

# MCA 04 Multi-component Analysis System

## FIELDS OF APPLICATION IN GENERAL

The analysis system is an extractive, continuous measuring system with an excellent price-performance ratio. It is not only suited for the use on raw and clean gas side but also as process measuring device in the same manner.

By means of the compact gas analyser MCA 04 as basis the analysis system has all necessary pre-conditions for that. Moreover the analysis system can be extended at the flue gas component total organic carbon (option).

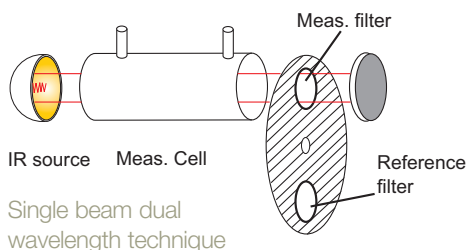
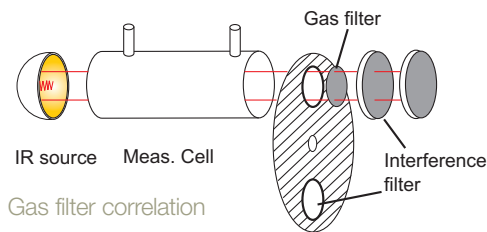
The analysis system MCA 04 extracts a partial gas flow from the flue gas which is led to the analyser in a heated way (all heated components of the measuring system are regulated on 185°C).

The proven gas sampling as well as the gas conditioning (flow rate 200 ... 600 l/h) and most advanced photometer technology grant a high reliability and long operating times with short maintenance intervals.

The Dr. Födisch Umweltmesstechnik AG offers, of course, completely equipped, walkable and air-conditioned analysis containers for different cases of application (e.g. incl. dust and mercury measurement as well as emission evaluation computer).

## MEASURING PRINCIPLE

The MCA 04 is a single beam photometer. It's based on the absorption of infrared light. For the calculation of a component's concentration the measuring technology registration of unattenuated and attenuated intensity in the range of absorption wave lengths is required. In the MCA 04 2 variants are used:



## SUBSTANTIAL CHARACTERISTICS

### CHARACTERISTICS

By means of the gas analyser MCA 04 up to 8 gas components can be measured at the same time: maximum 7 infrared active gases (e.g. CO, NO, NO<sub>2</sub>, SO<sub>2</sub>, HCl, NH<sub>3</sub>, H<sub>2</sub>O, CO<sub>2</sub>) and O<sub>2</sub> with an extractive zirconium oxid cell as well as optionally TOC with a flame ionisation detector.

The measuring values as well as all status and operational messages are shown on the display of the analyser module. All required adjustments of the system can be made by means of the keyboard.

### ADVANTAGES

The MCA 04 is worldwide the first modular-constructed hot gas analysis system with an analyser unit which can be changed on site.

The analysis system has been concipated in a way that it meets the sharpened requirements on availability for continuous emission monitoring systems.

Solely components proven in emission measurement are applied.

Via integrated modem a remote diagnosis of the analysis system done by the service staff is possible.

By using most advanced analyser components the pre-calibrated MCA 04 can be immediately applied.

The spare parts inventory is easily to calculate due to the use of some elements.

## APPLICATIONS

Multi-component gas analysis system for the use in official and process emission measuring systems e.g. for:

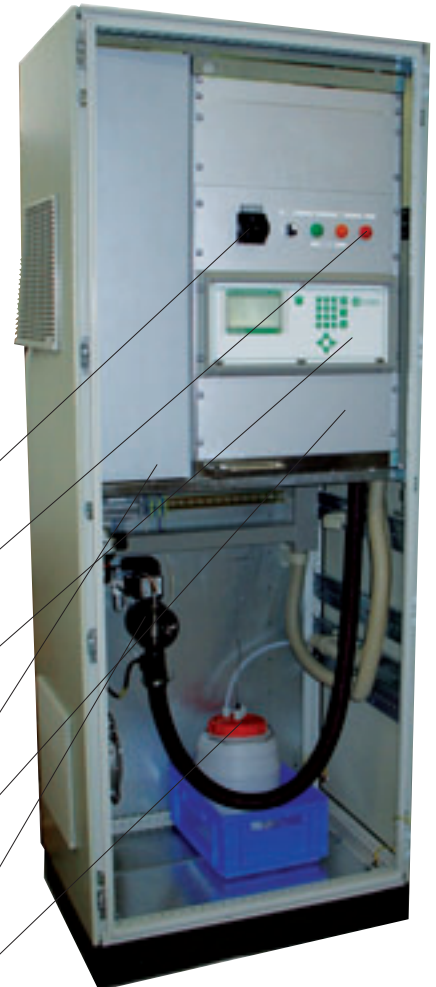
- Monitoring of the exhaust gas concentration of combustion plants with most diverse fuel (oil, gas, coal, biomass, substituting fuels etc) as well as at the thermal waste treatment
- Combustion optimisation
- Monitoring of process management

## EXAMPLES FOR APPLICATIONS

- Power plants
- Waste incinerations
- Refineries
- Cement industry
- Industrial exhaust air
- Paper factories
- Glass industry

## ANALYSIS SYSTEM (RIGHT)

- Main switch
- Maintenance switch and signal lamps for device status
- Analyser
- Partial tilting rack
- Option: Installation FID
- Measuring gas
- Condensate trap with level monitoring



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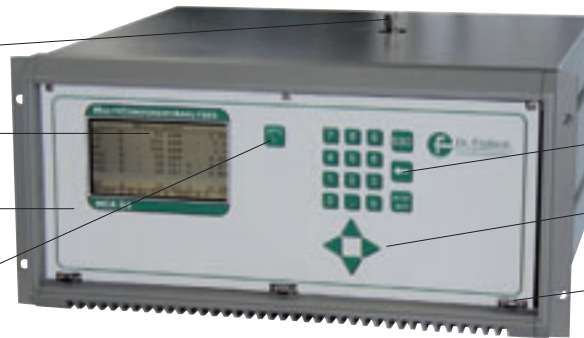
ANALYSER (RIGHT)

Measuring gas entry

Display

Dust-proof and washable front

Key for measuring value display



Measuring gas outlet and electrical connections on the device's backside

3 function keys

Keys for menu control

Front plate folding

## Specification

### Analysis cabinet MCA 04

Analysis cabinet	<ul style="list-style-type: none"> <li>• Steel-sheet cabinet, 800 x 600 x 2100 mm (W x D x H) incl. base, IP 54, 200 ... 300 kg depending on configuration</li> </ul>
Supply voltage	<ul style="list-style-type: none"> <li>• 400 V, 3~, 50Hz, 1.200 W (Cabinet, Probe, Blower) +100 W/m sampling line</li> </ul>
Ambient temperature	<ul style="list-style-type: none"> <li>• 1 +5 ... +35 °C, up to 80 % RH not condensating (placement of analysis cabinet in an air-conditioned analysis container)</li> </ul>
Interfaces	<ul style="list-style-type: none"> <li>• RS 232, internally ModBus (optional for customers), internal Modem for remote diagnosis</li> </ul>
Signal outputs	<ul style="list-style-type: none"> <li>• AO: 8 x 4 ... 20 mA (more optionally)</li> <li>• DO: for failure, maintenance, maintenance request, measuring range signalisation and limit values (optionally)</li> </ul>

### Analyser MCA 04 (integrated in analysis cabinet)

Analyser	<ul style="list-style-type: none"> <li>• 19" rack, 5 HU, ca. 40 kg</li> </ul>
Measuring principle	<ul style="list-style-type: none"> <li>• Infrared Photometer</li> </ul>
Display	<ul style="list-style-type: none"> <li>• LC-Display, 640 x 480 Pixel, back-lighted</li> </ul>
Keyboard	<ul style="list-style-type: none"> <li>• keypad (numerical and arrow keys)</li> </ul>
Operation	<ul style="list-style-type: none"> <li>• Menu-driven</li> </ul>
Cuvette	<ul style="list-style-type: none"> <li>• Optical path length: 6 m, temperature 185 °C, volume: 1 Liter, Flow rate: 200 ... 600 l/h (Raw gas: optical path length: 190 mm, volume: 0,2 l)</li> </ul>
Measuring range change-over	<ul style="list-style-type: none"> <li>• Per IR-component 2 measuring ranges selectable</li> </ul>
Limit value signalisation	<ul style="list-style-type: none"> <li>• Option</li> </ul>
Detection limit value	<ul style="list-style-type: none"> <li>• &lt; 2 % of the respective measuring range</li> </ul>
Zero point correction	<ul style="list-style-type: none"> <li>• Automatically</li> </ul>
Sensitivity correction	<ul style="list-style-type: none"> <li>• With test gas every 3 months</li> </ul>
Cross sensitivity correction	<ul style="list-style-type: none"> <li>• Internally</li> </ul>
Baro correction	<ul style="list-style-type: none"> <li>• Option</li> </ul>
Response time	<ul style="list-style-type: none"> <li>• T90 &lt; 180 seconds (depending on plant and the chosen component)</li> </ul>

### Components, lowest TÜV-approved meas. ranges, meas. principles

Meas. components	<ul style="list-style-type: none"> <li>• Max. 7 Infrared components + O + TOC (optionally)</li> </ul>
TÜV-Approval	<ul style="list-style-type: none"> <li>• TI-Air, 13th, 17th and 30th BImSchV</li> </ul>
TÜV-Report	<ul style="list-style-type: none"> <li>• 936/21203173/A</li> </ul>
CO	<ul style="list-style-type: none"> <li>• 0 ... 75 mg/m<sup>3</sup> (Gas filter correlation)</li> </ul>
NO	<ul style="list-style-type: none"> <li>• 0 ... 200 mg/m<sup>3</sup> (Gas filter correlation)</li> </ul>
NO <sup>2</sup> *)	<ul style="list-style-type: none"> <li>• 0 ... 100 mg/m<sup>3</sup> (Single beam dual wavelength)</li> </ul>
SO <sub>2</sub>	<ul style="list-style-type: none"> <li>• 0 ... 75 mg/m<sup>3</sup> (Single beam dual wavelength)</li> </ul>
HCl	<ul style="list-style-type: none"> <li>• 0 ... 15 mg/m<sup>3</sup> (Gas filter correlation)</li> </ul>
NH <sub>3</sub>	<ul style="list-style-type: none"> <li>• 0 ... 30 mg/m<sup>3</sup> (Gas filter correlation)</li> </ul>
H <sub>2</sub> O	<ul style="list-style-type: none"> <li>• 0 ... 40 Vol% (Single beam dual wavelength)</li> </ul>
CO <sub>2</sub>	<ul style="list-style-type: none"> <li>• 0 ... 20 Vol% (Single beam dual wavelength)</li> </ul>
O <sub>2</sub>	<ul style="list-style-type: none"> <li>• 0 ... 25 Vol% (Zirconium oxide cell)</li> </ul>
TOC, CH:n m	<ul style="list-style-type: none"> <li>• 0 ... 15 mg/m<sup>3</sup> TOC</li> </ul>

\*) NO is not TÜV-approved