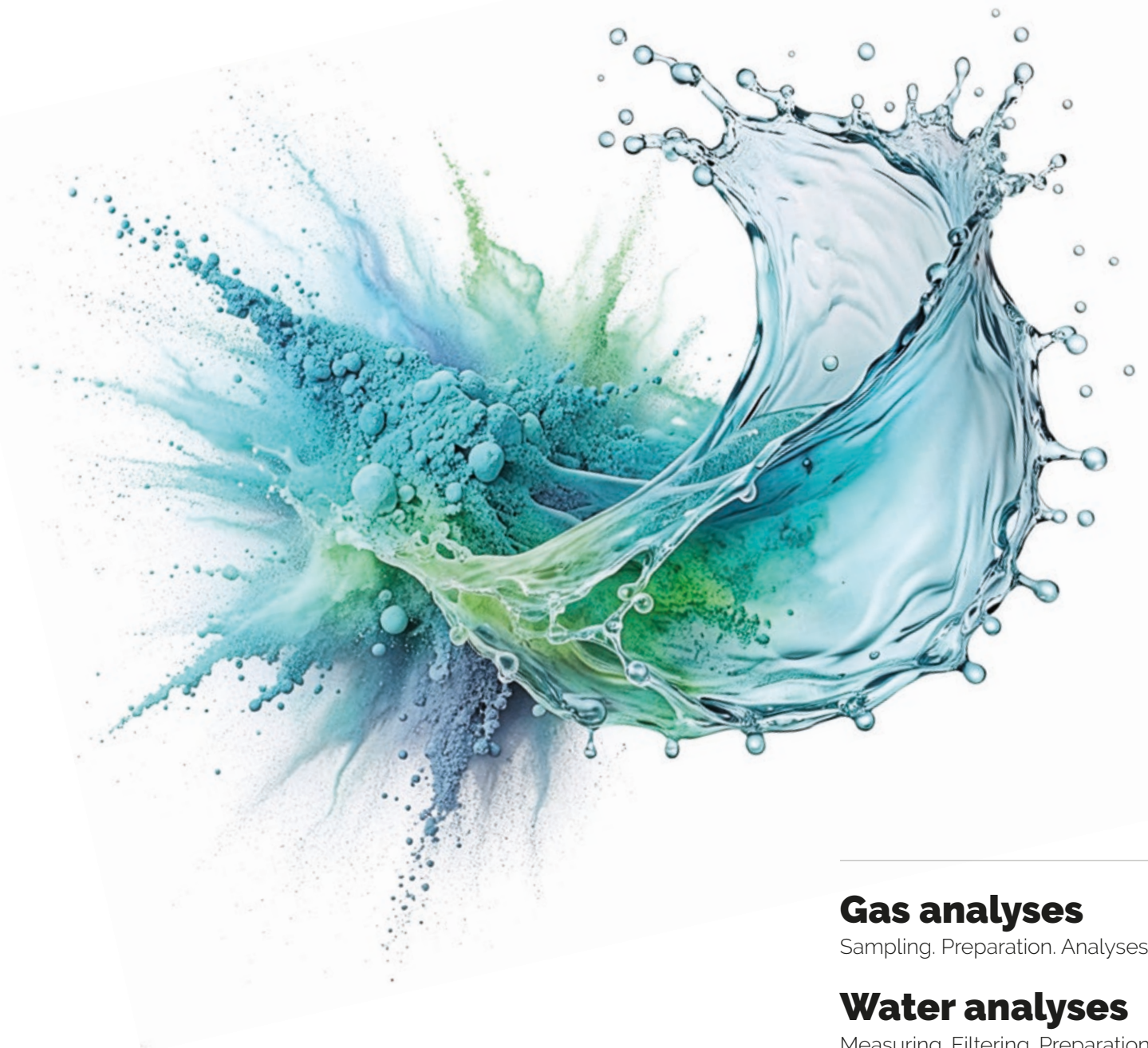


Analysis equipment for gas and water

We measure quality.



Gas analyses

Sampling. Preparation. Analyses.

Water analyses

Measuring. Filtering. Preparation.

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Family-owned with a passion for analytics

We are Gröger & Obst

Your partner for analyzers and system solutions for gas and water

Our approach: Always one step ahead.

With this mindset, we develop our solutions in-house and implement them directly at our headquarters in Upper Bavaria. As an owner-managed company, it is a matter of principle for us that every analytical instrument bearing our name delivers reliable performance and long-term operation – today and in the future.

Since our founding in 1986, we have established ourselves as a solid presence in the market for gas and water analysis – and we will continue to be at your side as an expert for high-quality analyzers “Made in Germany”.



What are our products used for?

Our solutions for **water analyses** enable reliable monitoring of municipal and industrial wastewater as well as surface water, drinking water and process water. They support safe process control and help you to comply with legal requirements efficiently.

In the field of **gas analyses**, precise measurements and flexible application options are key. Our instruments are used for monitoring air and climate applications as well as for process control. In addition, they are applied in research, laboratories, the chemical and petrochemical industry, cleanrooms and in immission and emission monitoring.



Gas analyses

- ✓ Chemical industry
- ✓ Chemical laboratories
- ✓ Filter monitoring
- ✓ Research institutions
- ✓ Immission and emission monitoring
- ✓ Hospitals
- ✓ Aerospace
- ✓ Cleanroom monitoring



Water analyses

- ✓ Wastewater tax regulations
- ✓ Wastewater treatment plants
- ✓ Airports
- ✓ Surface water quality monitoring
- ✓ Municipal and industrial sewage treatment plants
- ✓ Refineries
- ✓ Drinking and process water monitoring

Why Gröger & Obst?



Innovative

Gröger & Obst stands for many things – but not for standing still. Our development team is continuously working to innovate and upgrade our analyzers.



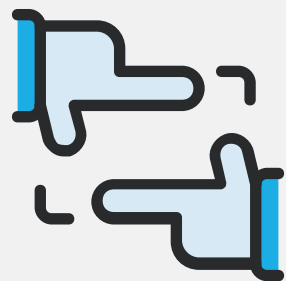
Personal

As a family-owned company, trust, honesty and partnership are particularly important to us.



High-quality

Sustainability and long operating life are what make our instruments so distinctive.



Individual

Individual consulting is essential to us. Ideally, this takes place directly on site, where we can gain a clear understanding of your specific requirements.

We are happy to adapt the construction of our analyzers to your specific requirements. Whether wall-mounted systems, benchtop instruments or very compact constructions – together we'll find the solution that works best for you. Our 40 years of experience in gas and water analysis enable us to configure the ideal analyzer for your specific application.

We always focus on simple assembly and user-friendly operation.

Our analyzers can be operated safely and conveniently from the front. All tubing is color-coded to make servicing and maintenance as easy and safe as possible. Our peristaltic pumps are equipped with transparent tubing to allow for quick and simple visual inspection.

Gröger & Obst analyzers – when accuracy matters most

Our areas of expertise

Water analyses

Online TOC analyzers, filtration and sample preparation systems. Our analyzers allow you to choose between different measuring components and constructions so that you can select the solution that best fits your specific requirements.



Gas analyses

Gas preparation systems and analyzers for online measurements and precision monitoring. We provide proprietary measuring methods and sample gas preparation systems for determining gases such as CH₄, CO₂, O₂, SO₂, ATC and other chemical gas components.





Water analyses





Gröger & Obst

Your specialist for water analyses

In the area of water analysis, we offer online TOC analyzers, filtration and sample preparation systems.

For the analyzers, we provide a variety of measuring components and constructions to meet the widest possible range of customer-specific requirements. We use high-quality analyzers from Siemens and ABB.

The flexibility for a wide variety of applications is further enhanced by the filtration and sample preparation systems we have developed in-house. The interaction between sample preparation and the analytical system optimizes measurement results, reduces maintenance effort and improves operating life.



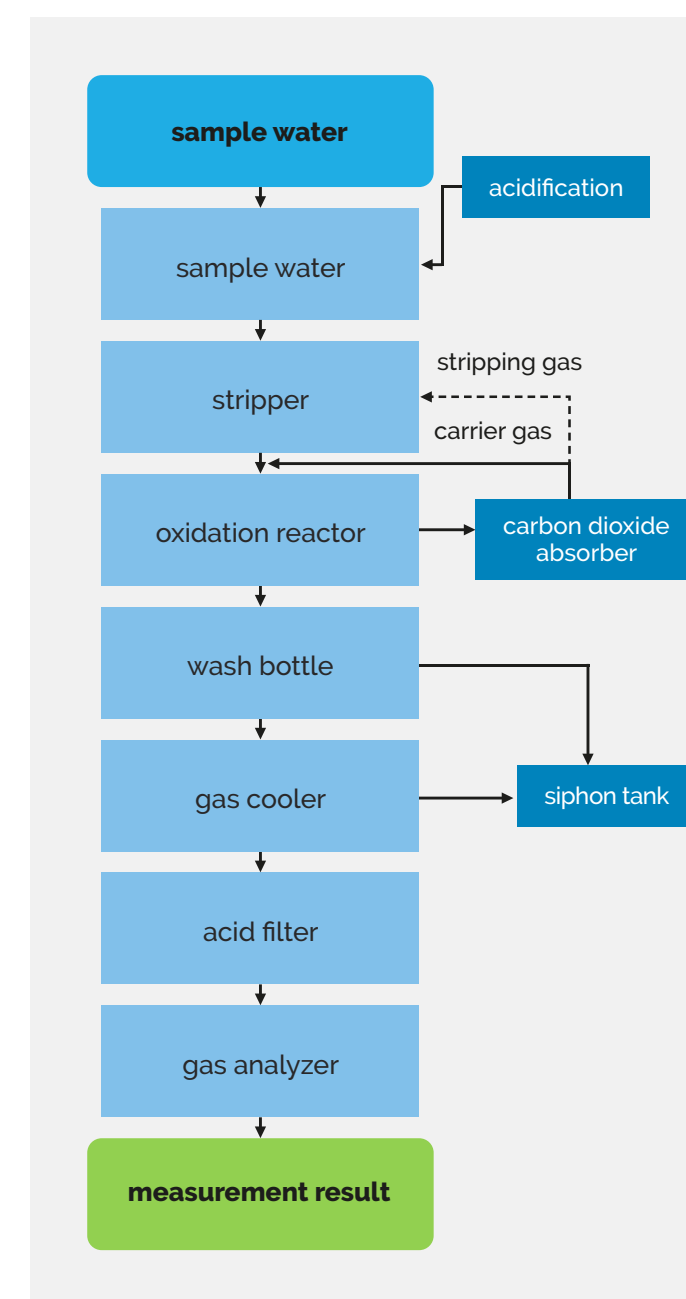
Measuring & filtering

Multifunctional and individual – these are the key attributes that characterize Gröger & Obst measuring systems.

We provide instruments for the continuous determination of total organic carbon (TOC) in water with automatic sample preparation, as well as for the analysis of individual samples.

OUR TOC ANALYSIS METHOD

- The GO-TOC analyzers automatically take the required sample volume from a sample stream, a sample tank or a sample changer.
- The sample water is acidified to approximately pH 2 with an inorganic acid.
- The inorganic carbon fraction is removed from the sample as CO₂ in a stripper tank, while the organic carbon remains in the sample.
- A dosing pump feeds the pre-treated water in a defined volume to the combustion chamber of the oxidation reactor.
- Air is drawn from the jacket of the oxidation reactor, freed of CO₂ and introduced into the reactor together with the sample water as carries gas.
- In the oxidation reactor, the sample water is evaporated and the water constituents are combusted.
- Carbon species are quantitatively oxidized to CO₂ and nitrogen species are quantitatively oxidized to NO
- In the wash bottle, the water vapor share is kept constant.
- The cyclone Peltier cooler GO-PK 2 cools the gas mixture from the oxidation reactor and removes the water vapor formed. The condensate is collected and discharged via a siphon tank.
- Acid residues from the acidification step are retained in acid filters.
- The microprocessor-controlled gas analyzer determines the quantity of CO₂ / nitrogen formed (optional).
- The TOC share of the sample water is displayed in mg C/l. The nitrogen share is displayed in mg N/l (optional).



In a nutshell

Everything about TOC analysis – simply scan the QR code.



GO-TOC P

Measurement system for continuous recording of total organic carbon (TOC) in water with automatic sample preparation. With optional TN measurement.

Function

Measurement system for determining total carbon (TC), total organic carbon (TOC), inorganic carbon (TIC) or dissolved organic carbon (DOC) according to DIN 38409 Part 3 / EN 1484 and for the optional determination of total bound nitrogen (TNb) according to DIN 38409 Part 27 in water. The system features automatic sample preparation for process analysis or for manual and automatic single-sample analysis.

How it works

The determination is based on thermal-catalytic oxidation of the water constituents to be analyzed. The quantity is determined in an infrared analyzer. The gases CO₂ for carbon determination and NO for nitrogen determination are measured (see also data sheet "Method of analysis"). Process analysis is performed with continuous sample water feed and automatic TIC elimination. For laboratory analysis, samples can be fed manually.



Measurement value display

Measurement values are displayed in mg C/L or mg N/L.

Instrument variants

Instrument variants are configured precisely to your requirements and installation conditions. We provide customized solutions tailored to your specific needs and operating conditions. Just let us know – we will be happy to implement your requirements, as far as they are technically feasible.

GO-TOC P performance data

NDIR gas analyzer	Ultramat 6 F / 6 EU / 6 E – 2 PU ABB Uras26
Minimum measurement range TOC	0 – 5 mg C/L (other measurement ranges on request)
Minimum combined TOC/TN measurement range (option)	TOC 0 – 5 mg C/L, TN 0 – 100 mg N/L
Dosing pump	4-channel dosing pump
Display	LCD multifunction display
Limit value outputs	4
Output signals	0/2/4 – 20 mA interface / PROFIBUS interface optional / 6 potential-free relay contacts
Operating temperature of the oxidation reactor	850 °C
Ambient temperature	5 – 30 °C
Power consumption	max. 1,600 VA
Mains connection	230 V, 50 Hz
Dimensions (H x W x D)	approx. 1,700 x 700 x 350 mm (mounting plate) approx. 1,900 x 800 x 500 mm (steel cabinet)
Gas cooler	peltier cooler GO-PK 2
Raw sample flow rate	approx. 250 mL/h
Measuring water flow rate	approx. 40 mL/h
Weight	approx. 100 kg (mounting plate) approx. 190 kg (steel cabinet)
Materials conducting sample	ceramic, glass, platinum, Viton, PVC, palladium, PTFE, silicone
Stripping and carrier gas	Ambient air

Facts

Applications

- ✓ Wastewater treatment plant monitoring
- ✓ Monitoring of industrial wastewater
- ✓ Drinking water control
- ✓ Surface water testing in refineries and at airports
- ✓ Water quality monitoring
- ✓ Simplification for the wastewater discharge regulation

Equipment options

- ✓ Version for simultaneous analysis of TOC and TNb (bound nitrogen)
- ✓ Dilution unit
- ✓ GO-RIF in-line pipe filter
- ✓ Sampling point changeover
- ✓ 2nd reactor
- ✓ Steel cabinet
- ✓ GO-MC measurement container
- ✓ GO-OTP oven support plate
- ✓ Analyzers from Siemens and ABB (freely selectable)

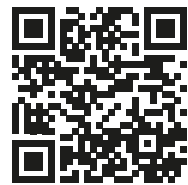
Benefits

- ✓ Continuous measured value recording
- ✓ Measurement according to DIN 38409 and EN 1484
- ✓ Online operation
- ✓ Automatic sample preparation
- ✓ Robust, proven technology



In a nutshell

Scan the QR code now and benefit from tips from our expert Patrick Kaisler.



2nd reactor for GO-TOC

Complete standby reactor including manual switching of the sample feed to reduce downtime during cleaning and maintenance work on the reactor.

The 2nd Reactor reduces maintenance time many times over.

If the reactor in the TOC system becomes soiled, it can be switched quickly to the 2nd reactor without major interruption to measurement. The other reactor can then be cleaned and returned to standby mode. This means a ready-to-operate reactor is available at all times.



Changing a reactor is faster than cleaning a reactor. This significantly reduces downtime during maintenance work.

Additional effect of heating in offline operation: the reactor contents are thermally cleaned before use.

Performance data

Mains connection	230 V 50 Hz
Power rating	approx. 1,100 Watts
Dimensions (H x W x D)	approx. 1,700 x 500 x 300 mm other sizes/dimensions available on request
Weight of the support plate	approx. 50 kg

Facts



Benefits

- ✓ For standby operation
- ✓ On mounting plate for wall mounting, suitable for side-by-side mounting
- ✓ Reduced downtime
- ✓ The reactor is thermally cleaned before use

GO-MC (measurement container)

Reliable and safe measurement and dosing without major structural modifications and at manageable cost.

We work in close partnership with H2Ortner GmbH to offer the GO-MC measurement container as a field-proven and flexible solution for housing sensitive measuring technology. Based on the proven MessDos concept from H2Ortner GmbH, the result is an individually configurable container solution that is optimally adapted to the on-site requirements.

The GO-MC serves in particular for the safe, weather-protected, and temperature-controlled operation of our GO-TOC analyzers as well as other sensitive gas and water analysis systems. Thanks to its modular



construction and project-specific planning, customer-specific requirements can be implemented efficiently for maximum operational reliability and cost-effectiveness.

 Every container is planned individually and specifically for you.

Facts



Benefits

- ✓ Weather-resistant basic solution
- ✓ Measuring technology/analyzers from various manufacturers possible and combinable
- ✓ Can be supplemented with dosing technology
- ✓ Additional storage of WGK chemicals possible
- ✓ Pipe paths can be configured individually
- ✓ Equipment is configured individually
- ✓ Container size is adapted to fit the available space
- ✓ Custom container configurations are available, such as a spill containment pan, crane eyes for relocation, heating and air conditioning, and a wash basin
- ✓ Floor construction freely selectable
- ✓ Manufacturer-independent configuration
- ✓ Optimized measurement accuracy through protection from environmental influences

Reactor support plate GO-OTP

System for rapid replacement of reactors to reduce downtime during cleaning and maintenance work.

In this construction, the reactors are built as easily exchangeable plug-in modules.

One of the modules is used in the GO-TOC P during ongoing measuring operation (online).

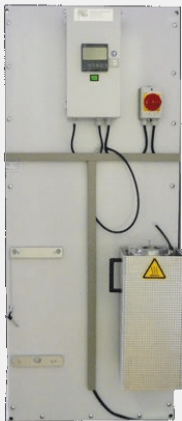
The second module is taken out of operation (offline) and serves as a standby reactor.

On the support plate, one module can be heated up to operating temperature in standby operation by means of a temperature controller and preflushed with air by means of an integrated pump.

Performance data

Mains connection	230 V 50 Hz
Power rating	approx. 1,100 Watts
Dimensions (H x W x D)	approx. 1,700 x 700 x 300 mm with module other sizes/dimensions available on request
Weight of the support plate	approx. 50 kg without module
Module weight	approx. 10 kg

Facts



Benefits

- ✓ For standby operation
- ✓ On mounting plate for wall mounting, suitable for side-by-side mounting
- ✓ Reduced downtime
- ✓ The reactor is thermally cleaned before use

GO-FP (filter plate)

Reliable filtration and uninterrupted sample preparation in wastewater engineering.

The robust filter plate is specifically designed for reliable use in water analysis and ensures uninterrupted sample preparation. Equipped with Ø 28 mm stainless steel lines, it provides a durable and corrosion-resistant solution even under demanding operating conditions.

The integrated system of 3-way ball valves enables flexible switching between two line paths. While one line is actively in operation, the second remains shut off and can be cleaned or serviced in parallel. This ensures continuous flow without measurement failure at all times.

Performance data

Dimensions (H x W x D)	approx. 1,700 x 700 x 300 mm
Weight	approx. 60 kg

Facts



Benefits

- ✓ Dual filter system
- ✓ On mounting plate for wall mounting, suitable for side-by-side mounting
- ✓ Lines made of corrosion-resistant material
- ✓ Simple sample changeover

GO-PBF (paper band filter)

Reliable filtration for precise measured values.

Analyzable water is essential in analytical applications. To keep your wastewater investigations precise and reproducible, efficient filtration is required. Our high-quality GO-PBF paper band filter ensures that particles and fibrous materials are reliably removed from your samples — for exact results in wastewater monitoring.

Especially in sensitive measuring methods such as TOC analysis according to DIN 38409 and EN 1484, a clean sample is essential. Our GO-PBF paper band filter optimizes your wastewater analyses by reliably removing unwanted solids – an ideal solution for use with GO-TOC analyzers and many other applications. In addition, the filter protects the TOC analyzer against coarse contamination, ensuring a long operating life and consistently accurate results. This reduces maintenance effort and minimizes disruptions during measuring mode. Uniform filtration also compensates for even the slightest fluctuations in sample quality, improving the comparability and reproducibility of your measured results. This ensures that your analyses always meet the highest quality standards.

How it works

The filter paper is immersed in the feed tank containing the flowing sample water, conducted by a Teflon suction piece, and then discharged by a peristaltic pump. The automatic tape feed ensures even use of the filter paper, while the flexible time settings facilitate easy maintenance.



Award-winning: our band filter

Our paper band filter was awarded the BSFZ seal by the German Federal Ministry of Education and Research. The seal confirms that this is an eligible research and development project distinguished by innovative strength and technological advancement. This recognition underscores our commitment to consistently providing the best solutions for precise wastewater analyses.

Invest in precise analyses

With our paper band filter, you ensure that your wastewater samples are free of solid particles and that your measured values meet the highest quality standards. This innovative solution, recognized with the BSFZ seal, offers you a simple, reliable, and efficient method of optimizing your water analyses.

Facts

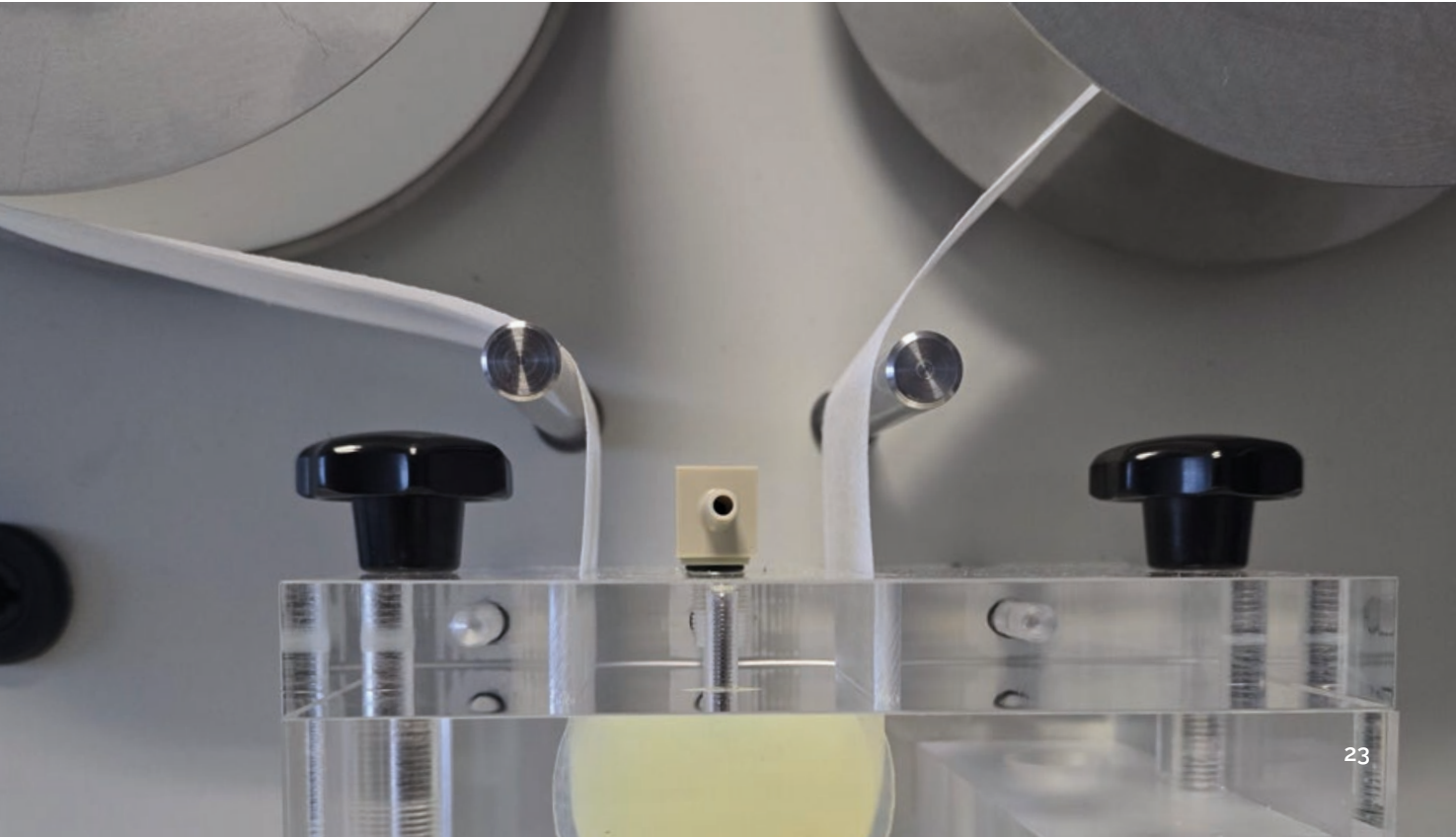
Benefits

- ✓ Versatile filter options
- ✓ Precise filtration
- ✓ Easy handling
- ✓ Efficient operation



GO-PBF performance data

Flow rate	2 L/min
Tank volume	approx. 0.9 l
Operating pressure	max. 1 bar
Connections	inlet: G ½" with ball valve outlet: G 1"
Filter belt	length: ~ 180 m width: ~ 70 mm
Filter rating	50 - 100 µm depending on requirements
Mains connection	230 V, 50 Hz with Schuko plug, 1.5 m cable
Power consumption	max. 15 VA
Drive	AC motor 230 V 5 rpm
Housing	polyester / GRP optionally in stainless steel
Dimensions (H x W x D)	approx. 500 x 400 x 200 mm
Weight	approx. 13 kg



GO-TOC 100 P

Measurement system for continuous determination of total organic carbon (TOC) in water with automatic sample preparation. Optional with TN measurement.

Function

Measurement system for determining total carbon (TC), organic carbon (TOC), inorganic carbon (TIC), or dissolved organic carbon (DOC) in water according to DIN 38409 Part 3 / EN 1484 and, optionally, total bound nitrogen (TNb) according to DIN 38409 Part 27. With automatic sample preparation for process analysis or for manual or automatic individual sample analysis.

How it works

The determination is based on the thermal-catalytic oxidation of the water constituents to be analyzed. Quantification is performed in an infrared analyzer. The gases detected are CO₂ for carbon determination and NO for nitrogen determination (see also the „Analysis method“ data sheet).



In process analysis, operation is based on continuous sample water feed and automatic TIC elimination. For laboratory analysis, samples can be fed manually.

Measured value display

Measured values are displayed in mg C/l and mg N/l respectively.

GO-TOC 100 P performance data

NDIR gas analyzer	Ultramat 6 F / 6 EU / 6 E – 2 PU ABB Uras26
Minimum measurement range TOC	0 – 5 mg C/l (other measurement ranges on request)
Minimum combined TOC/TN measurement range (option)	TOC 0 – 5 mg C/l, TN 0 – 100 mg N/l
Dosing pump	4-channel dosing pump
Display	LCD multifunction display
Limit value outputs	4
Output signals	0/2/4 – 20 mA interface / PROFIBUS interface optional / 6 potential-free relay contacts
Operating temperature of the oxidation reactor	850 °C
Ambient temperature	5 – 30 °C
Power consumption	max. 1,600 VA
Gas cooler	peltier cooler GO-PK 2
Raw sample flow rate	approx. 250 ml/h
Measuring water flow rate	approx. 40 ml/h
Stripping and carrier gas	ambient air
Weight	approx. 95 kg
Mains connection	230 V, 50 Hz
Dimensions (H x W x D)	approx. 600 x 1,150 x 600 mm

Facts

Applications

- ✓ Wastewater treatment plant monitoring
- ✓ Monitoring of industrial wastewater
- ✓ Drinking water control
- ✓ Surface water testing in refineries and at airports
- ✓ Water quality monitoring
- ✓ Simplification of the wastewater tax regulations

Equipment options

- ✓ Version for simultaneous analyses of TOC and TNb (bound nitrogen)
- ✓ Dilution unit
- ✓ GO-RIF in-line pipe filter
- ✓ Sampling point changeover
- ✓ GO-MC measurement container
- ✓ Analyzers from Siemens and ABB (freely selectable)

Benefits

- ✓ Continuous measured value recording
- ✓ Measurement according to DIN 38409 and EN 1484
- ✓ Online operation
- ✓ Automatic sample preparation
- ✓ Robust, proven technology

GO-SFP screen filter cartridge

Filter for the continuous extraction of a sample from a dip basin or a main water flow.

The GO-SFP screen filter cartridge is used for the continuous extraction of a filtered partial flow from a main water stream flowing past the outside, such as sampling from an overflow tank.

The filter is arranged radially. The main water flow or turbulence provides a certain self-cleaning effect, ensuring long filter operating life.



In this simple and extremely cost-effective way, a sufficient filtrate volume is obtained for downstream analysis equipment.

The GO-SFP screen filter cartridge is manually cleaned mechanically when needed.

Performance data

Filter cartridge	radial outer slots
Slot width	50 µm
Material	stainless steel 1.4301
Sample connection	PP tube nozzle DN 04 Other materials available on request
Dimensions	approx. L 85 x Ø 35 mm
Weight	approx. 200 g

Facts



Benefits

- ✓ Easy handling
- ✓ Cost-effective version for sampling
- ✓ Quick manual mechanical cleaning

GO-RIF inter- nal pipe filter

Continuous extraction of a filtered sample flow from a main water flow through the unit.

This filter can be integrated directly into a pipeline or tube. No power connection is required for operation.

The arrangement of the filter slots parallel to the flow direction of the main flow enables a sufficient filtrate yield for downstream analysis equipment while allowing for a long filter operating life.



For cleaning, the filter housing can simply be disconnected from the tube and the filter can be cleaned mechanically.

Filter housings are available in brass or stainless steel (VA).

Performance data

Stainless steel filter tube	axial internal slots
Slot width	50 µm
Housing	stainless steel (VA) or brass
Main flow connections	couplings with 1-inch hose connections
Sample connection	tube nozzle DN 04
Weight	stainless steel (VA) approx. 1.75 kg, brass approx. 1.1 kg
Dimensions	approx. L 270 x Ø 50 mm

Other filter inserts are possible upon request; just contact us.

Facts



Benefits

- ✓ Filter housing and filter tubes made of metal
- ✓ Easy cleaning
- ✓ Provides sufficient filtrate yield with long filter operating life
- ✓ Direct integration into pipeline or tube
- ✓ Easy handling

GO-KSP

GO-KSP condensate pump: The smart solution for condensate water.

No drain nearby for condensate water? No problem. With the GO-KSP condensate pump, even the smallest quantities are reliably and continuously transported to the next drain.



Performance data

Flow rate	14 ml per minute
Mains connection	230 V 50 Hz
Dimensions (H x W x D)	approx. 170 x 90 x 140 mm

Facts



Benefits

- ✓ Easy replacement of the condensate pump tube
- ✓ **Compact and efficient:**
Delivers up to 14 ml per minute at only 10 revolutions, ideal for small condensate quantities.
- ✓ **Durable and robust:**
The high-quality Novoprene tube ensures long and reliable operating life.
- ✓ **Flexible in use:**
Not just in combination with our GO-TOC equipment
- ✓ **Tailored solutions:**
Do you need more performance? No problem. We can configure a device for you that perfectly matches your requirements.

GO-4KPP

4-channel peristaltic pump in a robust and resistant plastic housing.

The GO-4KPP is equipped with four clamping brackets. This allows the pump tubes to be replaced quickly and easily. The contact pressure can also be fine-tuned using adjusting screws. The speed is fixed and the direction of rotation is reversible. A special feature is that you can choose between two different pump heads.



Performance data

Mains connection	230 V, 50 Hz
Dimensions (H x W x D)	approx. 280 x 165 x 200 mm



Facts

Benefits

- ✓ Selectable pump heads
- ✓ Durable and robust drive motor
- ✓ Easy handling

The stripper series

Analysis and sample preparation



GO-T stripper

Outgassing unit for clean and filtered water to reduce the T90 time, available in two versions.

GO-3A

The GO-3A (automatic outgassing and setting) makes it possible to continuously prepare even heavily soiled sample water.

GO-3A/P

With the GO-3A/P (automatic outgassing, setting and pump-out), the precisely dispensed sample feeding is also realized.

GO-6A

The GO-6A (automatic outgassing and setting twice over) prepares very heavily contaminated sample water continuously.

GO-HCL

Ideal for removing volatile organic compounds (VOC) from 30% hydrochloric acid.

GO-AG2-H

The GO-AG2-H outgassing tank with holding plate prepares lightly contaminated sample water.

GO-T stripper

Sample preparation with volumetric dosing for the measurement of TOC, TNb, and VOC.

The GO-T stripper was developed to reduce the time required for stripping and introducing the sample into the oxidation reactor as much as possible.

The GO-T stripper is suitable only for preparation of particle-free water. Upstream particle filters with a maximum permeability of 50 µm are absolutely essential.

Thanks to its special design, it is possible to save about 60 seconds or more. This shortens the period between sampling and output of the measured value.

This results in both safety-related benefits in process control and potential cost savings in the construction details of process plants.

We offer additional solutions for soiled wastewater.



Performance data

Stripping gas flow rate	20 – 40 L/h
Sampling water flow rate	150 – 250 mL/h
Extracted dosage	approx. 30 mL/h
Supply voltage	24V DC
Ambient temperature	5 – 45 °C
Dimensions (H x W x D)	approx. 165 x 85 x 55 mm
Weight	approx. 1 kg
Materials conducting sample	glass, silicone, PVC

GO-3A stripper

The GO-3A (automatic outgassing and setting) prepares very heavily contaminated sample water continuously.

For heavily soiled sample water, our previous solution was the rugged, easy-to-clean tube stripper.

The consistent advancement is our new GO-3A stripper with automatic outgassing and setting.

In the past, unwanted particles such as sand or similar materials entered the reactor along with the sample water via the peristaltic pump. This led to contamination in the tubing system, increased wear on the feed tube to the reactor and of course unnecessary contamination of the reactor.

With the new GO-3A stripper, this can largely be prevented. After the inorganic carbon is stripped, the sample water flows into a settling tube, where heavy, unwanted particles can settle, while at the same time the sample is taken to the reactor.



At certain time intervals, the squeeze valve at the bottom of the settling tube opens and the settled particles are removed. By choosing settling and rinsing times individually, we can specifically remove various problematic substances before they reach the tubing system and the reactor.

This reduces contamination and wear. We would be happy to check whether and in what form the GO-3A stripper can be used for your application.

Performance data

Stripping gas flow rate	20 – 40 L/h
Sampling water flow rate	150 – 250 mL/h
Treated sample volume	20 – 40 mL/h
Supply voltage	24V DC
Ambient temperature	5 – 45 °C
Dimensions (H x W x D)	approx. 180 x 180 x 100 mm
Weight	approx. 1 kg
Materials conducting sample	glass, PVC, silicone

GO-3A/P stripper

The GO-3A/P (automatic outgassing, setting, and pump-out) additionally provides maintenance-free and precisely dosed sample conveyance.

For particle-free, pre-filtered (<50 µm) sample water. The "P" stands for pump — more precisely, for a magnetic-diaphragm dosing pump.

In addition, the use of a special drip-in tube is required (item 700.002).

The main focus when developing this device was reducing the maintenance effort of our GO-TOC/ TNb measuring devices.

During routine operations, the normal wear on the feed tube to the reactor leads to a slow but steady change in flow rate, which results in a change in the measured value.

In the past, such deviations were corrected by calibrating our GO-TOC TNb units.



To spare our customers this effort, we use a highly precise magnetic-diaphragm dosing pump in our new GO-3AP stripper. This pump conveys the stripped sample water into the reactor. To prevent unnecessary wear on the pump caused by particles, we have installed our GO-3A stripper upstream of it.

Thanks to the customizable setting and flushing times of the stripping unit and the wide range of adjustment options for the magnetic-diaphragm dosing pump, our customers can achieve a wide variety of optimizations.

Performance data

Stripping gas flow rate	20 – 40 L/h
Sampling water flow rate	150 – 250 mL/h
Treated sample volume	20 – 40 mL/h
Supply voltage	24V DC
Ambient temperature	5 – 45 °C
Dimensions (H x W x D)	approx. 180 x 180 x 100 mm
Weight	approx. 1 kg
Materials conducting sample	glass, Viton, PVC, silicone, Teflon

GO-6A stripper

The GO-6A (automatic outgassing and setting twice over) prepares very heavily contaminated sample water continuously.

For heavily contaminated sample water, our previous solution was the rugged, easy-to-clean tube stripper.

A consistent advancement for reducing maintenance effort is our GO-6A stripper with automatic outgassing and setting – twice over.

In the past, unwanted particles such as sand or similar materials entered the reactor along with the sample water via the peristaltic pump. This led to contamination in the tubing system, increased wear on the feed tube to the reactor and of course unnecessary contamination of the reactor.

With the GO-6A stripper, this can largely be prevented. Right at the beginning, unwanted, heavy particles can settle in a special container under increased ambient pressure. These particles are removed automatically by means of a robust pinch valve. Time-consuming cleaning work on the valve is therefore no longer necessary.

Performance data

Stripping gas flow rate	20 – 40 L/h
Sampling water flow rate	150 – 250 mL/h
Treated sample volume	20 – 40 mL/h
Supply voltage	24V DC
Ambient temperature	5 – 45 °C
Dimensions (H x W x D)	approx. 180 x 180 x 100 mm
Weight	approx. 1 kg
Materials conducting sample	glass, PVC, silicone



This first measure prevents unwanted particles from settling in the downstream tube stripper and causing carryover of measured values.

After the inorganic carbon has been stripped out, the sample water flows into a settling tube in which remaining unwanted particles can settle once again. At the same time, the sample is taken to the reactor. At regular intervals, the pinch valve at the lower end of the settling tube opens and the accumulated particles are removed.

By choosing settling and flushing times individually, the system can be optimally adapted to the ambient conditions.

GO-HCL stripper

Ideal for removing volatile organic compounds (VOC) from 30% hydrochloric acid.

Thanks to its acid-resistant materials, the stripper does not affect either the total organic carbon (TOC) or the total inorganic carbon (TIC). After the outgassing process, the hydrochloric acid is returned to the system.



GO-AG2-H

Two-stage outgassing tank with a support plate.

The two-stage outgassing unit is used for the effective treatment of sample water and is specifically engineered for low-contamination water to be measured. It is ideal for applications involving slightly contaminated cooling water or deionized water and ensures reliable and stable sample preparation.

As a proven standard, this version is integrated into our GO-TOC analyzers. For more demanding applications or more heavily contaminated waters, alternative stripper variants are available that can be customized individually according to specific customer requirements.



Performance data

Stripping gas flow rate	20 – 40 L/h
Dimensions (H x W x D)	approx. 100 x 35 x 45 mm
Weight	approx. 10 g
Materials conducting sample	glass, PVC



GRÖGER
& OBST

Nothing goes undetected.



So larger problems don't arise in the first place.

Gröger & Obst analyzers provide you with clear and reliable water measurement data in a timely manner.



Gas analyses





Gröger & Obst

Your specialist for gas analyses

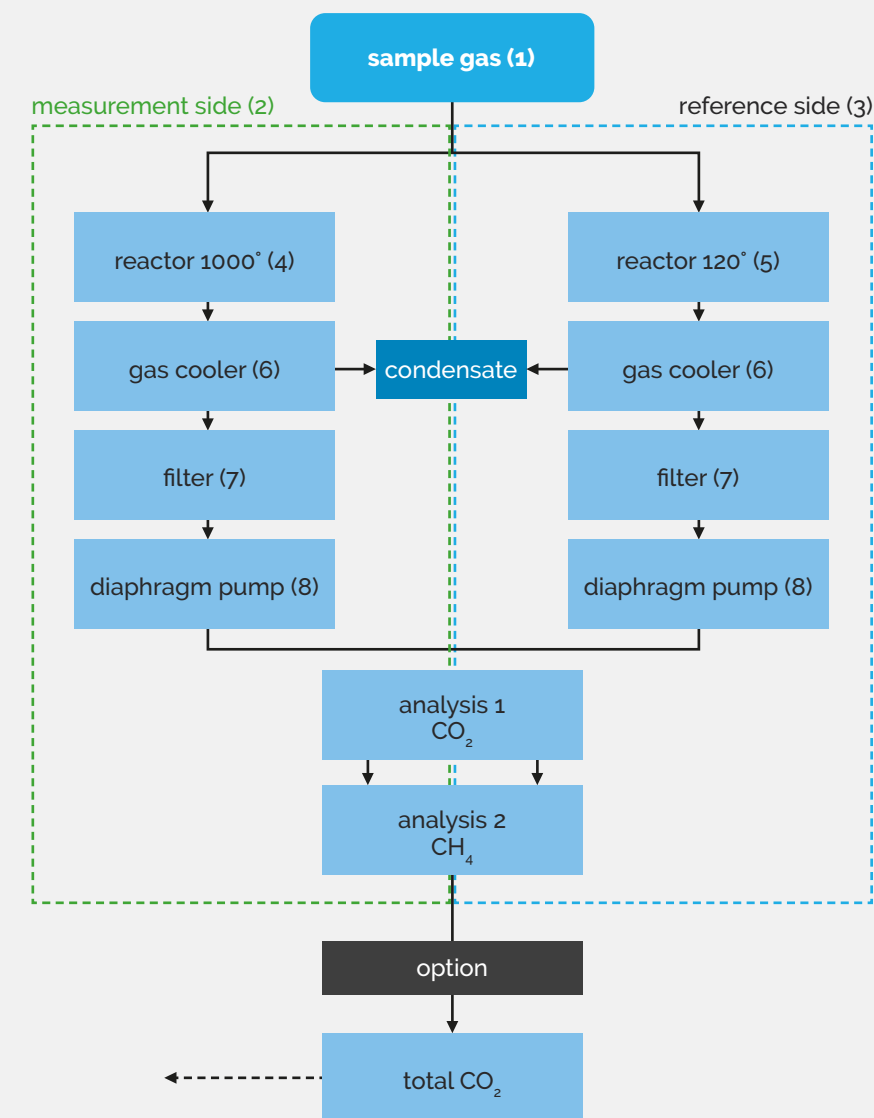
In the field of gas analysis, we offer gas preparation systems and measuring instruments for the online measurement of, for example, CH_4 , CO_2 , O_2 , SO_2 and ATC (total carbon share in gas) as well as other chemical gas components.

We utilize our own measurement methods and sample gas preparation systems.

In doing so, we give measurement gas preparation the attention it requires to minimize cross-sensitivities in the analyzers and ensure precise repeatability in measurement results throughout the entire operating life of the instruments.



The GO-ATC analyses method



A sample gas flow (of approx. 120 l/h) is continuously taken from the gas to be tested (1).

The gas flow is evenly divided between the symmetrically parallel measurement side (2) and reference side (3).

The gas flow on the measurement side is passed through a reactor (4) heated to 1,000 °C and containing a catalytically coated packing.

On the reference side, the gas is passed through a reactor (5) heated to 120 °C in order to prevent the deposition of water or hydrocarbons.

The measurement/reference gas is then passed through a gas cooler (6) for drying (the resulting

condensate is drained) and subsequently passed through filters (7) to remove acid and particles.

Mass flow control is then performed using a diaphragm pump (8) and a flow controller.

Analysis 1:

The CO₂ concentration of the gas in the measurement cuvette is compared with that in the reference cuvette using the CO₂ measuring cell.

Analysis 2:

In parallel, the concentration difference in CH₄ (methane) between the reference cuvette and the measurement cuvette is determined in the same way.

GO-ATC & GO-Mini-ATC

The GO-ATC and the GO-Mini-ATC are online analysis systems that determine, for example, the total hydrocarbon (THC) share in air.

Online analysis system

This method can be used for online measurement of hydrocarbons and other chemical constituents in many areas of industry and research, for example in the ultrapure gas and breathing gas sectors, the chemical industry, especially petrochemicals, indoor air monitoring, and more.

The GO-ATC air total carbon analyzer is used to determine the share of the total hydrocarbon content of air, optionally including further gas components. Methane is measured online at the same time in order to determine the NMHC (non-methane hydrocarbon) value. Unlike conventional air measurements, the absolute value of organically bound carbon in the gas flow is not determined; instead, the delta between the concentrations of two gas streams is formed. The measured values are determined by converting the CO₂ concentration in the gas streams.



Facts

Areas of application

- ✓ Immission and emission measurement
- ✓ Industry, such as the chemical industry, especially petrochemicals
- ✓ Research institutions in the ultrapure gas and breathing gas field
- ✓ Aviation, for monitoring cabin air
- ✓ Chemical laboratories

Equipment options

- ✓ Device for measuring absolute CO₂
- ✓ Device for measuring other gases
- ✓ Software
- ✓ Further options on request

Benefits

- ✓ Continuous measured value recording

- ✓ No consumables
- ✓ No ultrapure gases
- ✓ Low operating costs
- ✓ Measurement resolution: 0.01 ppm
- ✓ True online measurement
- ✓ No CO₂-free air / no fuel gas
- ✓ Optional remote maintenance and data retrieval via LAN, WAN, and GSM/UMTS
- ✓ Safe, simple, and eco-friendly handling
- ✓ Automatic calibration

GO-ATC & GO-Mini-ATC performance data

NDIR gas analyzer	Ultramat 6
Minimum measurement range GO-ATC	0,01 ppm
Permissible water share of sample gas	8,00 mL/h / 500 mL/h per channel
Display	LCD
Limit value outputs	4
Output signals	0 / 2 / 4 – 20 mA / serial interface
Operating temperature of the oxidation reactor	1,000 °C
Warm-up time	GO-ATC: approx. 240 Min. GO-Mini-ATC: approx. 60 Min.
T ₉₀	GO-ATC: approx. 20 sec. GO-Mini-ATC: approx. 10 sec.
Gas cooler	GO-ATC: Peltier cooler GO-PK2 GO-Mini-ATC: GO-ATC Cooler
Crude gas sample flow rate	approx. 2 x 1 L/min.
Power consumption	GO-ATC: max. 2,800 W GO-Mini-ATC: max. 350 W
Mains connection	230 V, 50 Hz
Ambient temperature	+5 to +30 °C
Dimensions (H x W x D)	GO-ATC: approx. 1,150mm x 560mm x 600mm GO-Mini-ATC: approx. 450mm x 440mm x 320mm
Weight	GO-ATC: approx. 85 kg GO-Mini-ATC: approx. 30 kg
Automatic zero-point adjustment	yes / self-calibration
Materials conducting sample	ceramic, glass, Viton, PVC, stainless steel (VA)



Before you run into haunting problems.

Gröger & Obst analyzers deliver clear, on-time, reliable gas measured values.

GO 2-channel gas pump

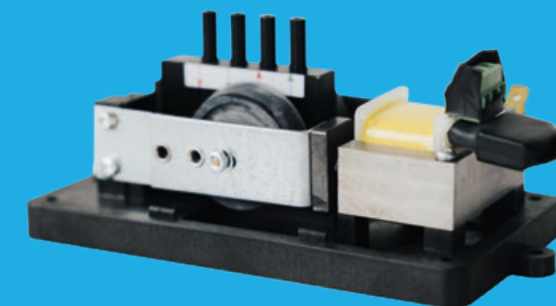
2-channel diaphragm pump with electromagnetic drive, suitable for continuous operation.

The GO 2-channel gas pump represents the latest innovation in gas conveying technology, developed specifically for applications that require high flexibility and reliability. With its two separate ways for gas, it offers a second-to-none adaptability for a wide range of operating conditions.

The pump is characterized by ease of maintenance as well as low-noise and low-vibration operation, making it ideal for working environments in which noise and vibration must be minimized. The pump head, made of robust plastic as a standard, can optionally be upgraded to aluminum to withstand even higher loads.

The diaphragms, made of high-quality material, are designed as the only wear parts and can be replaced with minimal effort, reducing operating costs and extending the operating life of the pump.

Two separate ways of gas make the pump flexible. The pump is low-maintenance, low-noise, and low-vibration. The pump head is available in plastic or aluminum.



Whether in research, industrial processes, or medical technology, the GO 2-channel gas pump is the optimal solution for modern gas conveyance requirements. Discover the efficiency and performance this pump can bring to your system.

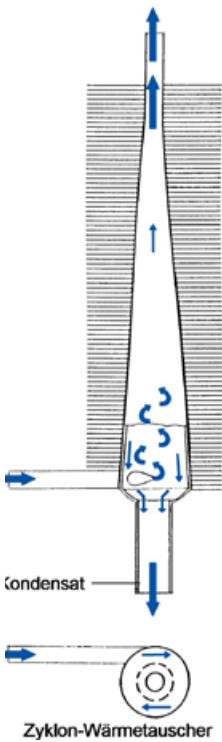
Performance data

Mains connection	230 V / 50 Hz
Power consumption	5 W
Conveying performance non-pressurized	approx. 150 L/h per channel
Dimensions (L x D x W)	approx. 65 x 145 x 73 mm

The GO-PK series

Systems for cooling gas in order to separate the contained water vapor. By cooling with units from the GO-PK series, you obtain accurate measured results and reduce washout losses.

Sample gas preparation before gas analysis generally requires, in most cases, cooling the gas in order to separate the contained water vapor in addition to other measures.



During the cooling process, it is essential to prevent washout losses of target substances in gas analyses. This is necessary to obtain measurement results that are as accurate as possible. In practice, the goal is to achieve negligible levels of absorption of the target substances in the resulting condensate. Ideally, these values are either unmeasurable, or fall within the measurement tolerances of the analyzers.

This is achieved by condensing the water vapor in the gas completely. The condensate flows downwards and is removed, while the gas exits at the top.

For this purpose, the geometry of the condensate separator / heat exchanger in the cooling block of a cooler is of particular importance. As a variation of the cyclone principle of a solid separator, the shape of the contact separator and the resulting gas routing in the GO-PK and GO-EPK measurement gas cooler enforce the gas into immediate contact with the coldest point of the wall. The sudden cooling to approx. 5 °C causes most of the condensate to drain downward in the heat exchanger, while the dehumidified measurement gas is directed upward.

The small internal surface area and low volume of the heat exchanger further help reduce loss in substance.



The measurement gas coolers GO-PK and GO-EPK can be equipped with one or two heat exchangers. Their compact construction allows easy installation in analyzer cabinets, while the GO-EPK model can be integrated into 19-inch rackmount chassis. The measurement gas coolers GO-PK and GO-EPK are also an essential component of the GO-PP, GO-PKK, GO-PKF cooling systems and the GOT, GOE, and GOM measurement gas processing.

Facts

Benefits

- ✓ Compact construction
- ✓ With integrated cyclone heat exchanger
- ✓ Ready to operate within about 10 minutes
- ✓ Helps ensure accurate measurement results
- ✓ Reduces washout losses
- ✓ Suitable for wall mounting (GO-PK)
- ✓ For installation in 19-inch rackmount enclosure (GO-EPK only)

Equipment options

- ✓ Wall-mount bracket
- ✓ Transport protection
- ✓ Portable version with handle (not included with GO-EPK 1)

GO-PK series performance data

Heat exchanger	GO-PK1 and GO-EPK1 / 1 cyclone separator made of DURAN glass GO-PK2 and GO-EPK2 / 2 cyclone separators made of DURAN glass	
Heat exchanger volume	GO-PK1 and GO-EPK1 / 25 ml GO-PK2 and GO-EPK2 / 50 ml	
Output dew point	factory-set to + 5 °C, optical alarm if value deviates by + 3 °C	
Alarm output	Potential-free temperature alarm contact / converter, max. 250 V/30 W	
Input dew point	GO-PK1	max. 65 °C
	GO-PK2	max. 70 °C
	GO-EPK1	max. 55 °C
	GO-EPK2	max. 60 °C
Cooling power	approx. 110 kJ/h	
Flow rate	GO-PK1 and GO-EPK1 / 50 - 150 l/h GO-PK2 and GO-EPK2 / 50 - 250 l/h	
Ambient temperature	+5 to +30 °C	
Ready to operate	within approx. 10 minutes (depending on ambient temperature)	
Peltier element	function-monitored with optical indicator	
Power consumption	max. 100 VA	
Operating pressure	max. 4 bar	
Gas connections	pipe 4 x 6 mm, glass	
Condensate drain	pipe 10 x 12 mm, glass	
Dimensions (approx.)	GO-PK1 and GO-PK 2 / L 250 x T 120 x H 210 mm GO-EPK1 L 205 x T 155 x H 125 mm GO-EPK2 L 225 x T 155 x H 125 mm	
Weight (approx.)	GO-PK1	6,0 kg
	GO-EPK1	4,5 kg
	GO-PK2	7 kg
	GO-EPK2	5 kg
Mains connection	230 V, 50 Hz (other connection types available on request)	

The GOT series emission analyzers

Achieve optimum preparation of the gas to be analyzed with the GOT measurement gas processing system. Effective combination of a Peltier cooler with cyclone heat exchanger, filters and permeation dryers, which reliably removes dust and dries the measurement gas.

The measurement gas processing systems of the GOT 100 and GOT 200 series offer, as a complete solution, an effective combination of a Peltier cooler with cyclone heat exchanger, filters and permeation dryer that reliably remove dust and dry the sample gas.



In addition, aerosols and contaminations are retained. The resulting output dew point is below -10 °C and ensures that no further condensation is to be expected in the gas analyzer.

Facts

Benefits

- ✓ Aerosols and contaminations are retained
- ✓ Reliable dust removal and drying of the measurement gas
- ✓ One unit for cooling, filtering and drying
- ✓ Clearly arranged preparation on a mounting plate
- ✓ Ready to operate in approx. 10 min

Equipment options

- ✓ Special power plug for the heated gas extraction sensor and temperature regulator of the analysis line
- ✓ Mounting bracket for heated analytical line for attachment to the case
- ✓ Diaphragm filter with condensate monitor to shut off the measured gas pump if moisture ingresses
- ✓ GO-M configuration for installation in analysis cabinets

GOT series performance data

Cooler	Peltier cooler GO-PK 1 or GO-PK 2 with cyclone heat exchanger, function-monitored Peltier element, potential-free temperature alarm contact
Ambient temperature	max. 30 °C
Cooling temperature	regulated at +5 to +8 °C
Cooling capacity	110 kJ/h
Flow rate	GOT-100: 50 to 120 L/h GOT-200: 50 to 200 L/h
Input dew point	max. 70 °C
Output dew point	< -10 °C, depending on inlet dew point and flow rate
Condensate drain	GOT-100: 1 pump, conveying performance 0.5 L/h collector 1 l GOT-200: 2 pumps, conveying performance 0.5 L/h each, collector 1 l
Filters	aerosol filter, membrane filter 10 µ
Drying	peltier element and permeation dryer
Gas connections	PP bulkhead fittings 6 x 8 mm
Volume of the way of gas	approx. 200 ml
Materials conducting sample	glass, PP, PVC, PTFE, PVDF acrylic
Ready to operate	within approx. 10 minutes
Power input	max. 950 VA (depending on the length of the heated pipe)
Mains connection	230 V, 50 Hz

The GO-MO series: GO-MO 1/GO-MO 2

Preparation of raw gas for continuous gas analysis (process analysis).

Gases that must be analyzed – such as those for emissions measurement in accordance with the TA Luft – contain a number of components that interfere with gas analysis. These components produce incorrect measurement values and can also damage the gas analyzers.

The GO-MO series measurement gas processing system is designed to prepare such raw gas for continuous gas analysis (process analysis).

Interfering components of the raw gas must be removed from the measurement gas in such a way that the measuring components (e.g. SO₂, CO, NO, etc.) are retained in the gas as completely as possible.

The GO-MO series measurement gas processing system accomplishes this task using a cyclone heat exchanger, which gently purifies and dries the sample gas and minimizes washout effects.



Equipment description

The GO-MO 1 measurement gas processing system includes a Peltier gas cooler and a condensate pump.

The GO-MO 2 measurement gas processing system additionally includes a sample gas pump. The cooling block temperature of the Peltier cooler (with integrated cyclone heat exchanger) can be freely selected within the range of 3 °C to 15 °C. The corresponding temperature controller is located in the front cover of the housing.

All components are housed in a plastic enclosure designed for wall mounting. Thanks to its low weight and compact dimensions, the unit can also be used mobile.

GO-MO series 1 and 2 performance data

Cooling	Peltier cooler with cyclone heat exchanger
Mains connection	230 V / 50 Hz via cold-device plug
Power input	max. 65 W
Heat exchanger volume	approx. 25 ml
Cooling power of the Peltier cooler	approx. 95 KJ/h
Gas input temperature	max. 50 °C
Gas output dew point	approx. 5° (depending on the selected cooling block temperature)
Cooling block temperature	freely selectable between 3°C and 15°C
Gas pump flow range	GO-MO 2 only: approx. 75 L/h
Absolute pressure / vacuum	GO-MO 2 only: 600 mbar / 350 mbar
Ambient temperature	+5°C to +30°C
Number of gas inlets	1
Number of gas outlets	1
Number of condensate outlets	1
Ready to operate	within approx. 10 minutes
Gas connections	PVDF bulkhead fittings DN 06/08
Condensate discharge	condensate pump, flow rate approx. 0,5 L/h
Materials conducting sample	glass, PVDF, PP, Viton and PVC
Dimensions (L x D x H)	approx. 360 x 254 x 111 mm
Weight	approx. 3,9 kg

Facts

Benefits

- ✓ Compact construction
- ✓ Continuous processing
- ✓ Ready to operate quickly, within approx. 10 min
- ✓ Suitable for wall mounting
- ✓ With integrated cyclone heat exchanger
- ✓ Cooling temperature freely selectable in the range of 3 °C to 15 °C

Options

- ✓ Carrying device for mobile use
- ✓ Can be combined with GO-MO 3

GO-MO 3 gas preparation unit

Preparation of raw gas for continuous gas analysis (process analysis).

The GO-MO 3 measurement gas processing system includes a permeation dryer, a fine-particle filter, and a measurement gas pump.

The gas quantity can be freely adjusted within the range of 50 to 120 l/h using a flow regulator.

All components are housed in a plastic enclosure designed for wall mounting.

The connections for the measurement gas input and output are located on the top of the housing and marked EIN and AUS (= IN and OUT).

For the 230 V AC mains connection, there is a cold-appliance connector with a micro fuse located on the left side. A suitable connection cable is included in the accessory package.



How the permeation dryer works

This device consists of a tube made of a selectively permeable plastic membrane enclosed by another tube. A carrier gas (usually ambient air) flows through this outer tube in the opposite direction to the measurement gas stream.

Water molecules diffuse through the inner tube from the measurement gas into the carrier gas and are carried away by the carrier gas flow. To avoid disrupting or completely stopping this water transport, the measurement gas must not contain any particles, aerosols, or water in liquid form (droplets). We therefore recommend installing the GO-MO 1 measurement gas processing unit or another cooler upstream to reliably prevent this.

GO-MO 3 performance data

Drying	permeation dryer
Mains connection	230 V / 50 Hz via IEC appliance inlet
Power input	max. 100 W
Gas input dew point	max. 5 °C
Gas output dew point	approx. -10° (depending on the selected flow rate)
Flow range	approx. 50 - 120 l/h
Ambient temperature	+5 to +30 °C
Absolute pressure / vacuum	1,500 mbar / 600 mbar
Number of gas inputs	1
Number of gas outputs	1
Number of condensate outputs	1
Ready to operate	within approx. 10 minutes
Gas connections	PVDF bulkhead fittings DN o6/o8
Condensate discharge	via diaphragm pump mixed with ambient air
Materials conducting sample	glass, PVDF, PP, Viton and PVC
Dimensions (L x D x H)	approx. 360 x 254 x 111 mm
Weight	approx. 4 kg
Device fuse	1A, slow-blow, 230 V, 5 x 20 mm
Degree of protection	IP20 EN 60529
Electrical equipment standard	EN 61010
Housing	polystyrene, color gray, RAL 7035 for wall mounting

Facts

Benefits

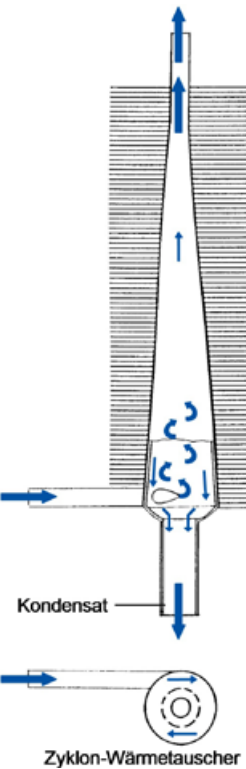
- ✓ Compact construction
- ✓ Continuous processing
- ✓ Ready to operate quickly, within approx. 10 min
- ✓ Suitable for wall mounting

Options

- ✓ Carrying device for mobile use

GO-PKK 1 measure- ment gas co- oling system

Device for cooling the gas in order to separate the water vapor it contains.



Before gas analysis, the measurement gas usually has to be prepared; in most cases this requires cooling the gas in order to remove any water vapor it contains. In all cases, however, the target substances of the analysis must be preserved, which requires special steps in the case of water-soluble gas components such as SO₂. The core component of measurement gas drying in the GO-PKK cooling system is a gas cooler in whose cyclone heat exchanger the gas is dried to a dew point of 5 °C.

Thanks to its special construction, the heat exchanger enables sudden cooling of the gas - analogous to cyclone particle separators - after which the measurement gas is immediately separated from the condensate and no longer comes into contact with it in the further way of gas. This effectively reduces washout losses.

In addition to the cooler, the cooling system already contains a pump for condensate discharge as well as a collector (1 l). Various filters can optionally complement the cooling system further, and mains plugs and temperature regulators for heated gas extraction sensors and heated analysis tubes can be installed.

The portable case makes the GO-PKK cooling system suitable for mobile use.

Facts

Benefits

- ✓ Compact design in a portable case
- ✓ With one cyclone heat exchanger
- ✓ Ready to operate within approx. 10 minutes
- ✓ Helps ensure accurate measurement results
- ✓ Reduces washout losses
- ✓ Stable output dew point
- ✓ Other types of construction available on request (GO-PP)

Options

- ✓ Aerosol filter
- ✓ Holder for heated line
- ✓ Mains plug and heated gas extraction sensor for heated analysis tubes
- ✓ Temperature regulator for heated analysis tubes

GO-PKK1 performance data

Cooling	GO-EPK 1 with a cyclone heat exchanger
Heat exchanger volume	GO-EPK approx. 25 ml
Outlet dew point	factory set to + 5 °C, optical alarm if deviating by + 3 °C
Alarm output	6 potential-free alarm contacts / changeover contact, max. 250 V/30 W
Inlet dew point	GO-PKK 1 max. 55°C
Cooling capacity	approx. 110 J/h
Flow range	GO-PKK 1, 50 - 150 l/h
Ambient temperature	+ 5 to + 30 °C
Ready to operate	within approx. 10 minutes (depending on ambient temperature)
Peltier element	function-monitored with visual indication
Operating pressure	max. 4 bar
Gas connections	pipe 4 x 6 mm
Condensate discharge	condensate pump, flow rate 0.5 l/h in collector (1 l volume)
Power input	max. 200 VA
Mains connection	230 V, 50 Hz
Dimensions (L x D x H)	approx. 450 x 230 x 310 mm
Weight	approx. 9 kg

Our team

Quality is our benchmark

Our team is small, but highly effective and competent, with decades of experience in mechanics, technology and electrical engineering – built up by company founder Helmut Gröger. We are happy to assist you with any questions you may have.

If you would like to learn more about us, the easiest way is to get to know us in person – on site in Wolfratshausen, in your plant or in an online meeting.

In the heart of beautiful Wolfratshausen

Our office & surroundings

Working in the most beautiful Upper Bavarian postcard setting – that is a real highlight. Surrounded by Germany's highest mountains, the picturesque rivers Loisach and Isar as well as nearby, vibrant Munich, we feel right at home here. This holiday region, rich in clear lakes and fresh mountain air, reminds us every day of how valuable clean air and water are.

Here in Wolfratshausen, our best ideas are born. For more than 40 years it has been from here that we have been supplying companies through-out Germany and far beyond its borders with our measuring technology.



Your direct line to Gröger & Obst



Give us a call

We are happy to assist you and look forward to your call.

+49 8171 997700

Write to us

Just send us an email. We look forward to hearing from you and will help you as quickly as possible – that's a promise.

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