PRODUCT OVERVIEW

Gas mixers

Test bench systems

Leak test and impermeability testing systems

High pressure dosing pumps

FLUSYS

COMPLETE SOLUTIONS

FLUSYS is solely dedicated to producing solutions for projects of all kinds involving gas and liquids.

Our work benefits from the knowledge of our customers and the many years of practical experience of our staff, accumulated in the implementation of an extremely varied and wide range of projects and developments.

From expert to expert

From the feasibility study to the finished system or test bench, we can offer high-value solutions while also taking account of all current machine standards, as well as ATEX and VDE guidelines. Our customers use the systems for purposes ranging from research to production in clean rooms or within heavy industry.

Feasibility study – Concept creation – Planning

Tailored support at an early stage in your planning and devising solutions on the basis of systems and experience already available. From sensors to actuators and automation, we show you the solutions.

Electrical plans / Switch cabinet construction

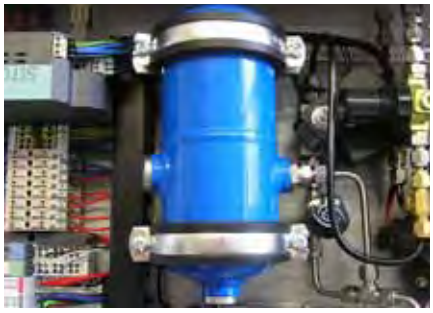
Plans, switch cabinet construction and wiring; testing of all components is carried out in accordance with the current low voltage guidelines. E-Design is performed using E-PLAN® software.

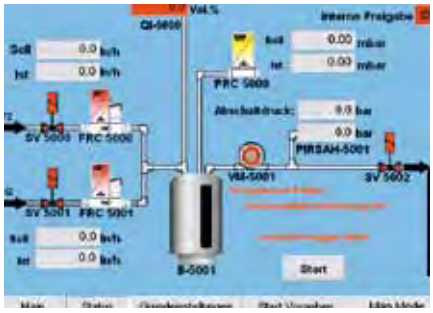
Hazards / Risk assessment

Where others say: ‘it’s fine like that...’ or ‘nothing will happen...’ is where we really get started! Repeated consideration of all risks connected with functionality is where our true strength lies. ‘Everything will be fine’ is not just an assumption we make – you have proven safety right from the start, based on the Performance-Level calculation in accordance with DIN EN ISO 12100:2011-03 and EN 60204-1:2006.

ATEX compliance / Assessment of ignition sources

Anyone who works with combustible liquids must give due consideration to the standards laid down in by ATEX DIN EN 1127-1:2011-10, Explosive Atmospheres – and apply them! When planning systems of this type, additional, often unforeseen, constraints and additional measures may arise. We can support you in establishing or structuring these aspects.





Applications

- Test bench construction
- Reactor dosing systems
- Gas mixing systems of all types
- Humidification systems
- Catalyser test benches
- Hydrogenation controls
- Fuel cell test benches
- Leakage and testing systems
- Furnace controls
- Laboratory controls with safety functions
- Endurance test benches
- Production support systems
- Quality testing within production

Mechanics / Tubing

Conventionally, construction is from aluminium profile sections in the form of panels, racks, boxes or cabinets. In most cases, the tubing is made from stainless steel tubing or in the form of hose systems. The connections are made from high-grade and high-purity compression fittings or achieved by means of an orbital welding process.

Tailored Software

Every system and every test bench is unique. You benefit from prefabricated functional modules. Nearly all new projects involve new additional requirements. We can offer you an all-in-one software and display module. Programming can be on SPS, PC, embedded PC or on a microcontroller basis in Structure text (ST), C++, VB/VBA, or in any customary SPS language.

Documentation

We work with the most modern CAD, layout and circuit diagram programs as well as document management systems in order to guarantee full and complete documentation and secure archiving from the start of the planning process to project completion. This means even many years after a project has been completed, speedy and consistent servicing will be possible. With continued access to this on-demand resource, you are assured safe and secure servicing and reproducibility in line with the latest technology and machine guidelines for many years to come.

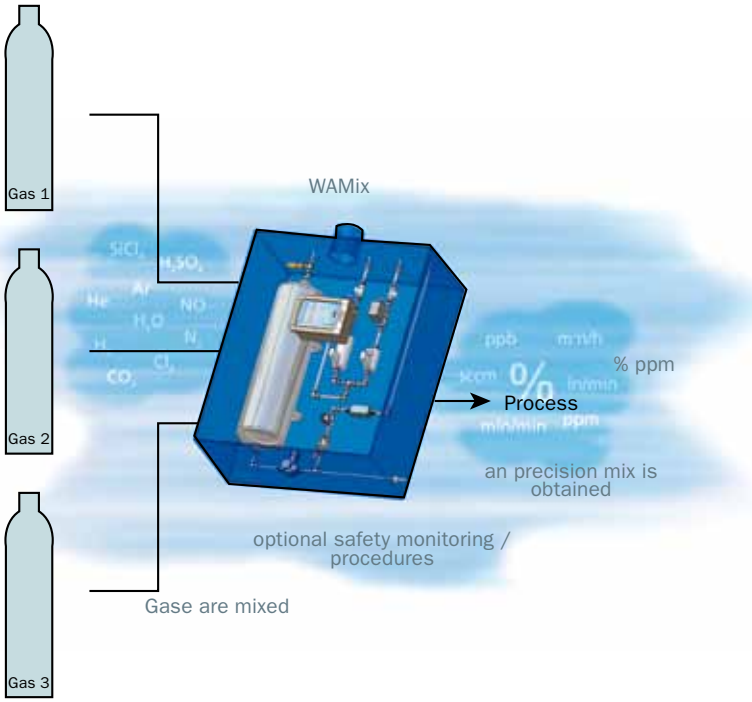
Startup, maintenance, support

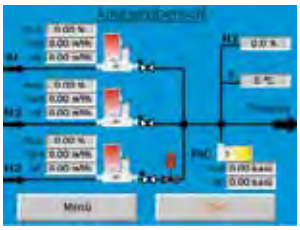
The majority of systems are supplied as ‘plug&work’. This also includes startup, training of operating personnel and troubleshooting support, for example via a remote maintenance module. We also offer maintenance contracts for optimum efficiency.

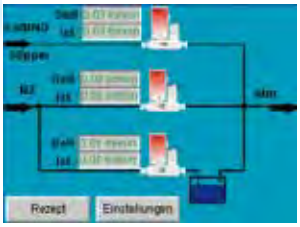
Automated gas mixing

The WAMix gas mixing control system facilitates precision automated production of industrial gas mixtures in differing concentrations and within a large dynamic range.

Continuous gas mix monitoring, valve switching, rinsing processes, safety monitoring and shutdowns are all available as standard. The mixes can comprise at least two liquids in a range from a few ppm to larger percentage ranges.
Operation is more or less self-explanatory. Extraction volumes of a few mln/min to 10.000 m_3n/h are possible.







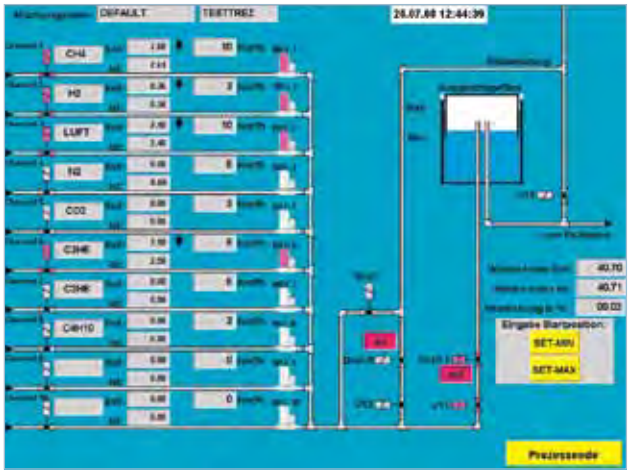
Example of a complete system including safety device in ATEX Zone II

Typical areas of application

- Automated mix production as required
- Replacement of pre-mixed gases
- Synthetic natural gas production
- Catalyser and fuel cell test benches
- Test gas generation
- Forming gases
- Application of furnace gas
- Exposure of foodstuffs to gas
- Event-driven/time-based process control

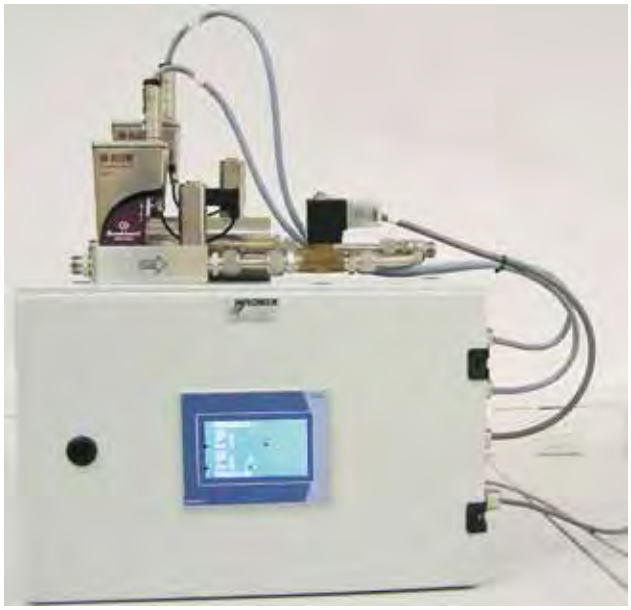
WAMix calculates the plausibility of inputs, the resulting accuracies and the parameter settings by means of an ingenious algorithm and ensures mixes are automatically generated. The current dosing status of the valves and control units is displayed in a flow chart as absolute figures or graph trends.

WAMix is flexible! The majority of WAMix systems are adapted to customers' specific individual requirements. A formula management system permits storage of details of up to 50 gas mixes. The Wobbe index can be determined and indicated and/or adjusted for fuel gas mixes. Complex gas mixing systems with monitoring and a hazard/risk assessment are available alongside the less expensive two and three-component mixers.



Example of synthetic gas production (natural gas here)

N_2 / CO_2 / Ar / He gas mixer



Ar / He und H_2 / CH_4 / C_3H_8 etc. two-channel gas mixer

Mixing system with humidification dosing system

Leak test system for impermeability testing

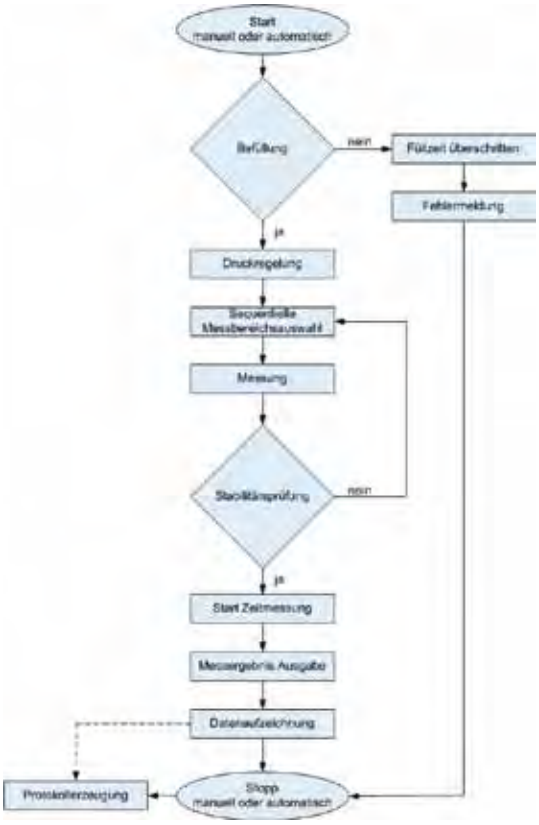
The WALeck leak test system can test the impermeability of valves and hollow bodies of all types. WALeck can be supplied directly as a standalone tabletop unit or as an active unit subject to superordinated controls, e.g. production sequences. Depending on the application, WALeck can be employed using the relative pressure process or the differential pressure process (pressure reduction) for impermeability tests.

Automated, rapid filling of the test piece is effected by the pressure regulator and an accurately calibrated mass flow meter. An embedded PC (SPS) controls intelligent cascaded switching between the respective ideal accurate measurement ranges of multiple mass flow meters. The touch screen control panel allows for intuitive evaluation and operation. Leakage is indicated in mln/min or mbar l/sec.

In addition to the fully automated model, we also offer economy systems with manual pressurisation. The WALeck is used for the characterisation of pumps or KV values with the recording of flow characteristics.

Advantages

- Easy operation via an external start signal or touch screen
- Rapid and precise determination of leakage
- Storages of multiple testing sequences
- External control link
- Output of measurement values / report via an Ethernet (FTP) or RS232 interface
- High universal dynamics via automated measurement range switchover
- TFT operating terminal with touch panel
- Display and logging of characteristics
- Clear and distinct characterisation of the test piece (OK / Not OK)



Possible test pieces

Accurate pumping and monitoring of liquids

The newly developed HPLMC (High Pressure Liquid MASS Controlled Pump) doses and monitors flow in situ more or less independently of the process counter-pressure.

Will my pump really always pump what I want?
This uncertainty does exist if there is no way of monitoring the pump directly, either personally or via a time-based gravimetric measurement process. Wear or pump defects, unexpected high counter-pressures, lack of dosing liquid, leakages, air inclusions, compressibility factors, blockages – all these can lead to a liquid volume different from what is actually required.

The special feature of this pump is that the pumped volume can optionally be monitored and precisely measured with a mini-CORI-Flow® mass flow sensor in a closed loop. The pump is controlled by means of an intuitive touch screen control panel or an external control signal.

In addition to flow volume, impermeability, temperature, batch quantity and, optionally, process pressure can also be included in the output. The pump is controlled by means the touch control panel or the interfaces, for example analog signals, PROFIBUS-DP (optional).

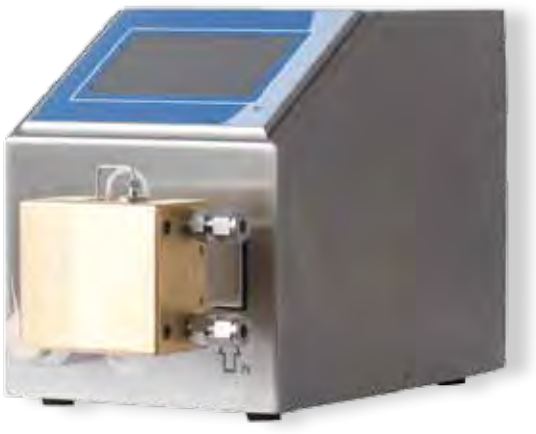
The ideal pump for dosing in test benches, reactor systems or pilot/processing units.

Max. values of the three available pump buttons
2 – 10 – 50 ml/min

Liquid dosing volumes
0.0016 ml/min to 50 ml/min (H_2O)
0.01 g/h to 3.000 g/h for H_2O

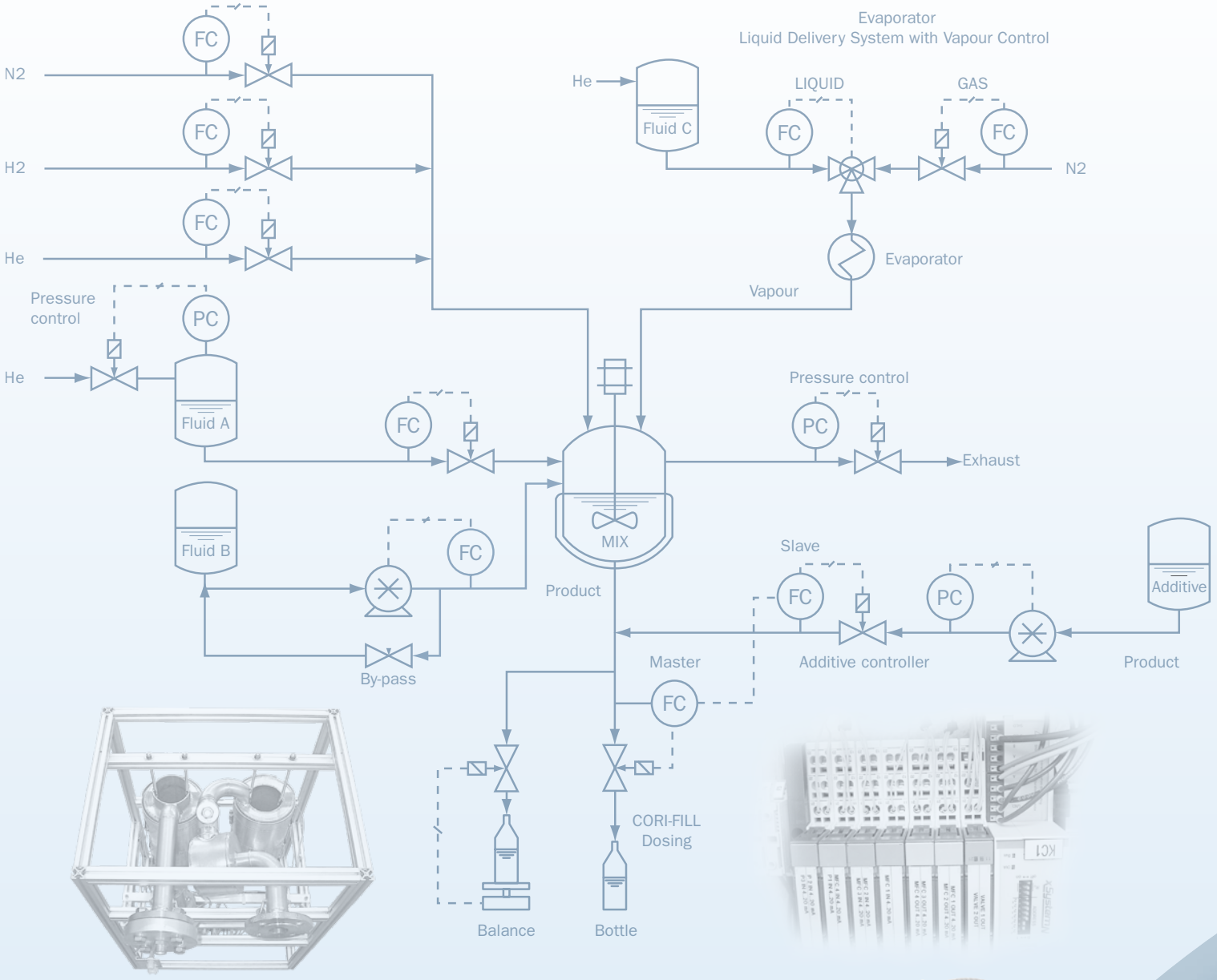
Features

- Easy operation via touch screen or external analog signals
- Pumping up to 400 bar
- Precision regulation with flow measurement (optional)
- Integrated impermeability measurement (optional)
- Integrated pressure measurement and shutdown
- Robust stainless steel housing
- Stainless steel or PEEK material
- Feed specification as batch
- Integrated pressure regulation



Pump with temperature control head

Gases, liquids and vapour –
Accurate measurement and control are our strong points



From the feasibility study to the finished system or test bench

FLUSYS

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