

LEWA Solutions for the Oil & Gas Industry

Pumps, Systems and Packages for the
Production of Crude Oil and Natural Gas.

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LEWA has been your expert when it comes to pumps and packages for crude oil and natural gas production for more than 60 years. At LEWA, you receive high-end metering and process pumps as well as systems and packages for specific functions for use in onshore and offshore production.

From antifouling agents to wax inhibitors – with our entire portfolio and custom packages, you know you are using chemicals safely. Our pumps also meter corrosion inhibitors, oxygen binders or other toxic and supercritical substances without a concern while ensuring absolute process safety. Our systems can cope with the harshest environmental conditions: Whether in the bitter cold in Siberia, extreme heat in the desert or on the rough sea – with LEWA pumps, systems and packages you are on the safe side.



LEWA Solutions for the Oil & Gas Industry

Experienced and reliable! Our qualified equipment for crude oil and natural gas production allows us to comply with all requirements of the oil and gas industry. We offer EPC companies, operators, and end customers our complete portfolio of pumps and packages, through to full turnkey projects.

LEWA Packages for the Oil & Gas Industry.

The advantages at a glance.

1



Proven and reliable

Pumps from LEWA are designed for continuous operation. Our pumps and systems have been working reliably around the clock for decades in different applications and achieve an above-average cost/benefit factor.

2



Customer-specific solutions

We develop pumps, systems and packages in dialog with our customers. LEWA designs fulfill important national and international standards. Our experts from different subject areas work in close collaboration to create an optimal solution that fulfills all requirements and specifications.

3



The most advanced diaphragm technology

Our diaphragm pumps are equipped with a durable sandwich diaphragm and different tools for continuous monitoring. Therefore they are suitable for nearly all types of fluids, while achieving the highest levels of efficiency and operational safety.

4



Worldwide service

LEWA is globally organized. Spare parts and services are quickly available almost anywhere. Our worldwide network enables us to commission systems and offer technical services onshore and offshore, directly on site.

5



System integration

As a pump manufacturer, we are familiar with the challenges faced with entire systems. This knowledge and state-of-the-art software enables us to ensure seamless system integration. Furthermore, we use programs with which international requirements such as API 674, Approach I as well as Approach II calculations can be conducted.

6



Global packaging

LEWA has facilities across all the major oil producing regions in the world, where we develop and manufacture complete systems and packages. This allows us to deliver packages with local knowledge and knowhow, while utilising LEWA global process to ensure the highest quality and cost security.

Pumps, systems and packages

Top products for the Oil & Gas Industry

Customized consultation for each application.

We develop customer-specific skids, systems, packages and units for a wide variety of applications. We have already developed numerous individualized solutions with our customers. We are happy to assist you with your specific process and work together to develop the optimal solution.



LEWA ecoflow® diaphragm process pump

The ecoflow diaphragm process pump, according to API 675, is an advanced pump, able to meet extremely high pressure applications. The construction with its tried-and-tested modular system makes it possible to combine pump heads and drive units in variable segment construction with series or boxer design. The DPS diaphragm protection system ensures maximum process reliability. The diaphragm process pump achieves flow rates of up to 5,019 gph (19 m³/h) per pump head and discharge pressures of up to 17,400 psig (1,200 bar).



LEWA triplex® diaphragm process pump

LEWA triplex is a rugged process diaphragm pump, relating to API 675 with the patented LEWA DPS diaphragm protection system. It is the right solution for high-pressure processes in all industries and for a wide variety of fluids. Thanks to the space-saving monoblock design, it is ideally suited for small installation spaces such as offshore platforms, for example. LEWA triplex achieves flow rates of up to 47,550 gph (180 m³/h) and discharge pressures of up to 17,400 psig (1,200 bar).



LEWA high-pressure plunger pump

LEWA plunger pump, with an integrated gear unit, is a high-performance and versatile plunger pump for high-pressure applications in various industries, according to API 674. It is a robust and efficient solution especially for large hydraulic performances. The plunger pump implements flow rates up to 54,683 gph (207 m³/h) per pump and a maximum pressure of 50,763 psig (3,500 bar).



LEWA Pump Skid

LEWA is your contact for ready-to-operate, custom-designed pump skid units with a small-footprint design. Our expertise in the pump industry allows us to handle every stage in the creation of a pump skid – from design to commissioning. Our portfolio includes skids featuring a flow rate between 0.0026 gph (10 ml/h) and 47,550 gph (180 m³/h) at discharge pressure levels of up to 50,763 psig (3,500 bar).



LEWA Chemical Injection Package

LEWA designs and builds efficient Chemical Injection Packages for specialist applications in the oil, gas, and chemical industries. LEWA Chemical Injection Packages meet all demands for reliability and easy maintenance on offshore platforms and in extremely hot or cold environments. Our portfolio includes systems featuring a flow rate between 0.0475 gph (5 ml/h) and 47,550 gph (180 m³/h) at discharge pressure levels of up to 50,763 psig (3,500 bar).



LEWA Flow Distribution System (FDS)

Injecting chemicals at different locations is possible with LEWA Flow Distribution Systems (FDS). The system is space-saving and has numerous monitoring and control options with a centrally installed pump and multiple injection strands. Flow rates from 0.0792 gph (0.3 l/h) to 1,320 gph (5,000 l/h) and pressures of up to 14,503 psig (1,000 bar) are possible using a Flow Distribution System.



Nitrogen Generation Package

Our portfolio includes high-quality, optimally tailored solutions for the continuous generation of nitrogen for different applications in the oil and gas industry. Nitrogen purity levels of up to 99.5% are achieved with the Nitrogen Generation Packages.





Customized solutions and optimum execution

Project management

Calculation of fluid dynamics

- Computer-aided fluid dynamics calculations in the pipelines
- Suitable integration of pulsation dampers

Engineering

- Customized design for each project
- Consideration of all national and international regulations

In-house production

- Ongoing quality assurance
- Lean production
- Flexibility in production

Testing, acceptance and inspection

- Internal acceptance tests
- Globally uniform standards for the specifications of quality standard
- Customized tests according to customer specifications

Flexible storage tank design

The storage tanks can be designed in rectangular or cylindrical designs. If necessary, we use a multi-chamber system, depending on the requirements.

Control concept

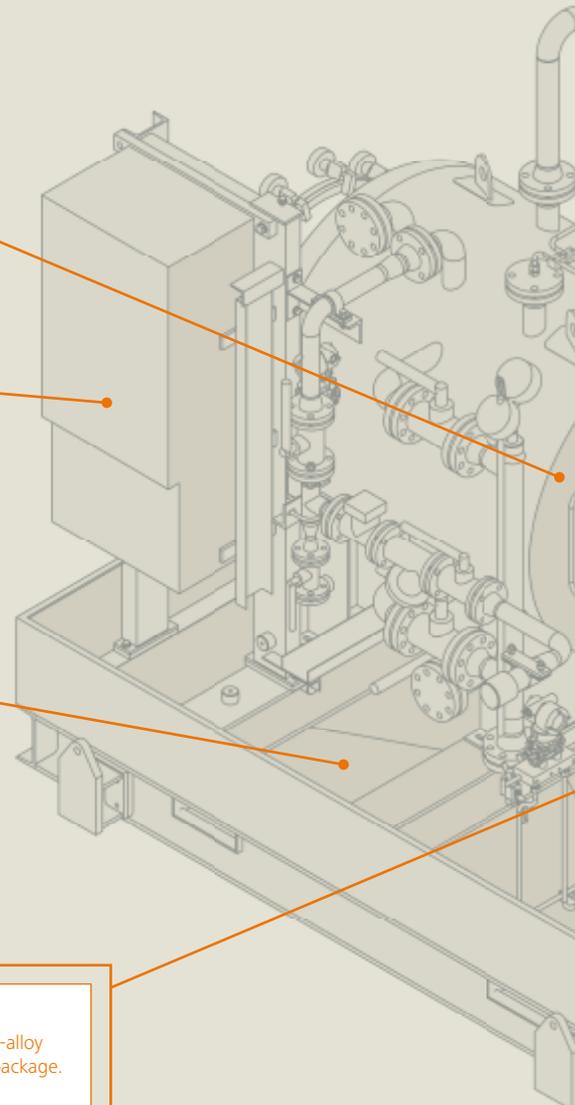
LEWA offers standardized or customer-specific control and regulation systems for a wide variety of environmental conditions. Integration into process control systems as well as process displays is possible.

International standards

LEWA is certified in accordance with ISO 9001, ISO 14001 and OHSAS 18001. Our pumps, systems and units are compliant with all major international standards such as EN, API, ASME, NORSOK, EHEDG and FDA.

High-alloy design materials

In addition to standard materials like austenitic stainless steel, we also use high-alloy materials like Incoloy, Monel, titanium and Hastelloy when designing a LEWA package. Other options are available on request.



Optimized logistics

- Challenges taken into account as early as the production stage (e.g. offshore installation)
- Short delivery times

Global commissioning

- Worldwide service network
- Technical service at every location, in accordance with uniform quality standards
- Onshore and offshore

After Sales LifeCycle Contract

- Lifetime services
- Maintenance contracts
- Qualified and certified employees (LEWA's global standards for consistent quality)
- Original LEWA spare parts

Piping

Depending on the application and customer requirements, we offer welded piping or tubing systems which are designed and built on an individual basis.

Exceptional efficiency

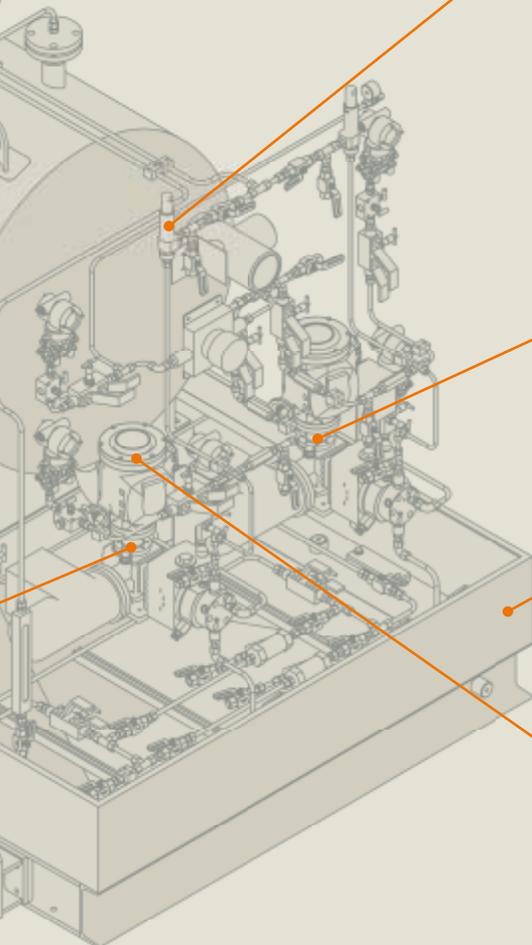
LEWA offers the most efficient pump technology. This allows us to select the most optimized solution, particularly in special applications where only a low or limited amount of electric power is available.

Design calculation of the base plate

We provide designs for extreme acceleration forces, which is important for the base plate, such as for the installation of the system in the offshore sector.

Different drive types

We provide the flexibility you need to respond to environmental conditions. The pumps in our packages are driven by electricity (including solar energy), compressed air, gas or diesel engines.



Applications and processes.

Over 60 years of experience in the industry.



Industry: Oil & Gas
Installation location: North Sea
Application: Methanol for hydrate formation prevention
LEWA solution:
– Triplex G3G diaphragm pump, M800,
660 gph (2.5 m³/h), 8,832 psig (609 barg)



Industry: Oil & Gas

Installation location: Saudi Arabia

Application: MEG injection

LEWA solution:

- Quintuplex process diaphragm pump with modular construction, 1,188 gph (4.5 m³/h), 7,760 psig (535 bar) (API 10000)
- Space-saving M800-PTFE pump heads
- Pump heads and piping made of super duplex SS material (API 10000)



BP relies on LEWA systems

LEWA is a reliable and certified partner of the BP Global Projects Organization.

The contract with the BP Global Projects Organization includes all systems and skids that will be used on onshore and offshore oil and gas fields for the injection of corrosion inhibitors and scale inhibitors, demulsifiers as well as biocides as a part of a five-year agreement.



Customer: BP Exploration (Epsilon) Ltd, Oman
Project: Khazzan
EPC: Jacobs UK
Industry: Oil & Gas
Installation location: Oman (onshore)
Application: Onshore gas production, Scale Inhibitor Injection (prevention of crusting)
LEWA solution:
– 7x Chemical Injection Package, each with 2x LDB-1





Industry: Oil & Gas

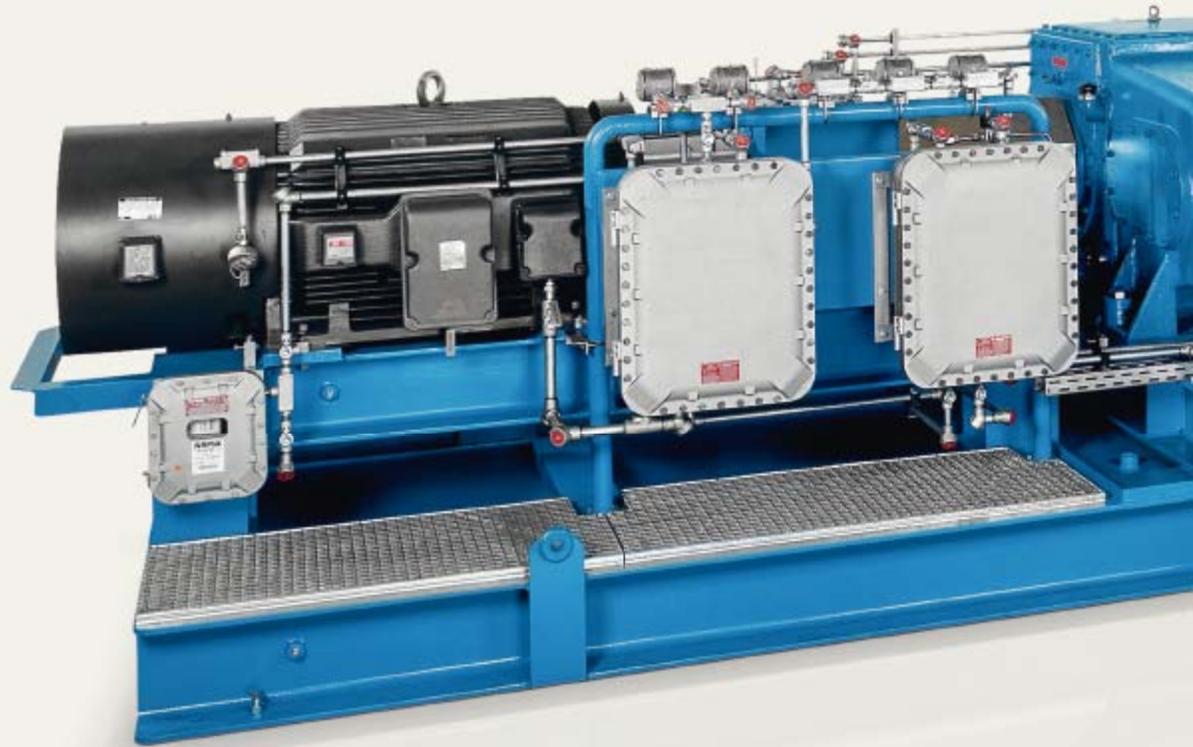
Installation location: Great Britain

Application: Chemical injection on a production and storage unit

LEWA solution:

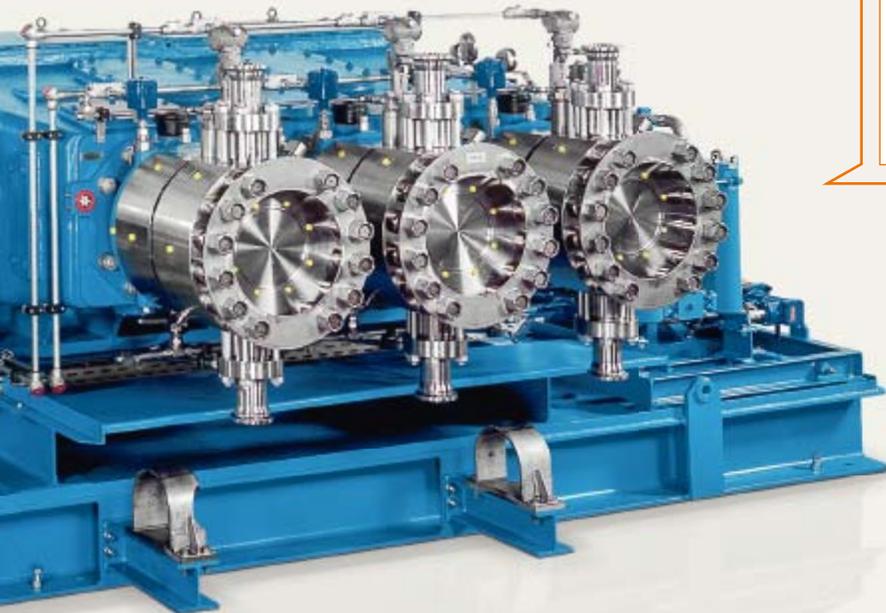
- Design, procurement and installation
- Diaphragm pumps for maximum pressure 8,702 psig (600 bar)
- Built for ambient temperatures from +21 to +104 °F (-6 to +40 °C)





Industry: Oil & Gas
Installation location:
Middle East (onshore)
Application: Onshore gas
production, methanol injection
LEWA solution:
– 2x solar-powered LDB-3 pumps



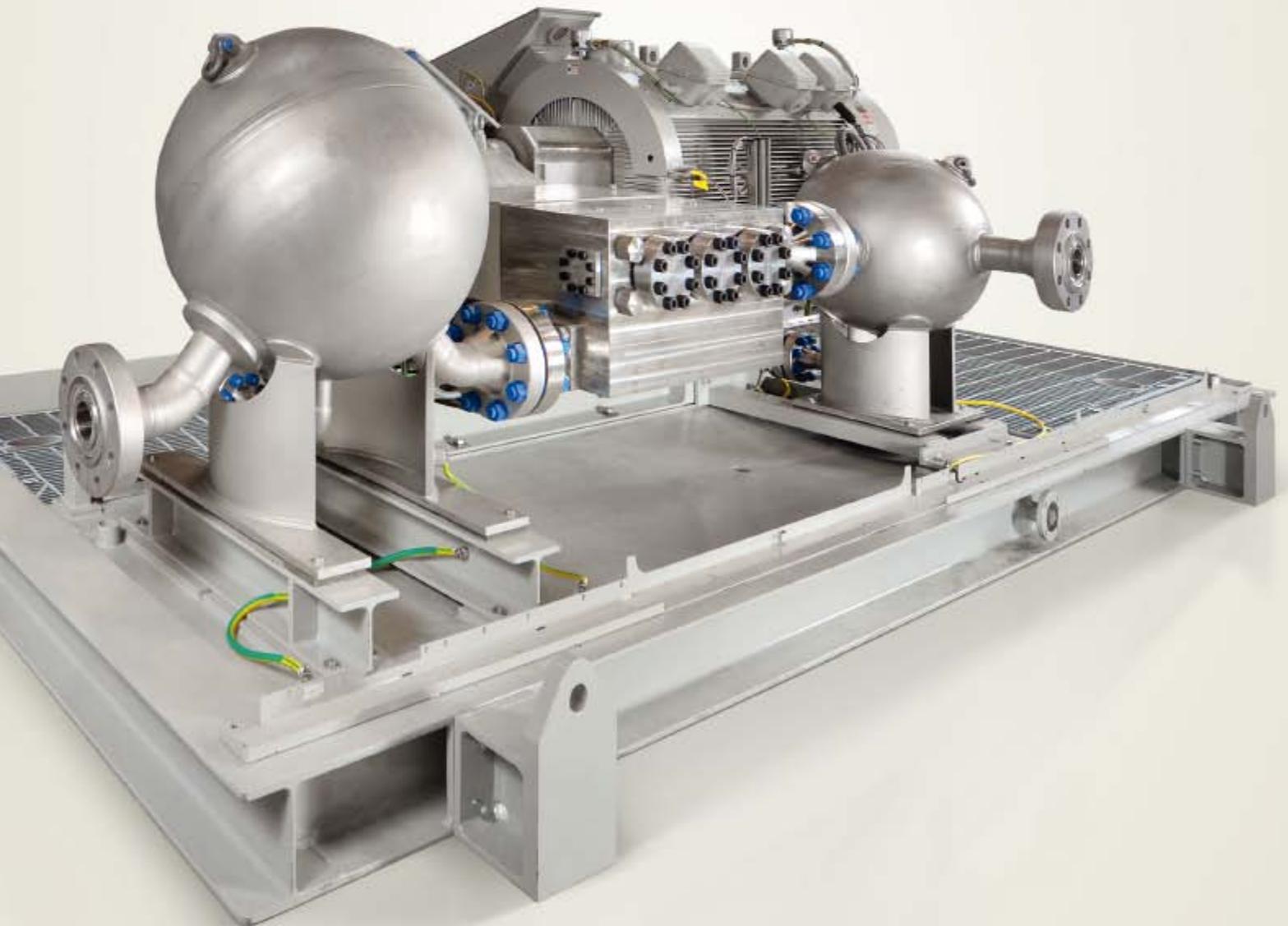


Industry: Oil & Gas
Installation location: Onshore Canada
Application: H₂S + CO₂ re-injection
LEWA solution:
– Triplex G3U diaphragm pump, M500,
5,548 gph (21 m³/h), 3,336 psig (230 bar)



Industry: Oil & Gas
Installation location: Algerian desert
Application: Injection of corrosion inhibitors
LEWA solution:
– Solar-powered MLM solenoid-driven pump, M200, 0.3962 gph (1.5 l/h), 2,900 psig (200 bar)





Industry: Oil & Gas + Gas field

Installation location:

Papua New Guinea

Application:

Produced Water Re-Injection

LEWA solution:

– API 674 plunger pump, G3K550,
5,283 gph (20 m³/h), 6,367 psig (439 bar)





LEWA's Largest Chemical Injection Package

Special requirements require special expertise: LEWA as a leading provider for systems in the oil and gas industry has built the largest Chemical Injection Package in the history of the company. The module weighs 715 tons and measures 70' x 65' x 32' (21.3 x 20 x 10 meters).

This ambitious project represents a large challenge to our engineers. The LEWA giant has been implemented in more than 7,500 engineering hours. The essential components include over 40 Lewa diaphragm and process pumps in accordance with the API 675 standard as well as 40 IRCDs for additional control of the injection volume. 18 tanks made of stainless steel with a volume of 210 m³ and a GRP tank with a volume of 5 m³ are added to the second layer. The third layer is a platform with 27 individual tote-tanks for chemicals that is protected against sparking as a result of special rubber insulation.

During the design, a wide array of technical standards and requirements had to be taken into account. The pumps and pipelines were made out of special titanium materials to withstand highly corrosive chemicals. Additionally, all of the equipment for the seven and nine-headed pump systems was housed in a tight space. The package itself is used on a Brazilian FPSO – a production and storage ship for natural gas and crude oil – off the coast of Singapore. LEWA once again confirmed its one-of-a-kind expertise as the global leader in pump manufacturing and system integrator with this special solution.

<u>Properties</u>	<u>LEWA Chemical Injection Packages</u>
Dimensions	70' x 65' x 32' (21.3 x 20 x 10 m)
Weight	715 t
Pumps	40 LEWA diaphragm and process pumps with 40 IRCDs
Injection locations	More than 120
Valves, tools	Over 3,000 components
Storage tanks	18
Pipelines	Over 11,500' (3,500 m) of tubing and piping
Max. operating pressure	5,584 psig (385 bar)

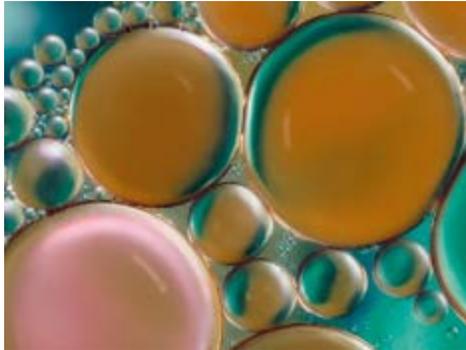




Creating Fluid Solutions. For more value created.



Technical consulting



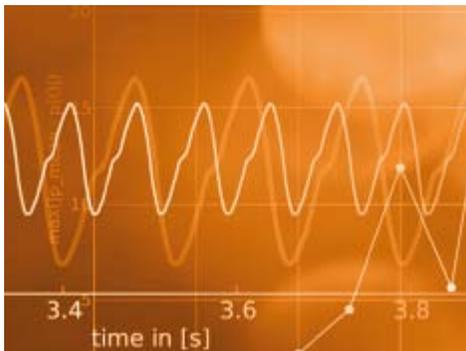
Fluid and process engineering tests



Lifecycle concepts and energy optimization



Process automation



Pulsation studies and pipeline calculations



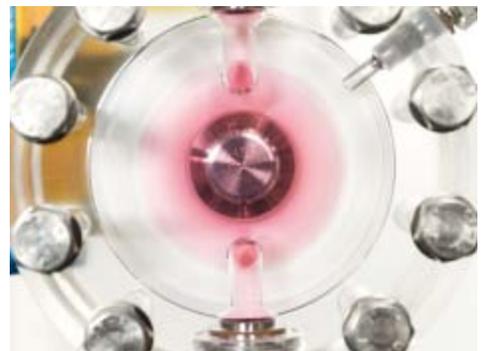
System layout and integration



Creative development and refinements



Commissioning and maintenance service



Spare part and service concepts

Creating Fluid Solutions.

Driven by our commitment, our trendsetting products and innovative technologies have set benchmarks for diaphragm pumps and metering systems for over 60 years. We solve complex tasks from a single source. That ranges from custom pump design, basic and system engineering, global project management, and pretesting to commissioning and maintenance on site. Our consistent drive always to develop the best solutions for the customer provides you with a competitive advantage and visible added value.

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