Individual solutions from one source
Founded in June 1991 as a small company mainly concentrating on research and development of environmental measuring devices the Dr. Födisch Umweltmesstechnik AG has now gained a leading position for continuous emission measuring technology.

For more than 25 years the continuous tribo-electric dust measuring technology is one part of own developments. The scope of devices ranges from simple but very effective filter controllers to sophisticated dust concentration measuring devices e.g. for the application in wet gases.

In the field analytical engineering we develop and manufacture several cold and hot gas analysers for the measurement of CO, NO, SO₂, O₂, HCl, NH₃, N₂O and H₂O for example. Depending on application the analysers are used stationary or mobile in dry respectively wet gases.

The portfolio of construction is completed by measuring devices for special applications (e.g. fine dust sensor, odour measurement, SO₂/SO₃ measurement).

As highly specialised service company we offer complete solutions for industry. Our engineers provide consulting, planning, installation as well as maintenance services for continuous emission monitoring systems in all industries.

We offer reliably working systems with low demand for maintenance and excellent price-performance ratio. All relevant system components are suitability tested according to German regulations.

Dr. Födisch Umweltmesstechnik AG – Your competent world-wide partner.
Dust channel

The dust channel serves to investigate different measuring principles and influencing factors for the measurement of dust concentration, which is necessary for the development and test of new dust and flow measuring devices. The dust channel is a suitable test facility to simulate many different operating conditions for individual applications and device types.

For this purpose the Dr. Foedisch Umweltmesstechnik AG erected a test facility containing a dust channel in 1998. Next to research purposes, the dust channel offers the possibility to pre calibrate dust and flow measuring devices before they are supplied to the customer.

- possibility to produce dust contents within the range of 0.1...1000 mg/m³ and velocities of 1...45 m/s
- simulation of different operating conditions and investigation of the variables influencing measuring principle and devices
- factory calibration of all dust and flow measuring devices

Gas analytics “made by foedisch”

For research and testing purposes the company has different laboratory facilities including calibration workstations as well an in-house energy centre.

Among other things a small power plant allows to test measuring devices under raw and clean gas conditions being as close as possible to reality.
Products

Filter monitoring

The measurement of dust emissions becomes more and more important all over the world. Until recently optical dust measuring devices dominated this application field. However, due to their advantageous features triboelectric dust measuring devices have increased their market share steadily.

The filter monitoring devices of Dr. Födisch Umweltmesstechnik AG are highly sensitive systems for continuous, tribo-electric in-situ filter monitoring. Thereby a qualitative monitoring of the exhaust gas is done. The measurement is carried out via the tribo-electric measuring method.

PFM 02
- continuous measurement of dust emissions after de-dusting facilities
- real-time monitoring of dust emissions
- also available as PFM 02 HB and PFM 02 EX

PFM 02 HB
- EC-type examination certificate according to DIN EN ISO 13849-1
- safe monitoring of residual dust content
- especially developed for wood-processing industry
- monitoring of filter systems with air recirculation

PFM 02 Ex
- EC-type examination certificate according to EN 60079, ATEX directive
- application in potentially explosive atmospheres, approved for Ex II 1/3D Ex ia/tc IIIC T74 °C Da/Dc, Ex II 3G Ex ic nA IIC T4 Gc

PFM 13
- dust measurement and filter monitoring with one compact device
- no separate power supply necessary (2-wire transmitter)
- as PFM 13 C also available without graphic display

PFM 14 K
- mobile filter diagnosis device for tribo-electric in-situ monitoring of dusty emissions
- immediate monitoring of the clean gas dust content after filter systems
- integrated recorder
- offline power supply by power bank

Filter diagnosis
Dust concentration measurement

The tribo-electric signal depends on the mechanical and electrical properties of dust. Apart from the dust concentration it seems that the gas velocity has the most important influence on the tribo-electric charge transfer. In case of fluctuating exhaust gas velocities this influence has to be considered in the calculation of the dust concentration.

Based on the following mathematical correlation the tribo-electric dust signal is compensated by the velocity measured at the same time.

\[ c_{\text{t.o.}} = A \cdot \text{cal} \cdot v^{\text{exp.}} + D \]

- **PFM 02 V**
  - continuous in-situ dust concentration measurement in all industrial branches with dry exhaust gases
  - additional input for connection of external measurement of exhaust velocity respectively flow and temperature

In case of droplets or aerosols in the exhaust gas the dust concentration has to be measured extractively. For this, a representative measuring gas sample is sucked off continuously from the stack, heated, diluted with dry air and finally measured in a cell with constant flow.

With the devices PFM 97 ED and PFM 06 ED of Dr. Födisch Umweltmesstechnik AG the continuous dust concentration measurement in wet and sticky exhaust gases is possible - independent of dew-point spread and flow. Thereby an automatic self-cleaning is carried out.

- **PFM 97 ED**
  - extractive tribo-electric dust measurement
  - tribo-electric measuring cell

- **PFM 06 ED**
  - suitability tested according to DIN EN 15267, certified in compliance with QAL1
  - extractive optic dust measurement
  - optical laser lance unit
### Products

#### Flow measurement

The continuous measurement of velocity and temperature of gas flows is much important at operation of a system with flowing gases (e.g. hall outlet air, exhaust etc.). At emission measurements the current concentrations are determined. For the translation to absolute emitted masses the volume is necessary; this is calculated through the gas velocity.

The flow measuring devices of Dr. Födisch Umweltmesstechnik AG measure continuously the gas velocity and the temperature of gas flows in pipelines. Moreover it is possible to display and provide the flow in operating and norm state. The use of the measuring principle of dynamic-pressure and PT100 guarantees devices simply to install and handle as well as a timely monitoring of the measuring parameters.

**FMD 02**

- continuous flow, velocity and temperature measurement in exhaust gases

**FMD 09**

- suitability tested according to DIN EN 15267, certified in compliance with QAL1
- continuous flow, velocity and temperature measurement in exhaust gases
- probe cleaning system for plants with dust content > 100 mg/m³
- operating and display unit integrated in weather protection casing

#### Oxygen measurement

For optimisation of combustion control and emission monitoring, accurate and rapid oxygen measuring values by a direct local measurement are often required.

The oxygen measuring device of Dr. Födisch Umweltmesstechnik AG is used for the measurement of the oxygen concentration in flue gases and process gases. The oxygen measurement is carried out by means of a zirconium dioxide cell, whereat the concentration of the free oxygen is measured.

**OMD 14**

- regulated sensor heating
- potentiometric zirconium dioxide sensor
- steady exactness in all oxygen concentration ranges

© Dr. Födisch Umweltmesstechnik AG 2002 - 2018
Gravimetric measurement

For the calibration of dust measuring devices the gravimetric dust measurement is used as reference measuring method. The gravimetric measuring devices of Dr. Födisch Umweltmesstechnik AG are compact and high-grade automated system for isokinetic gravimetric dust measurement in exhaust ducts and stacks. All relevant parameters for determination of dust content are registered by the system on standard conditions. The measuring gas sampling is regulated fully automatic isokinetic.

GMD 12

- measurement of all marginal parameters which are necessary for dust measurement on its own
- selection of the appropriate sample nozzle is assisted by the measuring unit
- storage of the current measuring values during measurement for future analysis
- ergonomic sample probe with integrated aerosol filter

GMD 13

- sampling, weighting and evaluation in one system on location
- value accuracy by hot weighting
- semi-automated weighting process
- project-based software

Sensor technology

To make out health hazards by fine dust loading of the environment a continuous measurement and control of fine dust contents in ambient air is most important.

FDS 15

- scattered light measurement
- integrated pre-separator
- active suction
- network-compatible, WLAN
- to be used in stationary application or mobile

With the optical fine dust sensor of Dr. Födisch Umweltmesstechnik AG the monitoring for fine dust in the range of production, in offices and public institutions as well as in the private domain is possible.
Gas analysis

The gas analysers of Dr. Födisch Umweltmesstechnik AG serve the continuous emission measurement of pollutants in flue gas as well as the continuous process control. They are applicable all-purpose for measurement of emissions, raw gases or processes.

Measuring ranges

<table>
<thead>
<tr>
<th>Gas</th>
<th>Low range</th>
<th>High range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>0...125 mg/m³</td>
<td>0...1000 mg/m³</td>
</tr>
<tr>
<td></td>
<td>(0...100 ppm)</td>
<td>(0...800 ppm)</td>
</tr>
<tr>
<td>CO₂</td>
<td>0...20 vol. %</td>
<td>-</td>
</tr>
<tr>
<td>SO₂</td>
<td>0...200 mg/m³</td>
<td>0...1000 mg/m³</td>
</tr>
<tr>
<td></td>
<td>(0...70 ppm)</td>
<td>(0...350 ppm)</td>
</tr>
<tr>
<td>NO</td>
<td>0...300 mg/m³</td>
<td>0...1000 mg/m³</td>
</tr>
<tr>
<td></td>
<td>(0...225 ppm)</td>
<td>(0...750 ppm)</td>
</tr>
<tr>
<td>NO₂</td>
<td>0...200 mg/m³</td>
<td>0...1000 mg/m³</td>
</tr>
<tr>
<td></td>
<td>(0...95 ppm)</td>
<td>(0...485 ppm)</td>
</tr>
<tr>
<td>CH₄</td>
<td>0...300 mg/m³</td>
<td>0...1000 mg/m³</td>
</tr>
<tr>
<td></td>
<td>(0...420 ppm)</td>
<td>(0...1400 ppm)</td>
</tr>
<tr>
<td>H₂S</td>
<td>0...75 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(0...50 ppm)</td>
<td></td>
</tr>
<tr>
<td>H₂O</td>
<td>0...3 vol. %</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(0...4 vol.)</td>
<td></td>
</tr>
<tr>
<td>O₂</td>
<td>0...25 vol. %</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(0...30 vol.)</td>
<td></td>
</tr>
</tbody>
</table>

[Cold gas analyser MGA 12]

- suitability tested according to DIN EN 15267-3, certified in compliance with QAL1
- system: suitability tested and certified for systems according to IED and DIN EN 15267-3

Measuring methods at cold gas analysis:
- infrared photometer
- paramagnetic measuring method [1]
- electrochemical cell

Measuring methods at hot gas analysis:
- bi-frequency measuring method
- gas filter correlation
- zirconium dioxide cell

Products
Gas analysis

**Hot gas analyser MCA 10 HWIR**
- suitability tested according to DIN EN 15267-3, certified in compliance with MCERTS Performance Standards
- field-proven components
- modern photometer technology
- also available as mobile variant

<table>
<thead>
<tr>
<th><strong>Measuring ranges</strong></th>
<th><strong>CO</strong>: 0...75 mg/m³</th>
<th>0...300 mg/m³</th>
<th>0...5000 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CO₂</strong>:</td>
<td>0...25 vol. %</td>
<td>0...50 vol. %</td>
<td>-</td>
</tr>
<tr>
<td><strong>NO</strong>:</td>
<td>0...200 mg/m³</td>
<td>0...400 mg/m³</td>
<td>0...3000 mg/m³</td>
</tr>
<tr>
<td><strong>NO₂</strong>:</td>
<td>0...50 mg/m³</td>
<td>0...500 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td><strong>N₂O</strong>:</td>
<td>0...50 mg/m³</td>
<td>0...3000 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td><strong>NH₃</strong>:</td>
<td>0...10 mg/m³</td>
<td>0...50 mg/m³</td>
<td>0...500 mg/m³</td>
</tr>
<tr>
<td><strong>SO₂</strong>:</td>
<td>0...75 mg/m³</td>
<td>0...300 mg/m³</td>
<td>0...2500 mg/m³</td>
</tr>
<tr>
<td><strong>HCl</strong>:</td>
<td>0...15 mg/m³</td>
<td>0...90 mg/m³</td>
<td>0...5000 mg/m³</td>
</tr>
<tr>
<td><strong>HF</strong>:</td>
<td>-</td>
<td>0...20 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td><strong>H₂O</strong>:</td>
<td>0...40 vol. %</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>CH₄</strong>:</td>
<td>0...50 mg/m³</td>
<td>0...500 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOC</strong>:</td>
<td>0...15 mg/m³</td>
<td>0...30 mg/m³</td>
<td>-</td>
</tr>
<tr>
<td><strong>O₂</strong>:</td>
<td>0...25 vol. %</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Mobile hot gas analyser MCA 14 m**
- mobile hot gas analyser system in small format (without gas cooler)
- no instrument air necessary
- easy placement directly at the measuring point
- integrated zero gas provision with ambient air
- integrated printer for output of measuring values and device configuration
Emission measuring systems

Emission measuring systems according to IED

- project management
- engineering
- mounting
- commissioning
- maintenance
- service

The measurement of gaseous pollutants is normally made extractively. A representative measuring gas sample is extracted and led to the gas analysis system via a heated measuring gas line. The gas conditioning with multi component analyser is mounted in the analyser cabinet.

The emission data evaluation computer standardises the measuring values. It does the averaging of values being conform to authorities, the classification of pollutants and mass flows as well as the time counting of diverse facility states. The measuring values are stored and are available for authorities anytime.
Performance overview

**Systems**
- first-class complete solutions for emission monitoring
- support for implementing authority requirements
- compact design of measuring systems
- planning, production, installation
- professional after-sales support and service independent from brand

**Devices**
- planning, production, installation and after-sales service
- serial production and customisation
- customised solutions

**Service**
- maintenance and service for own- or foreign-constructed systems for emission or process measurement
- approval management
- authority engineering
- process-related and other services
Contact persons

**CEO**
Mr Dr. Holger Födisch  
Phone: +49 34205 755-0  
E-mail: vorstand@foedisch.de

**Research & development**
Mr Jörg Schulz,  
director of research and development  
Phone: +49 34205 755-41  
E-mail: schulz@foedisch.de

**Gas analytics**
Mr Hagen Amboldt,  
director of gas analytics  
Phone: +49 34205 755-31  
E-mail: amboldt@foedisch.de

**Engineering**
Ms Gabriele Dietrich,  
director of engineering  
Phone: +49 34205 755-18  
E-mail: dietrich@foedisch.de

**Production**
Mr Uwe Riemann,  
director of production  
Phone: +49 34205 755-16  
E-mail: riemann@foedisch.de

**Maintenance & service**
Mr Rico Kronberg,  
director of maintenance & Service  
Phone: +49 34205 755-15  
E-mail: rico.kronberg@foedisch.de

**Head office**
Dr. Födisch Umweltmesstechnik AG  
Zwenkauer Strasse 159  
04420 Markranstädt (Germany)

**Sales**
Mr Thomas Lambertz, sales director  
Phone: +49 34205 755-13  
E-mail: lambertz@foedisch.de

**Gas analytics**
Mr Mathias Groß  
Phone: +49 172 7572809  
E-mail: gross@foedisch.de

**Sales branch office North, Lübeck**
Mr Mathias Groß  
Phone: +49 172 7572809  
E-mail: gross@foedisch.de

**Engineering**
Mr Jörg Schulz,  
director of research and development  
Phone: +49 34205 755-41  
E-mail: schulz@foedisch.de

**Production**
Mr Uwe Riemann,  
director of production  
Phone: +49 34205 755-16  
E-mail: riemann@foedisch.de

**Sales branch office West, Mülheim a.d.Ruhr**
Mr Dirk Roloff  
Phone: +49 174 3344354  
E-mail: roloff@foedisch.de

**Maintenance & service**
Mr Rico Kronberg,  
director of maintenance & Service  
Phone: +49 34205 755-15  
E-mail: rico.kronberg@foedisch.de

**Export / international sales**
Ms Simone Schmalfuß  
Phone: +49 34205 755-54  
E-mail: schmalfuss@foedisch.de

**Sales branch office Southwestern, Kriftel**
Mr Reiner Krogbeumker  
Phone: +49 172 7572884  
E-mail: krogbeumker@foedisch.de

**Export / international sales**
Ms Simone Schmalfuß  
Phone: +49 34205 755-54  
E-mail: schmalfuss@foedisch.de
Service centres and sales areas

Service centres

DFU Analysenservice GmbH
Baukauer Strasse 86
44653 Herne (Germany)

DFU Service GmbH
In den Gartenwiesen 4
65830 Krifel (Germany)

Dr. Födisch Umweltmesstechnik AG/
Service office North
Lübeck (Germany)

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North
16xxx-19xxx, 2xxxx, 30xxx-31xxx,
37xxx-39xxx + Denmark

West
32xxx-33xxx, 4xxxx, 50xxx-53xxx,
57xxx-59xxx + Netherlands, Belgium

Southwest
34xxx-36xxx, 54xxx-56xxx, 6xxx, 7xxxx,
88xxx-89xxx, 97xxx + Luxembourg

Dr. Foedisch Instruments (Hangzhou) Co. Ltd.
Room 18K, Zhongtian Mansion,
No.173 Yugu Road
Hangzhou, P.C.310012
P.R. China
www.foedisch-china.com
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- environmental technology
- water management
- clean room technology
- industrial automation

Fanalmatic GmbH
Cösitzer Weg 2
06369 Weissandt-Gölzau
(Germany)

Phone: +49 34978 268-0
Fax: +49 34978 268-20
E-mail: info@fanalmatic.com

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- dosing stations for liquid chemicals
- gas dosing and warning facilities
- storage, treatment and dosing of powdery substances and granulates
- measuring, control and evaluation technology for drinking water, process water and waste water

Peter Nitschke GmbH
Zwenkauer Strasse 159
04420 Markranstädt (Germany)

Phone: +49 34205 4278-0
Fax: +49 34205 4278-9
E-mail: info@peter-nitschke.de

Gesellschaft für Ingenieurbau, Bauwerksinstandhaltung und Anlagenmanagement mbH

Zwenkauer Strasse 159
04420 Markranstädt (Germany)

Phone: +49 34205 2009-10
Fax: +49 34205 2009-20
E-mail: giba@giba-online.de

DFU Analysenservice GmbH
Baukauer Strasse 86
44653 Herne (Germany)

DFU Service GmbH
In den Gartenwiesen 4
65830 Kriftel (Germany)

Subsidiaries and investments

**Investments**

GIBA 40%

**Gesellschaft für Ingenieurbau, Bauwerksinstandhaltung und Anlagenmanagement mbH**

Zwenkauer Strasse 159
04420 Markranstädt (Germany)

Phone: +49 34205 2009-10
Fax: +49 34205 2009-20
E-mail: giba@giba-online.de

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04552 Borna (Germany)

Phone: +49 3433 246-0
Fax: +49 3433 246-333
E-mail: info@alltec-borna.de
## Distributors

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