

fluid
technology
solutions

VSE.flow®

Flow measurement technology

High precision flow meters and accessories

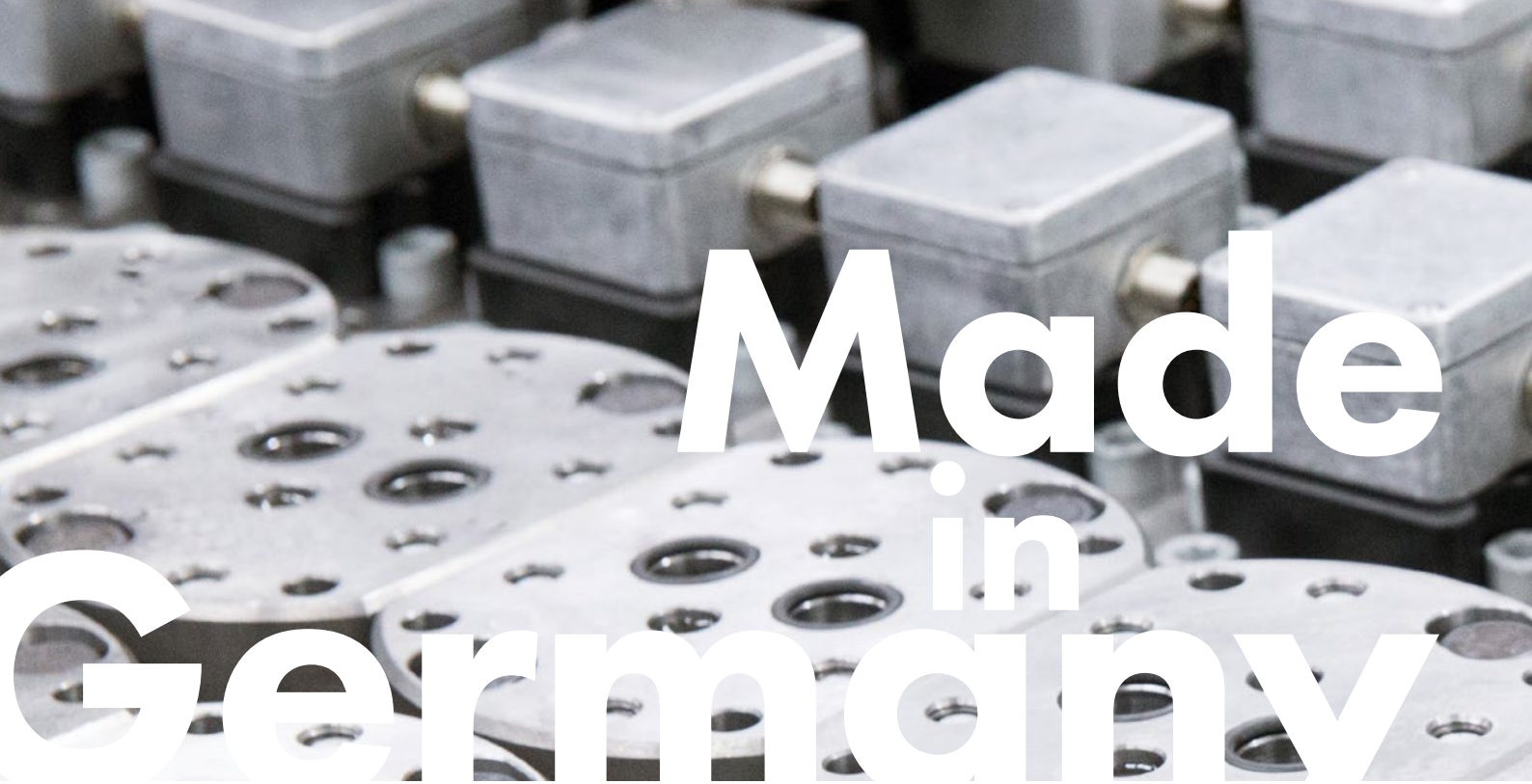


VISE.flow

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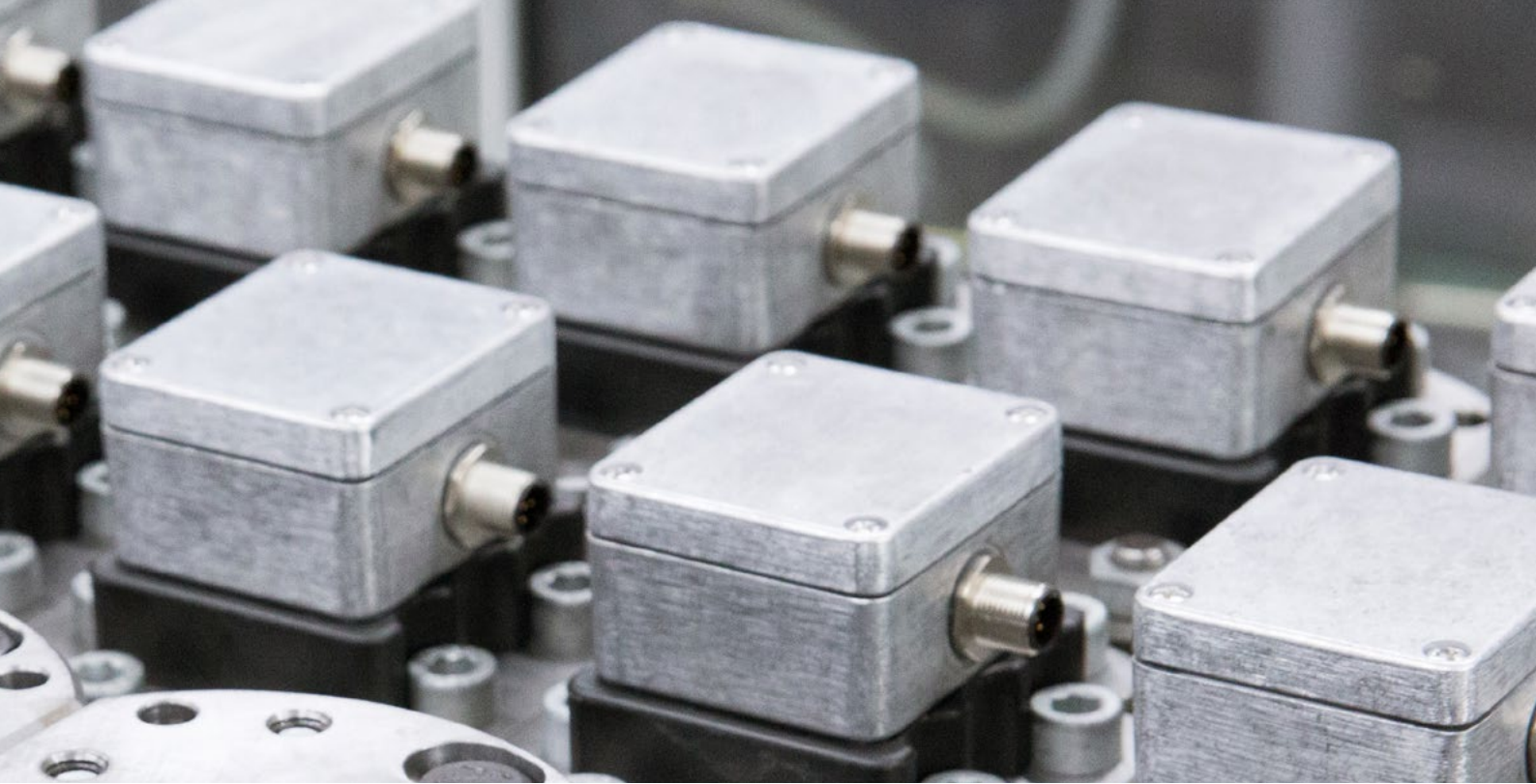


Made in Germany

Precise. Reliable. Efficient.

VSE develops and produces flowmeters with maximum accuracy. Our flowmeters are individually designed in different sizes and versions. With our many years of application experience in various fields, we can offer you an optimal as well as customised solution.

Benefit from our knowledge in precise metering for demanding applications. Our flow meters are already being used successfully by numerous well-known international manufacturers.



Customer requirements perfectly matched

In our inhouse development and construction department, we design technically sophisticated flowmeters and evaluation electronics. We see ourselves as an industrial manufacturer and can make use of modular systems that are adapted by means of technical specifications for each individual order. Even far beyond delivery, we support our customers with a comprehensive service.

Worldwide service

We are represented by our own subsidiaries in Italy, France, Great Britain, USA, China and India. Additional service partners worldwide also provide customers in all major industrial countries with the necessary know-how and comprehensive application expertise. Our employees and partners are continuously trained to maintain our high quality standards.



Automotive



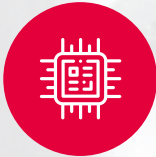
Aerospace



Battery & fuel cell
production



Chemical &
petrochemical



Electronics



Food



Hotmelt



Hydraulics



Marine



Oil and
gas



Pharmaceutical/
Biotechnology



Painting system



Process technology



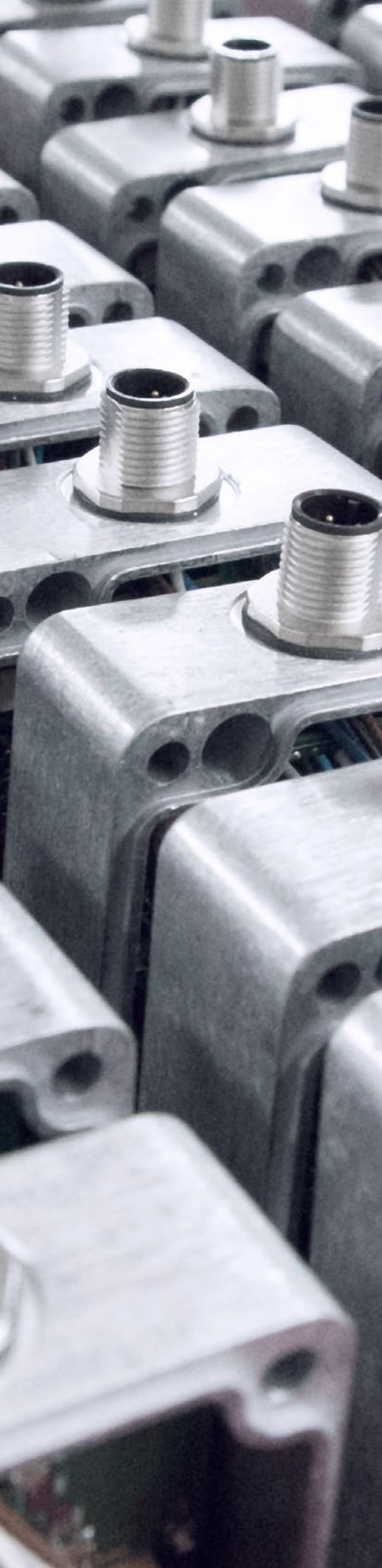
Renewable energy



Test &
measurement



Water



Applications

VSE flowmeters are used where the most precise measurement results are indispensable. Through our many years of experience in flow measurement technology, we have developed flowmeters with intelligent sensor technology, which are also specially designed for use with highly viscous and difficult media. We offer the right product for every industry. Whether as a standard version or as an individual customer project, our flowmeters are the ideal solution for your application.



Unbeatable performance through innovative and exceptional interpolation electronics

Gear flowmeter VSI+

VSI+ flowmeters measure the volume flow of the medium according to the gearwheel principle. A gearwheel pair fitted very precisely in the housing forms the measuring unit. The rotation of the measuring unit is recorded contact-free by a signal pick-up system and converted into digital pulses.

The integrated electronics of the VSI produces greatly improved signal quality with harmonic pulse widths. This means that more consistent and vibration-free measurements can be achieved.



Flow rate

0,002 to 525 l/min

Pressure

up to 450 bar

Temperature

-40°C to +210°C

Frequency

up to 100 kHz

Viscosity

1 to 1.000.000 mPas

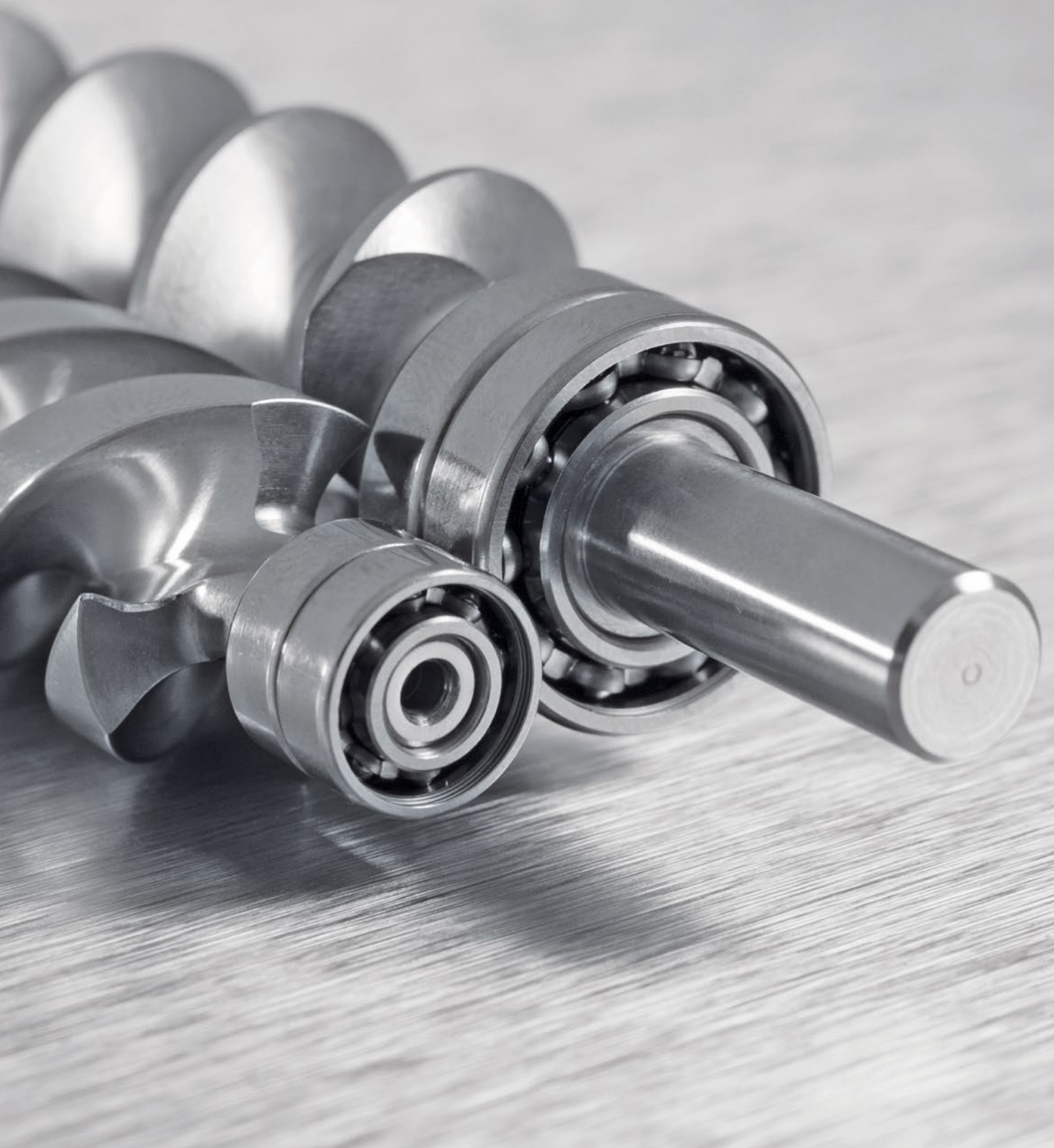
Measuring accuracy

± 0,3 % of the measured value
at viscosity > 20 mPas

Advantages

- Highest accuracy and linearity
- Short response times
- Large variety (different bearings and materials, EX-protection)
- Digital signal processing of the sensors

**Measurement of the fluid
with minimal shear,
and low pressure losses**



Helical screw flowmeter RS

The helical screw flowmeter RS convinces by a highly precise measurement of the fluid with lowest pressure losses and highest functionality by intelligent sensor technology.

Due to different bearings, tolerances, materials, coatings, electronics and resolution, the RS can be adapted to the respective customer requirements and applications. With the optional high temperature transducer system, use in extreme temperature ranges is also possible.



Flow rate

0 to 3.000 l/min

Pressure

up to 450 bar

Temperature

-30°C to +120°C

-40°C to +210°C with high temperature (HT) sensor system

Frequency

up to 100 kHz

Viscosity

1 to 1.000.000 mPas

Measuring accuracy

± 0,5 % of the measured value
at viscosity > 21 mPas

Advantages

- High and virtually viscosity-independent accuracy
- Pulsation-free and precision measurement with minimal shear
- Lowest pressure losses
- Highest functionality due to intelligent sensor technology
- Low response time due to reduced rotating masses



**High-resolution microdosing
with innovative sensor technology**

Helical screw flowmeter RS5

With the new RS5, measurement ranges from 0.25 ml/min to 1 l/min are possible. Like the larger models in the RS series, the RS5 impresses with its low resistance, high-precision, pulsation-free and gentle measurement of liquids with minimal pressure losses. The newly developed sensor technology transforms even the smallest drop into high-resolution signals. The compact dimensions and low weight open up for many new application possibilities.



Flow rate

0.25 ml/min to 1,000 ml/min

Pressure

up to 80 bar

Temperature

-30°C up to +80°C

Frequency

up to 120 kHz

Viscosity

≥ 800 mPas

Measuring accuracy

± 2 % of the measured value
at viscosity ≥ 800 mPas

Advantages

- First helical screw flow meter for very small quantities on the market
- Suitable for medium to high viscosity liquids, including 1C adhesives
- Compact dimensions: 86mm x 38mm x 51 mm
- Lightweight: only 700g
- Ideal for applications with limited installation space or specific weight requirements

**Compact design,
built for high pressures**



Helical screw flowmeter RS10

The RS10 measures flow rates ranging from 0.5 ml/min to 10 l/min and is designed for operating pressures of up to 250 bar. Its compact design allows installation in confined spaces or applications with weight restrictions. The design incorporates the proven connection units of the RS series, enabling flexible integration into various systems.

The sensor is developed for multi-component applications and complex ratio measurements and is also suitable for reliably detecting bidirectional flows such as pulsations or backflows.



Flow rate

0.5 ml/min to 10 l/min

Pressure

up to 250 bar

Temperature

-30°C up to +80°C

Frequency

up to 120 kHz

Viscosity

≥ 800 mPas

Measuring accuracy

± 2% of the measured value
at viscosity ≥ 800 mPas

Advantages

- Suitable for medium to high-viscosity fluids, including single-component adhesives
- Low-resistance, highly precise, pulse-free and gentle measurement with minimal pressure fluctuations
- Ideal for applications with limited installation space



**Ideally suited for
abrasive and poorly
lubricating media**

Gear flowmeter VHM

The VHM series was developed in particular for the highly accurate measurement of abrasive and poorly lubricating media.

The gearwheel flowmeters operate according to the positive displacement principle and are available with different signal resolutions. The flowmeters are also deadspace optimised for (flush-friendly) use in the painting industry. Due to the ATEX and FM certification, the VHM can also be installed in hazardous areas.



Flow rate

0,01 to 20 l/min

Pressure

up to 250 bar

Temperature

-20°C to +120°C

Frequency

up to 1.000 Hz

Viscosity

1 to 20.000 mPas

Measuring accuracy

± 0,5 % of the measured value
at viscosity > 10 mPas
± 1 % of the measured value
at viscosity < 10 mPas

Advantages

- In particular for abrasive and poorly lubricating media
- Various signal resolutions (single, double, quad)
- Deadspace optimised for use in painting industry
- Best surface finish for flushability
- ATEX and FM certified



**Precise measurement
as an in-line device**

Gear flowmeter VSE EF ecoflow

As an economical and lightweight alternative to the VSI+ flowmeter, we have launched the VSE EF ecoflow. The series measures viscous media as an in-line device.

The flowmeters combine the excellent gear and bearing characteristics of the VSI+ series with a simpler two-piece aluminum housing, offering an ideal balance between cost and performance. The VSE EF ecoflow is suitable as the basis for customised versions, as well as for everyday test and production applications. The flowmeters are ideal for low pressure hydraulics, lubrication systems, spray coatings and with high temperature option also for hot melt.



Flow rate

0,05 to 150 l/min

Pressure

up to 200 bar

Temperature

0°C to +80°C

Frequency

up to 1.666,7 Hz

Viscosity

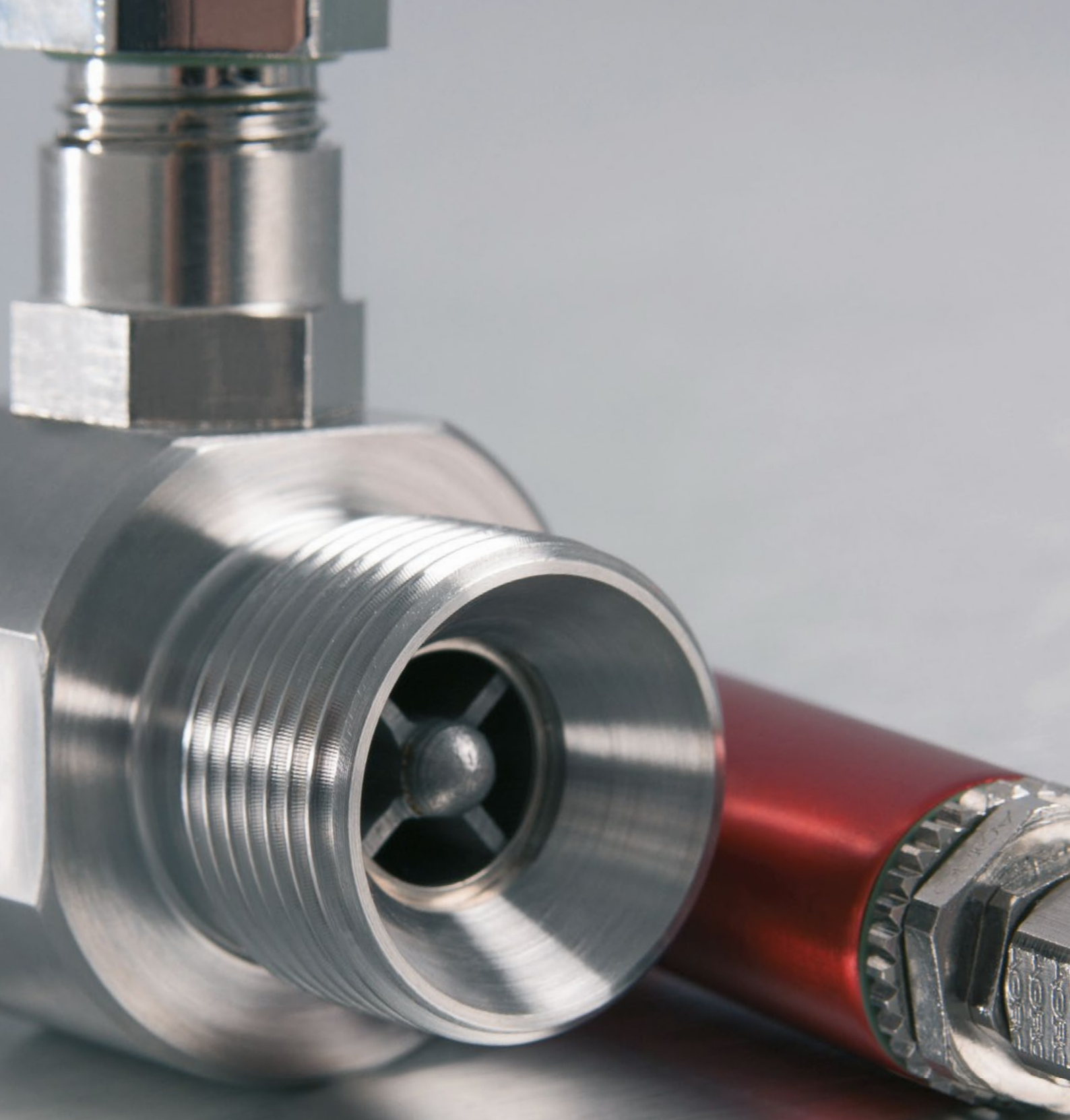
1 to 10.000 mPas

Measuring accuracy

± 2 % of the measured value
at viscosity 21 mPas

Advantages

- Good reproducibility with sufficient linearity
- Basis of many OEM applications and customised special solutions
- Suitable for everyday test and production applications
- Cost efficient with high performance



**Individually calibrated
flowmeters for the most difficult
application conditions**

Turbine flowmeter VTR

For applications in the most challenging conditions in the oil, petrochemical and chemical industries, we have developed our VTR series turbine flowmeters.

The basic system of the flowmeters consists of a rotor, the housing body and a measurement pick-up. Thanks to the specific inner diameter, the speed of the turbine is directly proportional to the flow. All VTR flowmeters are individually calibrated.



Flow rate

110 l/h to 4.500 m³/h

Pressure

up to 250 bar

Temperature

-40°C to +120°C

Frequency

up to 1.300 Hz

Viscosity

1 to 5 mPas

Measuring accuracy

± 0,5%

Advantages

- For a wide range of applications also in challenging conditions
- Individual calibration of each flowmeter
- Large selection of nominal sizes between DN 50 and DN 100
- Full stainless steel design
- Large temperature and pressure range



**Smart module for
integrating flowmeters
in IO-Link systems**

IO.flow[®] Converter

The IO.flow[®] module enables easy integration of all VSE flowmeters into IO-Link systems. The pulse signals of the preamplifier are measured with high precision by the module and converted into flow and volume values. This data is forwarded to the automation system by the IO-Link master.

The module is available either as a complete system or can be integrated into existing systems as an upgrade/add-on and offers numerous statistical and diagnostic data.



Advantages

- Accurate and simultaneous measurement of flow and volume
- Compact cartridge module with M12 connectors
- Aluminium housing suitable for oily environments
- High communication rate: COM3 (230.4 kBit/s)
- Integrated linearization function (flow/volume)
- Configurable signal filters (dynamic/smooth), pulse filter
- Statistical functions (operating hours, total volume)
- Events (limit values with optional teach function)
- Easy exchange of devices via data storage

High-precision flow calibrations according to the reference principle



Cal.flow calibration system + **EASYcal**

The Cal.flow calibration system is used in conjunction with the PC software EasyCal to calibrate VSE flow meters with high precision. Cal.flow is a compact USB device which, in conjunction with a PC, is perfect for calibrating flowmeters with pulse output.

Calibrations using Cal.flow are conducted based on the reference principle. This means that an adjustable flow is channeled in series through a calibrated master volume sensor and through the device under test. The Cal.flow calibration system captures the deviations between the two volume sensors to calculate the specific K-factor of the device under test.

Highlights

- Calibration using master and test flowmeter using the reference principle with up to 24 master calibration points
- Measurement of the K-factor over an adjustable number of pulses
- Highly accurate frequency measurement and counting of both flowmeters
- Automatic calculation of accuracy and repeatability
- Customisable testing procedure
- Export as PDF or Excel-Spreadsheet
- Perfect for manually operated testbenches
- Real-time flowrate graphs

Portable and PC-based data logging



Log.flow data logging system

+ EASYgraph

Log.flow is an excellent tool for recording measurement data from flow meters. With the PC software EasyGraph, highly dynamic processes can be analysed with sampling rates of up to 1000 Hz. The flow rate and volume of both channels can be recorded simultaneously. Depending on the selected configuration, various types of sensor data can be recorded.

The software enables a clear presentation and analysis of the measurement data and the possibility to perform data exports for further evaluations. The data recordings can also be provided with trigger functions to capture process changes, e.g. in long-term measurements. Various types of sensor data can be recorded based on the chosen configuration.

Highlights

- Dynamic and precise frequency measurement and pulse counter (adaptive period measurement)
- GPU-accelerated real-time graph of all 4 channels
- Adjustable sample rate (1-1000 Hz) and filter levels
- Math functionality to rescale input values (→ units)
- Data recording with starting-trigger functionality
- Import/Export of recorded data with file viewer
- Fast creation of PDF reports for documentation
- Log.flow versions with a dedicated analog input channel (4..20 mA/0..10 V) are available on request

**Highest precision
for flow monitoring
and evaluation**



Display devices

With the display units from VSE, the output pulses of the connected flowmeters are evaluated precisely and highly dynamically. The multi-functional units allow accurate monitoring and evaluation of the flow measured values, as well as the volume flowed through. Calculations such as ratio, sum or difference of two flow measuring systems are also realized with the units.

Just like the converters, the display units also have the additional functions of linearisation, filter and limit values to cover any customer-specific requirement. Additional analogue outputs enable precise control or the control of external evaluation units.

Advantages

- Modes of operation frequency measurement and/or pulse counting
- Calculations A/B, A+B, A-B
- Input frequency up to 250 kHz
- Additional analogue outputs with short conversion times
- 14-16 bit analogue output, configurable for voltage or current operation (± 10 V, 0/4 ... 20 mA)
- Linearisation with 16-24 interpolation points
- Switchable filter functions
- Control inputs and fast control outputs (limit values)
- Auxiliary voltage output 5 and 24 VDC for encoder supply
- Graphic display with different colour variants or LED display (6 decades)



**Customised conversion
of pulse frequencies**

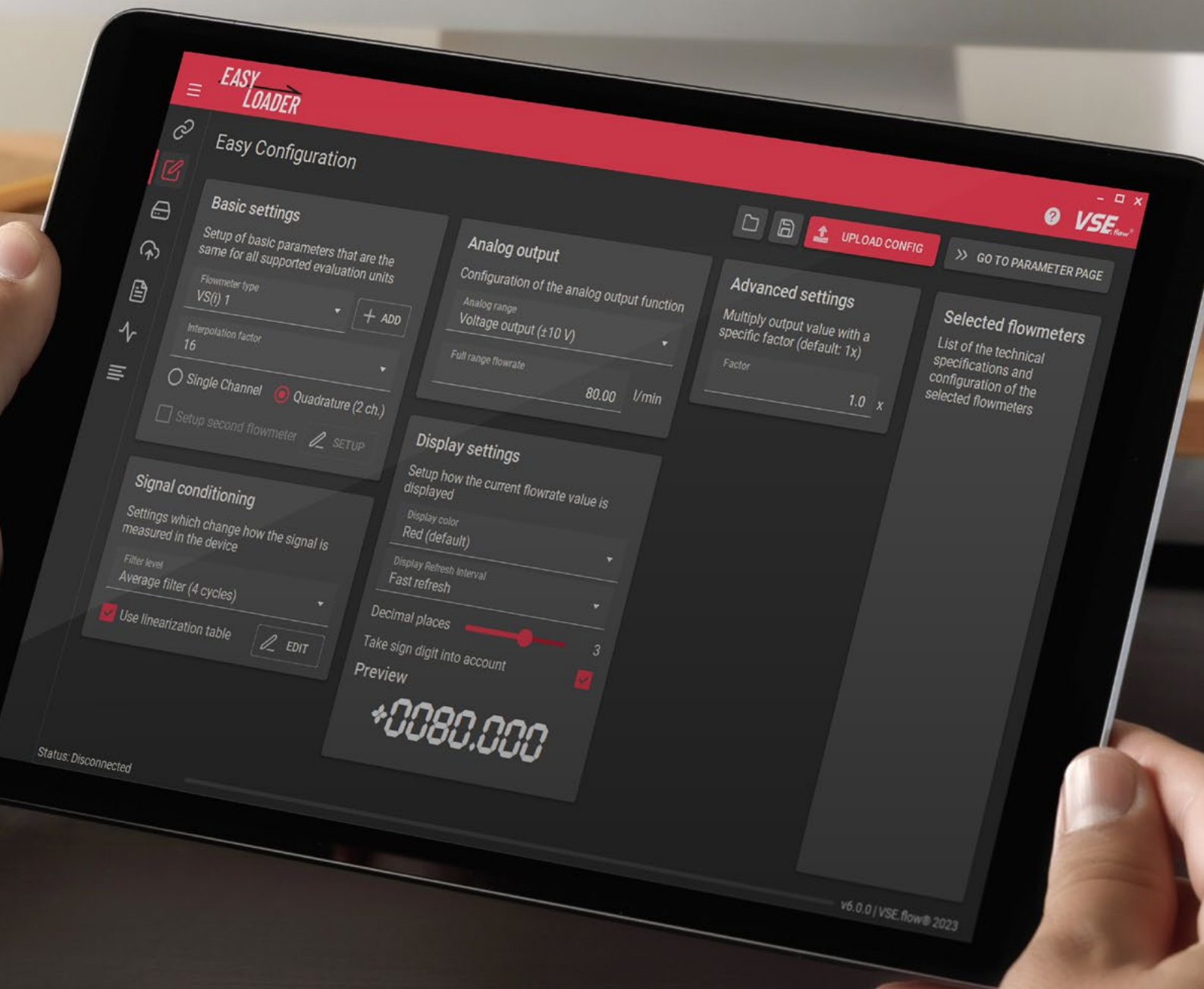
Converter

Signal converters from VSE convert the pulse frequencies of the volumetric sensors precisely and almost without delay into standardised analogue signals (V, mA). These can be set to the desired frequency or flow range.

With programmable additional functions such as linearisation, filter settings, limit values, etc., customer-specific adaptations for the corresponding requirement are made possible. Conversion of pulse count or volumetric quantity can also be realised. In addition, the measured values are displayed via a serial output interface.

Advantages

- Operating modes as frequency converter or pulse counter
- Input frequency up to 250 kHz
- 16-bit analogue output, configurable for voltage or current operation (± 10 V, 0/4 ... 20 mA)
- Extremely short conversion times
- Linearisation with 24 interpolation points
- Switchable filter functions
- Control inputs and fast control outputs (limit values)
- Serial interface for reading out current measured values
- Auxiliary voltage output 5 and 24 VDC for encoder supply



**Easy parameterisation
through own software**

VSE EasyLoader parameterisation software

The VSE EasyLoader was developed to simplify the parameterisation of flow indicators and signal converters. The parameterisation process usually involves many different calculations and expertise for the optimal setting of the devices.

With EasyLoader, the customer gets an easy-to-use tool to program the evaluation unit to the connected flowmeter. Additional options, such as the setting of the analogue output, the filter stages and the linearisation can also be easily changed via the software.

Advantages

- Simple Windows tool for connection to the VSE evaluation units.
- Specially developed for VSE flowmeters due to integrated flowmeter database
- Simple configuration of settings with only a few input fields
- Integrated formulas and calculations for all units
- New register editor for advanced users
(with search and filter functions)
- Copy-paste input of calibration data
- Integrated connection diagrams and operating instructions
- Live readout of current readings
- Upload/download of *.xml files (backups)

Oleotec Pressure Monitoring

Oleotec offers a comprehensive range of test couplings, hydraulic hoses and pressure gauges for the safe and reliable measurement of pressure in hydraulic systems.

DST Permanent Magnetic Coupling

DST's high-performance permanent magnetic couplings, enable contactless power transmission from the motor to the pump. Leakage-free, wear-free and environmentally compliant.



HBE Hydraulic Component

Whether bellhousings rigid or damped, foot flanges and damping rods – HBE offers a wide range of hydraulic accessories.

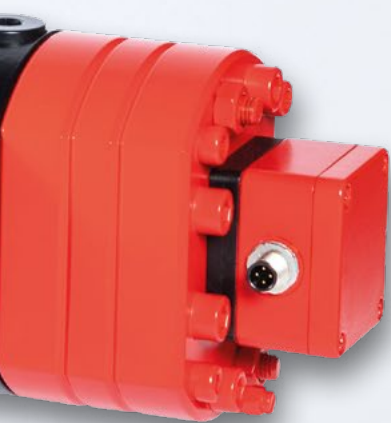
System solutions

Customer-specific units

With five production companies, the Echterhage Holding is one of the leading specialists worldwide in fluid technology.

The Echterhage Group combines technical expertise for various products and industries. As part of this group of companies, VSE develops customer-specific complete units for your application from a single source together with Beinlich Pumpen GmbH, DST Dauermagnet-SystemTechnik GmbH, HBE GmbH and Oleotec S.r.l..

Through close cooperation within our company group, customers benefit from system solutions that can be flexibly adapted to the respective application requirements.



VSE Flowmeter

VSE's high-precision flowmeters are used in a customer- and application-optimised manner for precise volume and flow measurement of almost all pumpable media.

Beinlich External Gear Pump

Beinlich's versatile external gear pumps are suitable for low-pulsation and exact dosing for applications with the highest precision requirements.

Explore our
product diversity



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