Caltex
- Total
- Turkmenneft
- Wintershall

Chemistry

- AKZO Chemicals
- BASF
- Bayer
- Boehringer
- Borealis Polymers
- Ciba Geigy
- DOW Chemical
- Wacker Chemie

EPC

- ABB
- AKER Maritime
- AMEC Engineering
- Bechtel
- FLUOR
- Foster Wheeler
- KBR
- Kværner Oil & Gas
- Linde
- Lurgi
- Snamprogetti
- SNC
- Technip
- Tecnimont
- Uhde

Global Service Locally

We can provide you with our services even if you are not yet our customer.

Our pre-sales service will ensure that you obtain the optimum solution to meet your individual needs.

Thanks to our worldwide presence in over 100 countries, our service is available wherever you need it.

- Advice on product selection
- Application and process optimisation
- Project planning

However, our commitment does not end with delivery. We also provide you with a comprehensive after-sales service, which lasts for the entire service life of your equipment. This maximises your productivity and minimises your operating costs.

- Assembly/installation
- Commissioning
- Maintenance
- Spare parts service
- Repair
- Troubleshooting

Contact worldwide



Experts in Chem-Feed and Water Treatment

ProMinent is at home in over 100 countries worldwide. This guarantees worldwide availability of our products and short distances to the customer. We offer identically high quality standards for

our products and services worldwide. Exactly where you need us. Experience, knowledge and expertise in water treatment and metering technology.

" " -
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