



**OMC 2500**  
Online Moisture Control



**ITC 880**  
Inline Turbidity Control



**us-ICC 1500**  
„TOF“



**μ-ICC 2.45**  
Inline Concentration Control

# The superior concept

The Inline Central Control  $\mu$ -ICC 2.45 measures the concentration, the density, the dry matter content or the water content of a liquid product during processing.

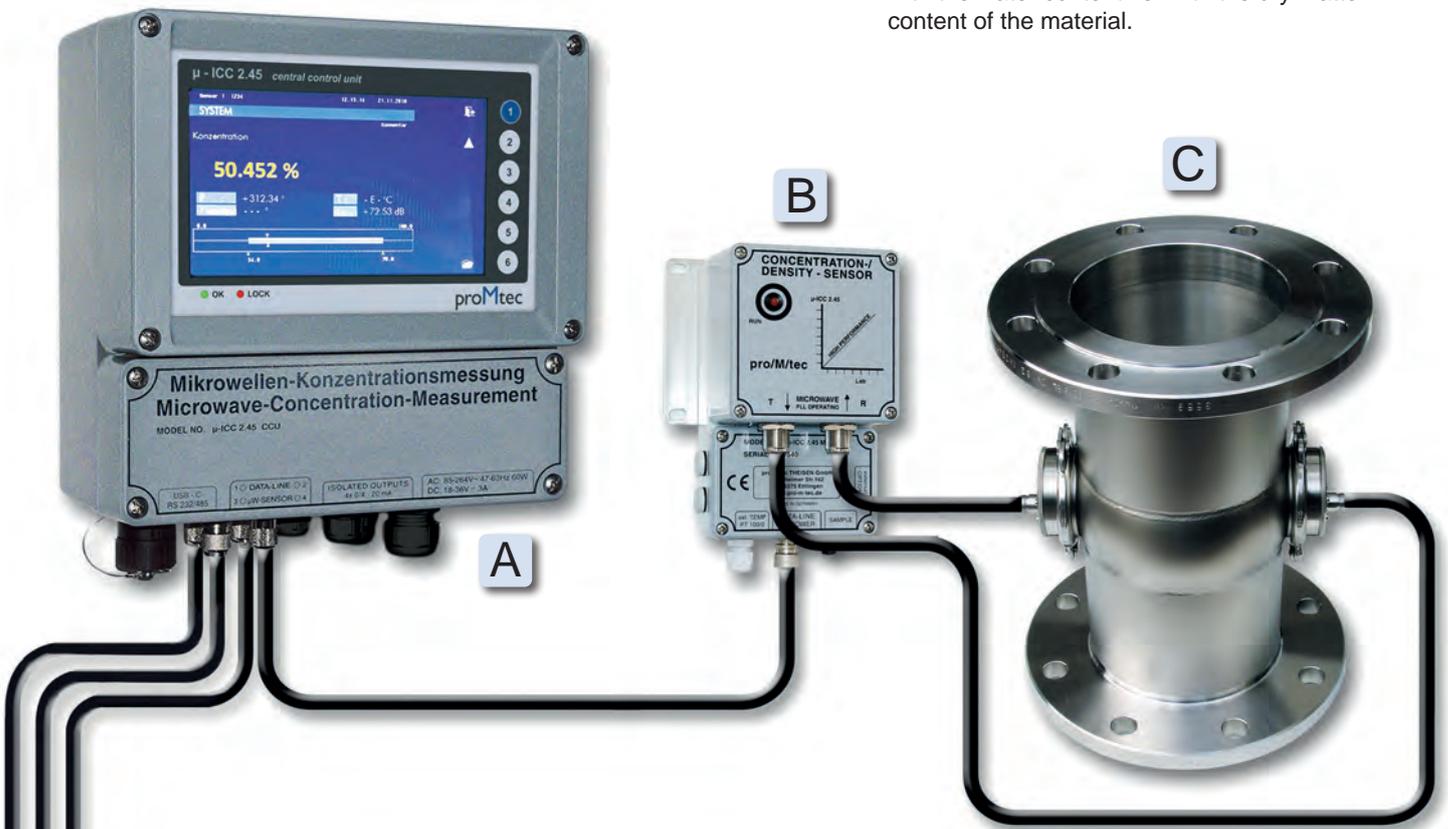
The product can be liquid, a kind of paste or a suspension.

*Look out for the new possibilities.  
Look into your process !*

*With microwaves you “radiate through” the whole cross-section of a pipeline from which you get a representative measurement.*



While radiating through a liquid product with microwaves they suffer a phase shift and attenuation change which directly correlates with the water content i.e. with the dry matter content of the material.



## Inline Concentration Control $\mu$ -ICC 2.45

The controller **A** is the central control evaluation unit ccu for between one to four measuring points. In the display you can see measurement values such as concentration, density or other concentration units with the related process temperature. All measurement values are digitally available through the RS 232 interface. The main measurement value for the concentration is transferred to the process control system by the classical 0/4 - 20 mA current

interface. You can adapt the system parameters and the calibration data to your specific measuring task by using the well-structured multilingual menu of the controller.

The complete microwave electronics are mounted in the extraordinarily compact microwave module **B** which is installed close to the sensor **C**. The microwave module gets its power supply from the controller by using a coaxial cable (with a max. length of 150 m) which also guarantees the digital transmission of the measured data between module and controller. This concept allows a flexible choice for installation places for the components **A**, **B** and **C**

# The superior idea: Measurement of concentration with proMtec $\mu$ -ICC 2.45

*Theoretically it is perfect.*

*But theory doesn't actually count, it is the practice which counts.*

*It is about the responsibility to keep the process running.*

*It is about the permanent and precise registration of specific measurement values.*

## What does the measurement of concentration by microwaves achieve for your process ?

- The measurement is **contactless**, therefore the attrition of the sensors is absolutely minimal. There is practically no maintenance.
- The measurement is adequate for the **main material stream in pipelines** and for **vessels**, i.e. inline in your process. Such a measurement values the real process as it is. Therefore you don't have to rely on a measurement installed in a bypass which often doesn't represent main material stream.
- Because of the transmission through a **representative cross-section of the product stream** you measure "correctly", you measure what counts.
- The measurement does not depend on an optical transparency of the product and therefore it is almost **independent of contamination and deposition** on the sensors. So you have chosen a secure measuring procedure.
- Depending on the application you obtain a **precision in the process** measurement which is comparable to your laboratory analysis. You get the quality of your laboratory control continuously in the process.

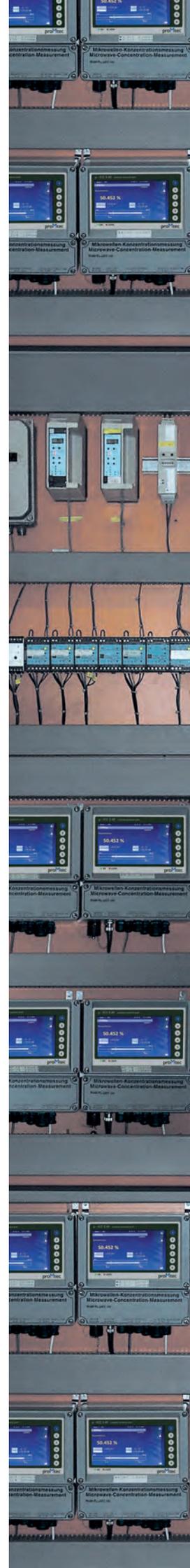
## What does proMtec achieve for you ?

- If you speak with us, you can profit from the **experience** of thousands of realised measurements. Each measurement available on the market has to be inserted carefully into the existing measurement conditions, and to be calibrated: all concentration measuring instruments available on the market at the moment do not measure concentration directly but comparatively. i.e. by a calibration received from standards the measurement is adapted to the given application in your industrial process. This way we go along with you.
- The installation: we make ourselves a comprehensive picture of your measuring task before we **recommend the optimal installation point**.
- proMtec is **operating** with this measuring system **world-wide in all continents**. i.e. you can trust in a measuring system which has worked and has been accepted under the toughest conditions on-site.
- proMtec works on **installing instruments in industrial processes** only, i.e. you can be sure, we know about what you are talking about. We know your problem already.
- proMtec is **100%** focused on the concentration **measurement by microwave**. i.e. as soon as there is further progress in this technology we have thought about the advantages you will get.

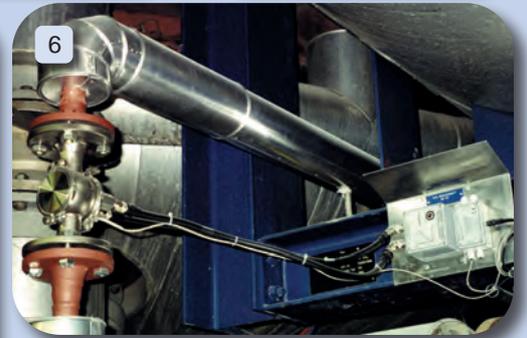
## What does $\mu$ -ICC 2.45 achieve for you ?

- Measuring system is appropriate for the rough **industrial process**. You will get a long-life, reliable measurement.
- The measurement parameters are set to the controller by a **user-friendly menu**, i.e. you will soon get used to the system and make adjustments very fast.
- The controller can be installed at a distance of up to **150 m from the measuring point** because we set the microwave electronics into a separate housing. This gives you great flexibility in the selection of the optimal installation place for the controller.
- The measuring system can have one to max. **4 separate sensors**. By using one common controller for several measuring points the costs can be reduced.
- Depending on the application **insertion sensors are available for vessels** and **inline pipelines while integrated sensors** are available to be installed in tubes in order to ensure the optimal measuring conditions for reliable measured values.

*With our  $\mu$ -ICC 2.45 you will get the highest standard for precise inline concentration measurement in the contactless measurement technique currently available on the world market*



Born in practice  
Matured during the rough industrial process



## Modular extension for 4 measurements

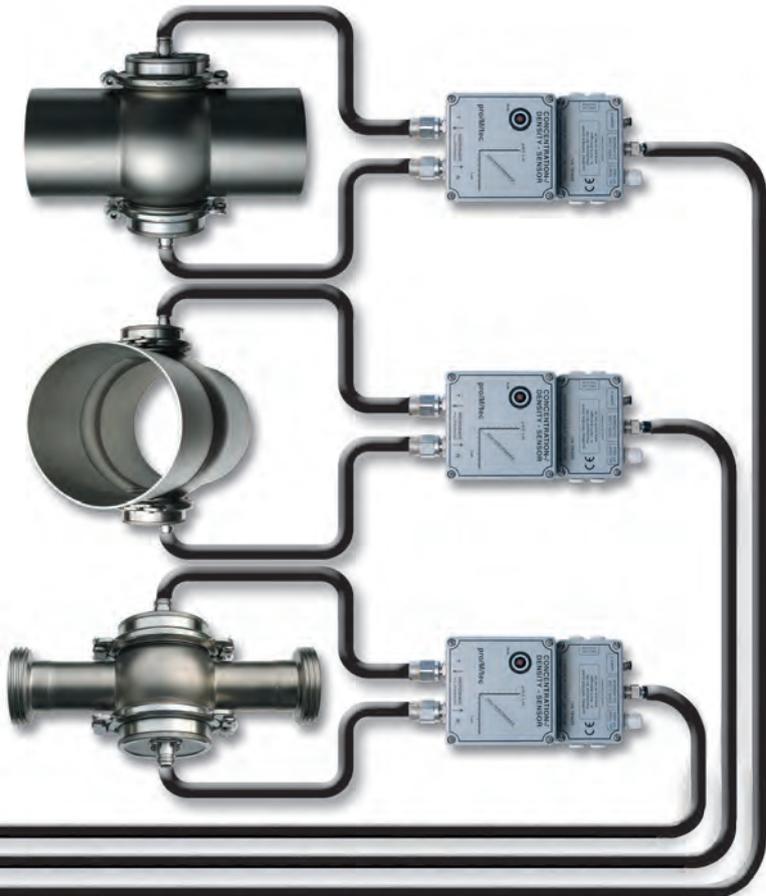
- 1 Typical installation in a pan. Here: Microwave insertion sensor DN100 with integrated temperature sensor Pt100 at the bottom of the crystallizer.
- 2 10 measurements distributed between 5 controllers installed inside an electrical cabinet.
- 3 Inline-pipeline DN125 installed in a vertical process pipeline. Microwave insertion sensor and temperature registration are installed compactly in a varivent flange.
- 4 Installation of the controller onto the crystallizer wall for on-site visualization of the measured values.
- 5 Two vertical pipelines DN150 with insertion flat sensors.  
Microwave transmission through the complete cross-section of the pipeline.
- 6 Compact inline pipeline DN40 in a vertical bypass.
- 7 The easiest installation form for a tank: The microwave insertion sensors are set directly into the pan wall. Additional registration of the process temperature by a Pt100.
- 8 Inline pipeline DN150 in a vertical process pipeline.  
Microwave transmission through the complete cross-section of the main stream. Additional registration of the process temperature by a Pt100 for temperature compensation.
- 9 Inline pipeline DN300 in the process of sludge dewatering
- 10 Alternative installation for pipelines with large cross-sections:  
A microwave insertion sensor DN100 with flange DN65 is mounted to the pipeline. A Pt100 temperature sensor has been installed separately.

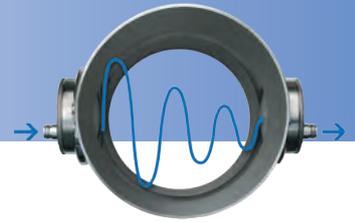
The controller  $\mu$ -ICC 2.45 ccu has 4 isolated outputs 0/4–20mA. For the realisation of more than one measurement up to 4 microwave modules can be connected. Each module has its own settings and calibration to measure independently from the other modules. The calibration and setting of each measurement can be effected without interference from the measuring channels which are already used for process control.

Each measurement and its settings can be shown separately on a big display or you can choose all 4 measuring values in the display together.

Even if you only operate one measurement: the remaining measuring channels can be used for different ranges or different calibrations (product specific multiple calibrations).

The power supply of the module and the digital data communication between each microwave module and the controller is effected by a coaxial cable with a max. length of 150 m. Hereby you always find the optimal installation place for the controller.





### Controller $\mu$ -ICC 2.45 CCU

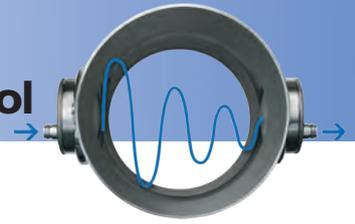
Housing	Aluminium wall housing, robust design, protection IP 65. 240 x 240 x 120 mm, approximately 4.8 kg
Mounting	4 holding flaps H x W = 142.5 x 273 for $\varnothing$ 5
Power supply	AC: 85 – 264 V, 47 – 63 Hz; max. 60 W alternative DC: 18 – 36 V DC max. 1000mA for 1 to 2 sensors DC max. 1800mA for 3 to 4 sensors
Display	7"-color display 840 x 480 pixel, illuminated. Large display of the measurement result and drag pointer with analogue bar graph displays of deviation of the measurement in its defined scale.
Handling	Foil keyboard with 6 soft keys. Well-structured multilingual menu.
Status display	2 LEDs, LED „OK“: green = ready, red = ccu error LED „LOCK“: access-PIN for parameter
Outputs	4 x 0/4 – 20 mA isolated outputs for concentration, range can be set for each channel specifically Load max. 500 $\Omega$ .
Data interface	RS 232, 9600, 19200, 38400, 57600 and 115200 Bd (selectable in the menu) for data communication or comfortable software-update.
Data memory	EEPROM - data memory for 30 calibration and parameter data sets. All data are absolutely saved in case of power failure.

Inputs	4x TNC-plugs for 50 $\Omega$ coaxial cable, RG 223 U, max. 150 m each for simultaneous running of 4 separated microwave modules. Digital data transmission on carrier frequency 10 MHz.
Temperature	Environment 0 to 50 °C.

### Microwave module $\mu$ -ICC 2.45

Housing	Aluminium wall housing, robust design, protection IP 65. 166 x 100 x 81 mm, approximately 1.4 kg
Mounting	4 holding flaps H x W = 87 x 123 for $\varnothing$ 5.
Power supply	DC 24V through coaxial cable from the controller.
Microwave	Extremely stabile phase and attenuation measurement with PLL-synthesizer; 2.45 GHz. Transmission performance 10 mW, 10 dBm.
Microwave cable	2x N-plugs for coaxial cable 50 $\Omega$ , typical 1 to 2 m (max. 3 m).
Data memory	EEPROM-data memory for reference point, in case of power failure all data absolutely saved.
Output	1x TNC-plug for coaxial cable 50 W, RG 223 U for data transmission to the controller.
Input	PT 100 two-wire connection. Range –50 to 200 °C.
Temperature	Environment 0 to 60 °C.





## The superior concept...

... with the evaluation units  $\mu$ -ICC 2.45 or  $\mu$ -ICC 2.45 compact, offering individual advantages for diverse fields of application,...



**$\mu$ -ICC 2.45**  
operates up  
to 4  
measuring  
points



**$\mu$ -ICC 2.45 compact**  
meets special requirements due to  
integrated dynamic range extension

...adapts with various sensors  
to fixed measurement conditions and installation  
requirements.

For this purpose we dispose of **measuring probes** in  
diverse immersion tubes with adjusted immersion lengths  
and wall-mounted **flat sensors** for measuring sections.

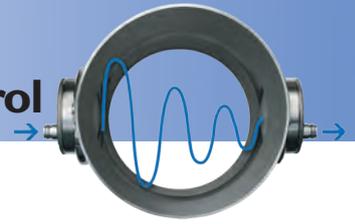
The modular system configuration provides highly flexible  
adaption to nearly every metrological demand.



The sensor variants can be installed in pre-fabricated  
pipeline sections and delivered completely  
pre-assembled in different variants.

**Inline-Measuring sections** are configurable in the  
nominal diameters **DN 25 to DN 400** in almost every  
measuring section adaption and installation length.





## Inline Concentration Control $\mu$ - I C C 2.45 compact

See the new possibilities. Gaze into the heart of your processes!  
Microwaves allow you to look right through the entire cross-section of a pipe and obtain representative measurements.

The  $\mu$ -ICC 2.45 compact is currently the only compact device of its kind for determining density and is supplied by proMtec.

Inline concentration control calculates the concentration, the density, proportion of dry matter or the water content of aqueous products directly in the process itself.

The product can be present as a liquid, paste or suspension.

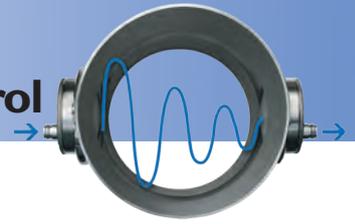


The instrument is attached directly where the measurement is taken so it is a perfect complete solution for individual measurement locations.

Despite its compact design, all the electronic hardware components are contained within the casing. This allows proMtec to provide you with an individually customised and extremely low cost solution.

Moreover, proMtec offers a wide range of sensor specifications and can therefore find the best solution for your specific needs.





## Microwave transmission measurement has many advantages:

- measurements are contact-free and the instrument requires no maintenance
- it is suitable both for use with pipes and directly in containers
- the readings are representative because it evaluates the cross-section of the product flow
- precision is comparable with laboratory analysis
- independently of dirt or deposits



## Know How from an enormous range of applications ...



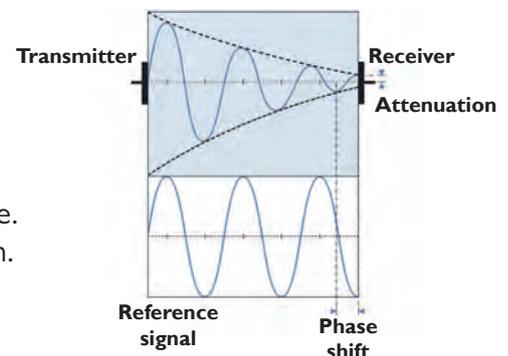
- Sugar industry: beet sugar, cane sugar, refined sugar, syrup, thin to thick juice, milk of lime
- Food processing industry: dairy products, fruit juices, tomatoes, olive oil, wine, coffee, vinasse, breweries
- paper industry
- aerated concrete
- chemical and pharmaceutical industries
- biogas and sewage treatment plants

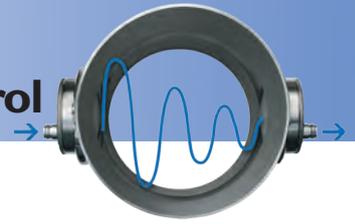
## The measurement principle

Microwave concentration measurement is based on the principle that microwaves are absorbed by free water molecules.

The measurement signal therefore experiences a phase shift in comparison to a reference signal and a damping of the amplitude, i.e. the measurement correlates with the water content of the medium.

From this information it is calculated a value for the water content, density or total dry matter.





## Data sheet $\mu$ - ICC 2.45 compact

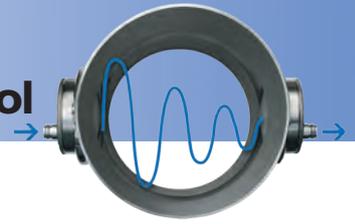


Housing	Aluminium wall housing, protection IP65, Dimension 160 x 160 x 120 mm, 3,1 kg
Mounting	4 holding flaps H x B = 120 x 180 mm for $\varnothing$ 6 mm
Power supply	24V DC, max. 1000 mA
Display	3.9"-Monochrome QVGA-LC, 320 x 240 pixel, illuminated. Large display of the measurement result and drag pointer with analogue bar graph displays of deviation of the measurement in its defined scale
Microwave	Extremely stabile phase, attenuation and level measurement with PLL-synthesizer, 2.45GHz, transmission performance 10 mW, 10 dBm
Microwave cable	2 x N-plugs for coaxial cable 50 ohms, typical 1 to 2 m (max. 3 m)
Handling	Foil keyboard with 4 soft keys, well-structured multilingual
Status display	LEDs for status of the measurement and access-PIN for parameter
Output	4 – 20 mA isolated output for concentration, load max. 500 ohms
Data interface	USB 2.0 interface for software update, data output and calibration via pc [PROFIBUS PA / ETHERNET/ IP / RS-232/-485 / CANopen - on request]
Data memory	SD-/ SD-HC-Card Slot for writing/ reading measuring datas & storage set of parameters
Environment Temperature	0 to 50°C
Temperature compensatuion	Pt 100 with four-wire-system, M12 plug-in
Sample push-button	for memorizing measured data, M12 plug-in

The  **$\mu$ -ICC 2.45 standard** is also available as an alternative to this concept and this consists of 3 components.

It permits a high degree of flexibility and allows the user to take up to four measurements with one controller.





## Application Report

### Measurement of dry substance content for regulation of the crystallization process

The most important parameter during the crystallization process in the batch pan is the dry substance content (brix).

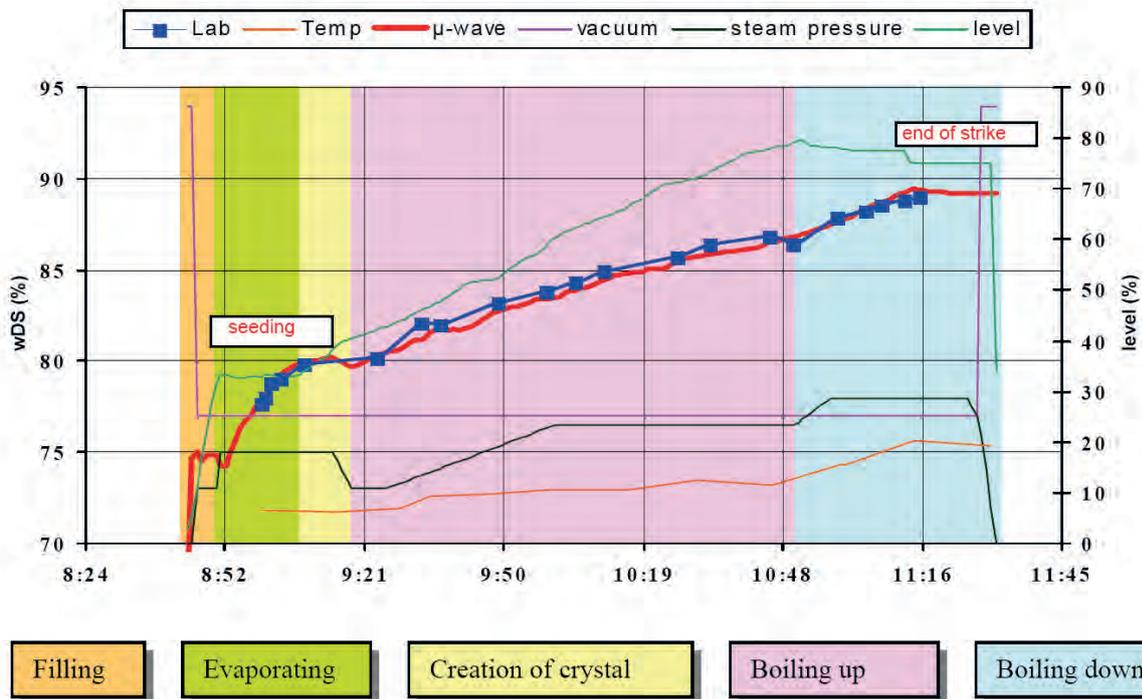
Continuous monitoring of the measurement value in the batch pan is indispensable for the optimal and regular crystal growth.

The proMtec microwave measurement permits precise regulation of the crystallization processes and sets a worldwide standard in this area.

The measurement is carefully calibrated by means of sampling and therefore reaches a very high measurement accuracy up to +/- 0,1% dry substance content under operational conditions.

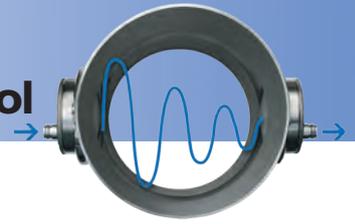


### Crystallisations process with typical increase of the dry substance content



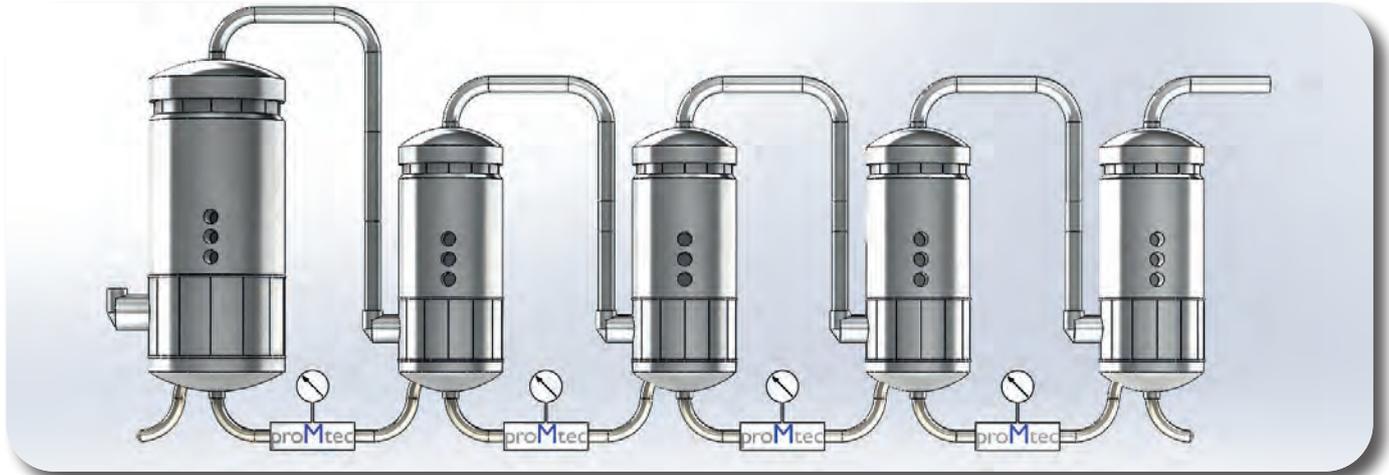
This measurement is thousandfold proven, accepted and used for all common crystallization processes in all types of discontinuous and continuous batch pans worldwide.





## Application Report

### Measurement of dry substance in the evaporating station

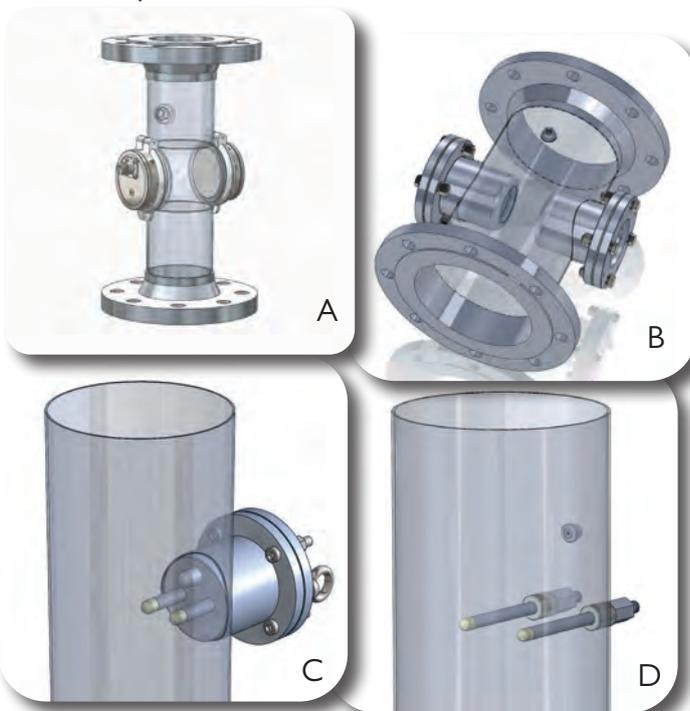


In the multi-stage evaporating station the thin juice is thickened to the required maximum dry substance content. In the stage of evaporation thermal efficiency aiming at energy saving is also of major economic importance for processes in the subsequent crystallization.

The balance between dry substance content of thick juice and the steam requirements is decisive for control and regulation of the plant. With the proMtec microwave measuring system the dry substance content is precisely determined and provides the basis for an efficient regulation of the liquid and vapour stream to avoid instabilities of the dry substance content in thick juice.

Due to a longstanding experience in the sugar industry sector a wide range of flexible installation options can be offered by proMtec.

Depending on technical requirements and available budget different installation variants can be selected:



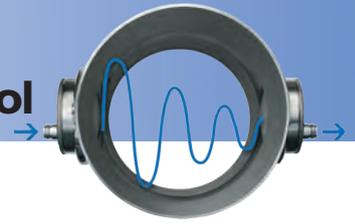
A - Pre-assembled Inline measuring sections, provided with individual mounting flanges.

B - Same installation type like A, but also possible for large measuring sections up to DN 400. Optionally only with welding necks and intrusions for fixed pipes

C - Pre-assembled intrusion with mounting neck that can be welded on the measuring section

D - Set of insertion probes with welding sockets





## Application Report

### Measurement of dry substance in milk of lime

The unique advantage of the microwave measurement system is the direct measurement in the process. The method evaluates the concentration of the whole cross section between the sensors, thus, the actual process is measured representative and with high accuracy.

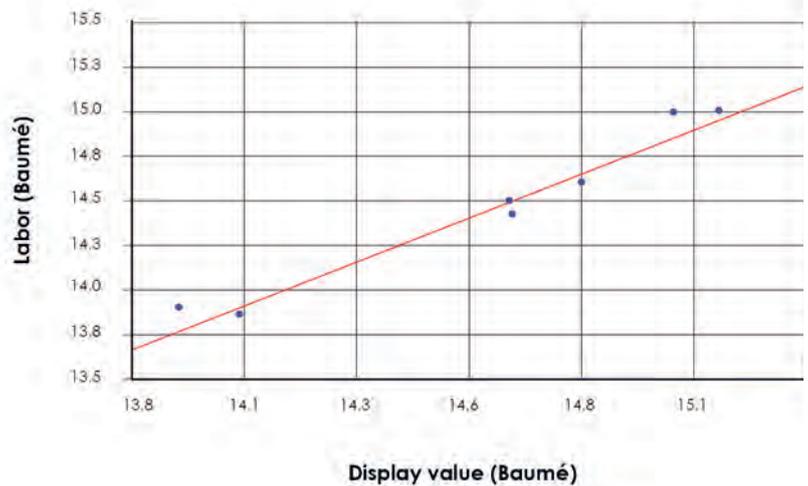
The monitoring is useful for determining the pre-density and density of the milk of lime after maturation. The sensors are installed in the pipeline after the tank or classifier. Alternatively the measurement can be implemented directly in the tank. The probe sensors are used here with weld-in sockets directly on the bottom of the tank.

The measured value is displayed in Baumé or kg/ L with a high accuracy, allowing reliable control of the extinguishing water.

The microwave measurement within the process leads to a steady flow. After installation of the microwave sensors and the Pt 100 in the pipe section no additional maintenance of the measuring device is required. In addition, the installation of a bypass has become superfluous and process faults by blockage in a bypass are eliminated.

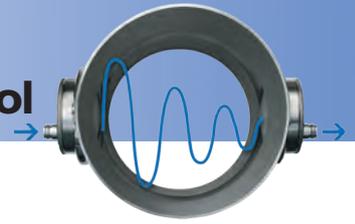


Milk of lime in Baumé



The contactless measurement consists of two flat sensors fitted in a pipe, a temperature sensor to compensate temperature fluctuations and the evaluation unit. The measurement is based on laboratory samples, which are used to calibrate each product, in order to achieve a very high accuracy.





## Application Report

### Measurement of dry substance in the process of sludge dewatering

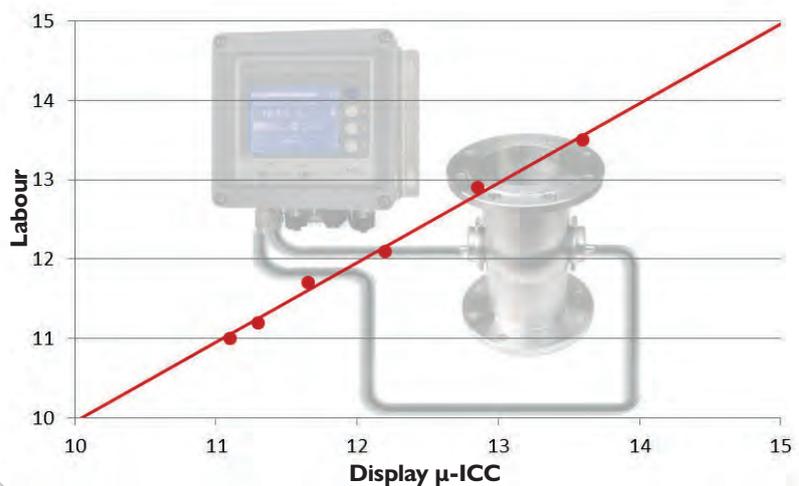
#### Beet washing

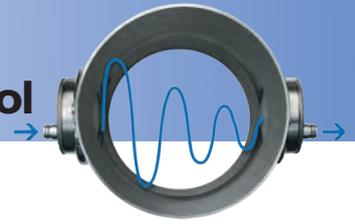
During beet washing the soil tare is removed from the beets by using cleaning water. Big amounts of cleaning and flume water are reused after mechanical sludge separation.

While the sludge is being separated from water in the settling tank the dry substance content on the central sludge output is reliably monitored on a permanent basis by the microwave concentration measurement.

The proMtec measurement offers the possibility to measure inline also in large measuring sections with a diameter up to DN400.

The sensors which can be hardly affected by contamination detect the dry substance content permanently in the main flow and thereby provide the most important standard value for the sludge dewatering and treatment.



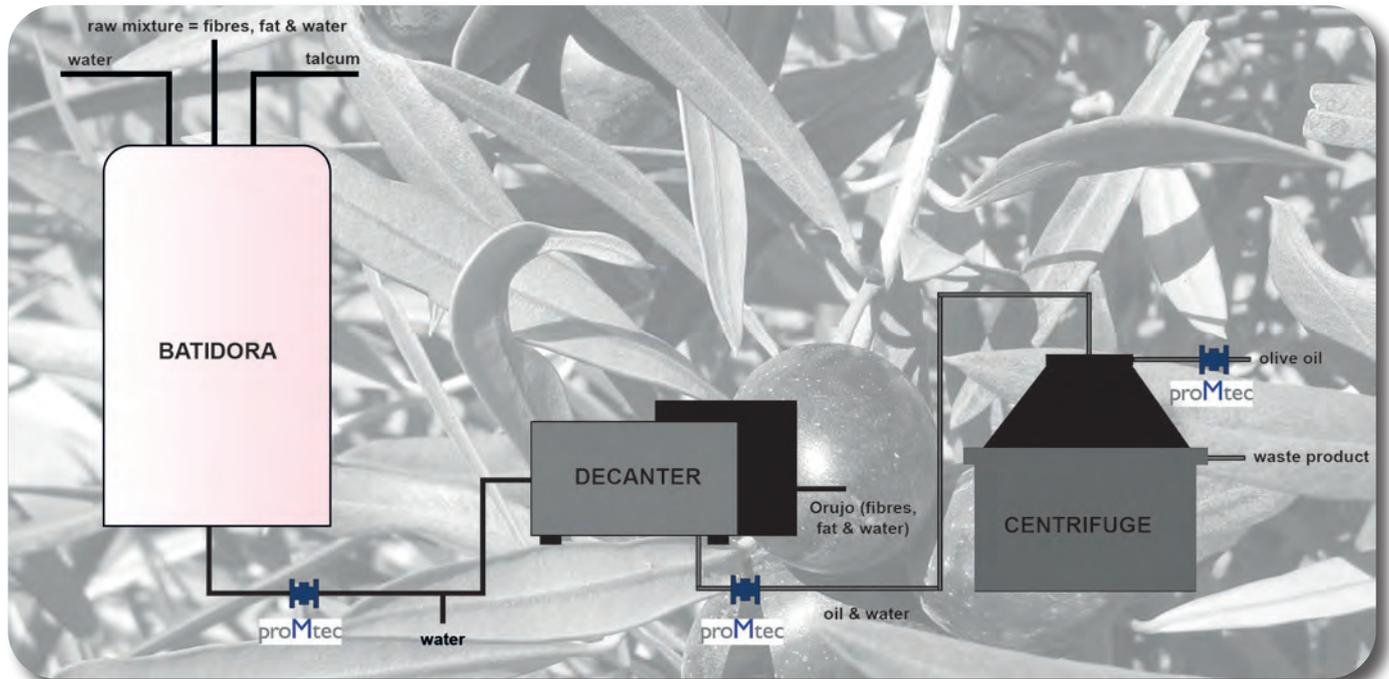


## Application Report

### Process optimization in the olive oil production

The microwave measurement is used to optimize the separation process in the olive oil extraction. The residual moisture is measured at the exit of the batidora, the exit of the decanter and optionally after the centrifuge. This gives information about the exact composition of the olive oil.

The microwave measurement captures the residual moisture content directly in the pipeline and is for this reason highly representative. The water supply as well as the rotation speed of the decanter and the centrifuge are highly controllable with this parameter.



For the extraction of the olive oil, the raw mixture is conditioned with water and talcum in the batidora and then gets crushed. After the batidora the dry matter content is measured. If necessary, there can be added water.

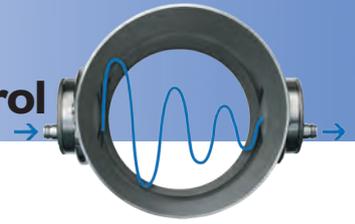


Then occurs the first separation process in the decanter to excavate the orujo, a fibre mixture with residual water and fat from the olive oil. The following measurement conduces to receive the right oil-water-content.



In the second separation process the olive oil is filtered out of the centrifuge. With the aid of the last measurement the final product can be controlled.





## Application Report

### TS-measurement of cream cheese

The unique advantage of the microwave measurement system is the **direct measurement** in the process.

The method evaluates the concentration of the whole cross section between the sensors, thus, the actual process is measured **representative** and with high accuracy.

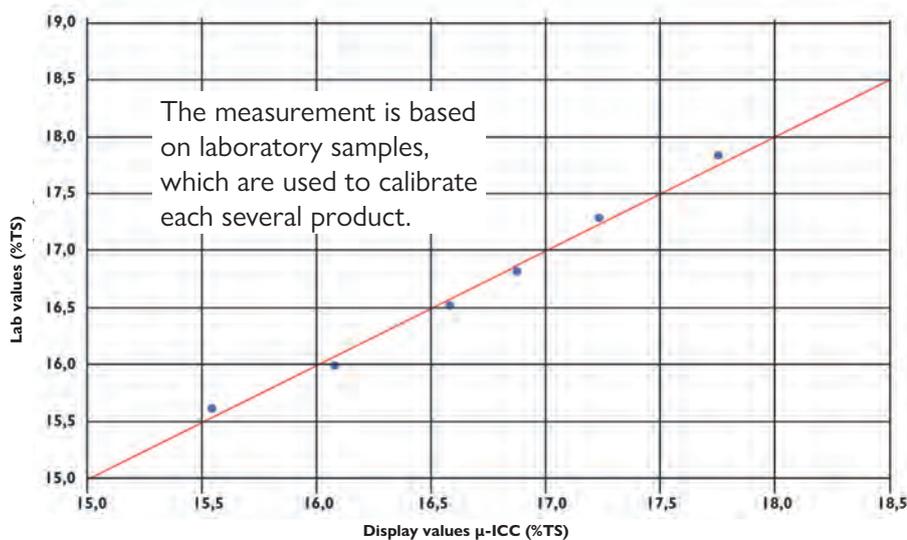
The measurement is installed after

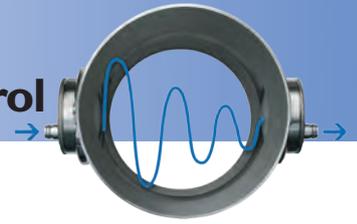
- the separator,
- the centrifuge or
- the ultrafiltration plant

and **measures the dry matter** in the cream cheese end product with a high reliability.

Thus the signal can be used as quality control or directly for controlling the separation process. With the microwave measurement the separation process will get in a constant cycle.

After installation of the microwave sensors and the Pt100 in the pipe section, no additional maintenance of the measuring device is required. In addition, the installation of a **bypass has become superfluous** and process faults by blockage in a bypass are eliminated.





## Application Report

### Dry matter measurement in starch production

The method of measuring density with microwaves is done by detecting the water content of the fluid/ medium between the sensors and based on these measuring results concluding to its density resp. concentration. The unique advantage of the microwave measurement system is the direct measurement in the process.

#### Further Advantages:

- can be used in pipeline bypass or container
- requires low maintenance
- no blockage in measuring cell
- it even works with polluted measuring surface
- high reproducibility of the measuring results
- high accuracy, comparable with the Coriolis meter

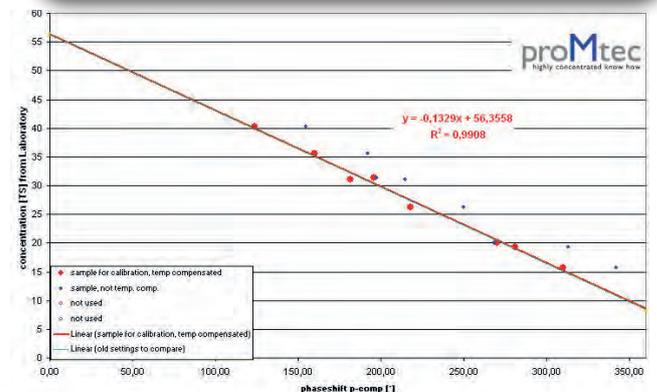
The measurement is based on laboratory samples, which are used to calibrate each several product, thus you will achieve a very high accuracy.

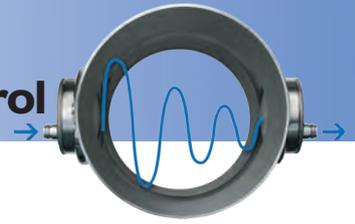


#### μ-ICC 2.45 compact with Inline-Measuring-Pipe

One-Channel-System for mounting near the measuring point.

It is also possible to use a four-channel-system with separate module-boxes for each measuring point.





## Application Report density measurement in aerated concrete

The unique advantage of the microwave measurement system is the direct measurement in the process. The method evaluates the concentration of the whole cross section between the sensors, thus, the actual process is measured representative and with high accuracy.

The measurement of the dry matter substance is an important parameter for charging the raw materials for the sand slurry preparation and also for the return slurry. An accurate density measurement leads to a very precise lacing of water, and thus there is the best pore formation.

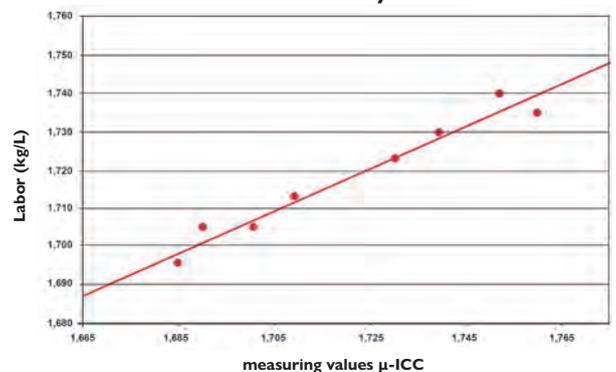
The microwave sensors and also the temperature sensor are abrasion-resistant. After installation of the microwave sensors and the Pt 100 in the pipe section, no additional maintenance of the measuring device is required. In addition, the installation of a bypass has become superfluous and process faults by blockage in a bypass are eliminated.

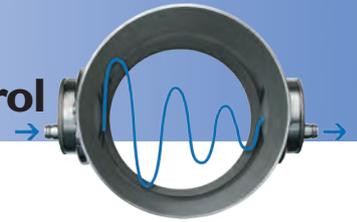


The contactless measurement consists of two flat sensors that are fitted in a pipe, a temperature sensor to compensate temperature fluctuations, a microwave module and the evaluation unit.

The measurement is based on laboratory samples, which are used to calibrate each several product, thus you will achieve a very high accuracy.

**Sand slurry**





## Application Report

### Density measurement for biogas- and sewage plant

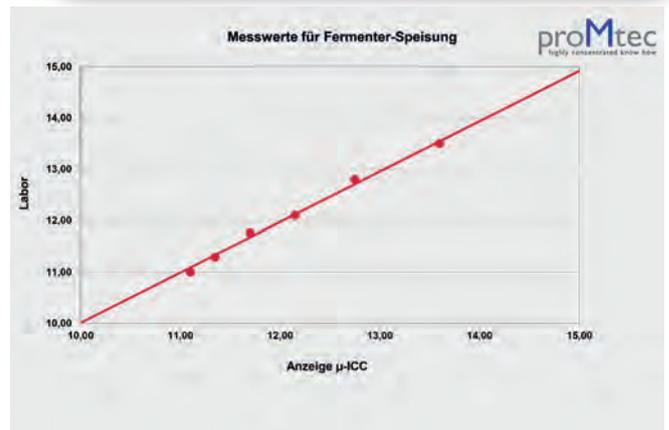
Even during the fermentation process, it is important to create an optimal composition in the treatment basin. Only in this way the required concentration and hence an optimal fermentation process can be achieved. For these applications, the concentration measurement with the microwave transmission method is the most appropriated.

#### Measurement:

The microwave measurement detects the water content of any medium and so suggests the density respectively the concentration (TS, %, kg/L). The measurement is directly inside the pipeline. In cause of this, you get a representative measurement of the rate of flow.

#### The process:

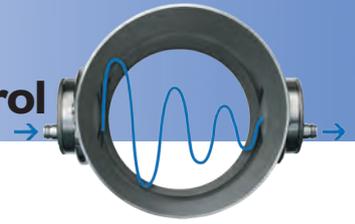
In the treatment basin the substrate is collected and a suitable concentration is provided. Via an inlet the substrate is conveyed into the fermenter in which the fermentation process begins and finally ends to the production of biogas.



#### The advantages:

- product contactless realtime measurement
- no bypass needed
- high reproductability and representativeness
- maintenance-free and no influence by purity





## Application Report TS-measurement after disperser

The advantage of the microwave measurement is the direct measurement of the process flow. By this method the concentration gradient of the product is evaluated between the sensors thus the real process is measured with a representative high accuracy.

The measurement of the TS-content is an important parameter for determining the consistency in the thickener and also between the disperser to the refiner.



An exact measurement of the density allows here a very precise water addition and is reaching an accuracy of up to  $\pm 0,2\%$  TS directly in the main pipeline.

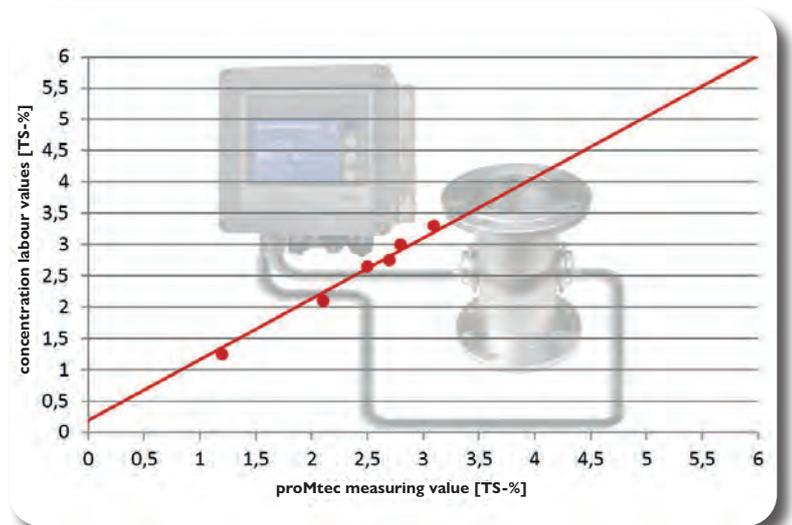
The microwave sensor is wearless, that means after the installation of the microwave sensors in the pipe section no additional maintenance is necessary. Further, with proMtec the installation of a bypass has become redundant and process disturbances caused by clogging of the bypass measurement are excluded.

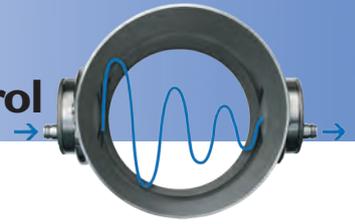


The contactless measurement consists of the two flat sensors, which are used in a pipe, a microwave module and the evaluation unit.

Moreover the measurement has a temperature compensation with a special temperature sensor.

The measurement is carefully calibrated to the particular product by using laboratory samples and therefore achieves very high accuracy.





## Application Report: Density meter in flue-gas desulfurization (FGD)

The method of measuring density with microwaves is done by detecting the water content of the fluid/ medium between the sensors and based on these measuring results concluding to its density resp. concentration..

The unique advantage of the microwave measurement system is the direct measurement in the process.

### Further Advantages:

- can be used in pipeline bypass or container
- requires low maintenance-
- it even works with polluted measuring surface
- no blockage in measuring cell
- high reproducibility of the measuring results
- high accuracy, comparable with the Coriolis meter
- no risk for health at radiation (as for example radiometric measurement)

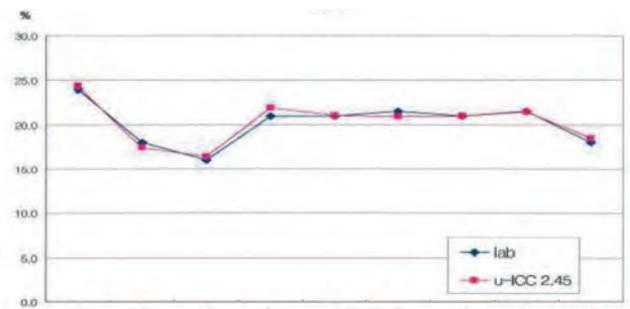
The measurement is based on laboratory samples, which are used to calibrate each several product, thus you will achieve a very high accuracy.



### μ-ICC 2.45 compact with Inline Measuring Pipe

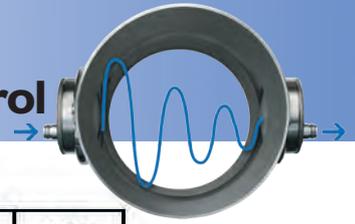
One-channel system for mounting near the measuring point.

It is also possible to use a four-channel system with separate module boxes for each measuring point.



Absorber Process in Power Plant - Trend



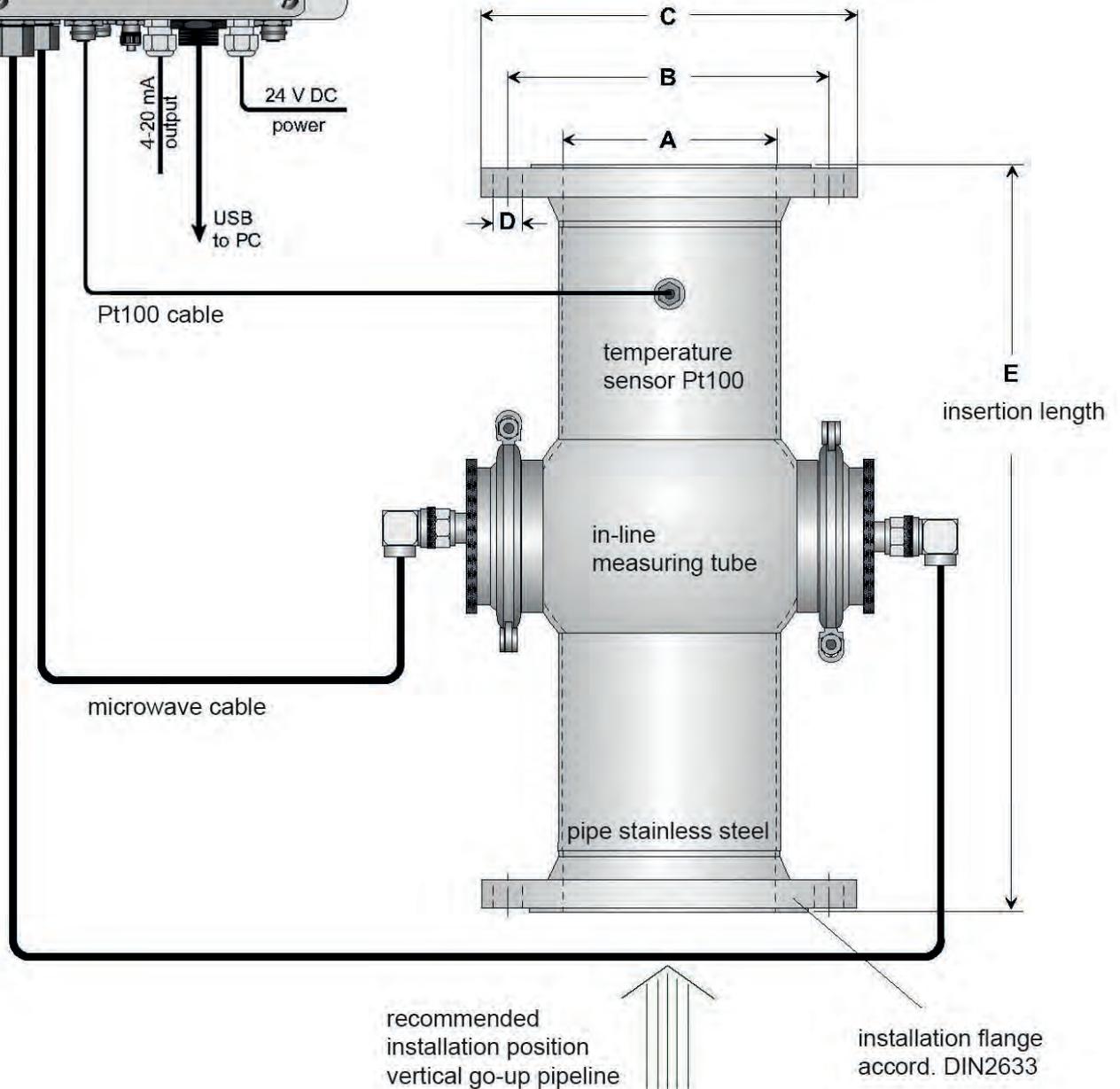


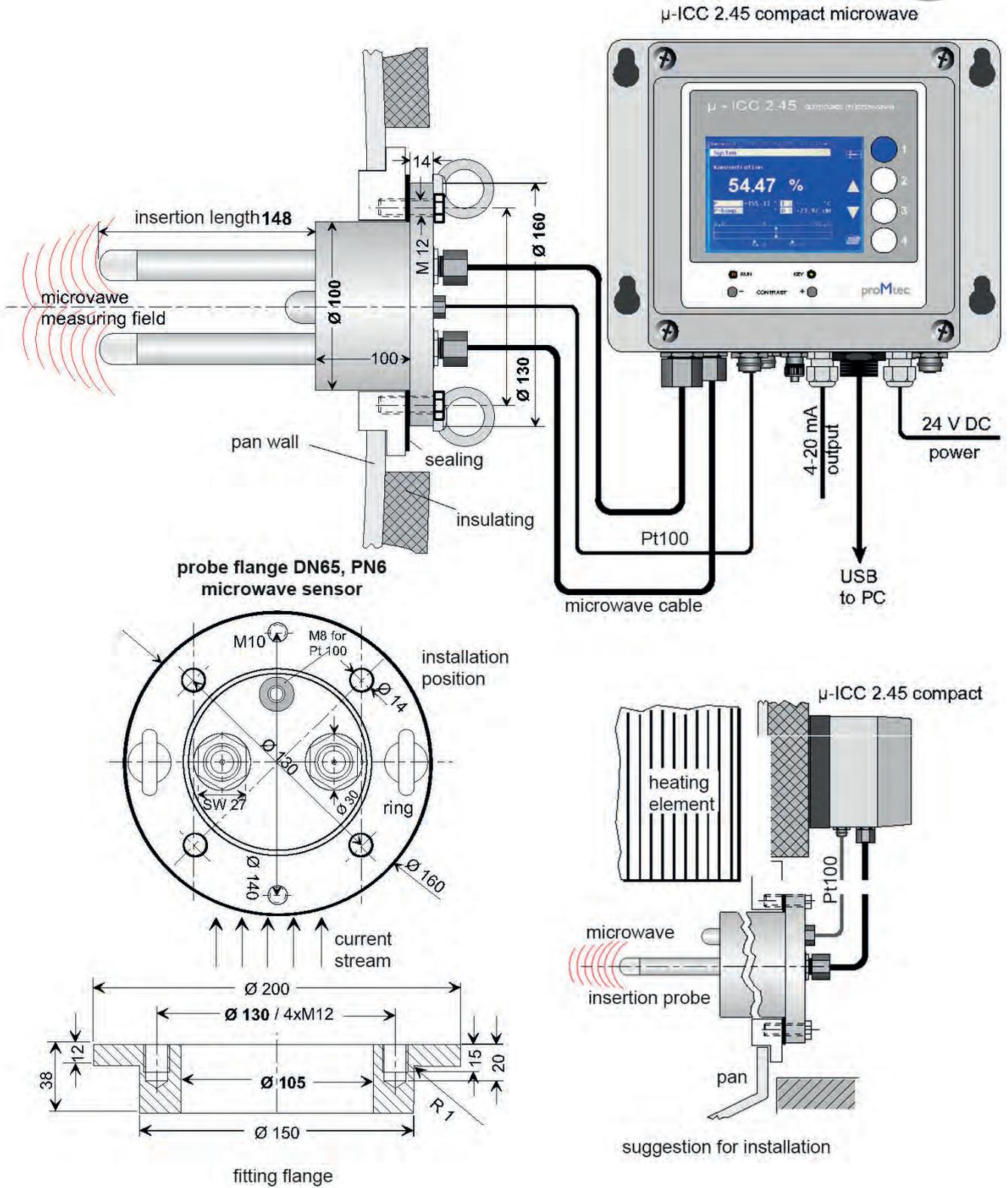
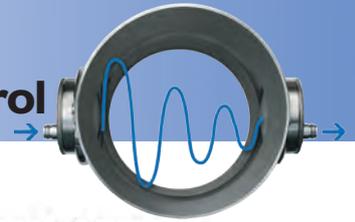
μ-ICC 2.45 compact

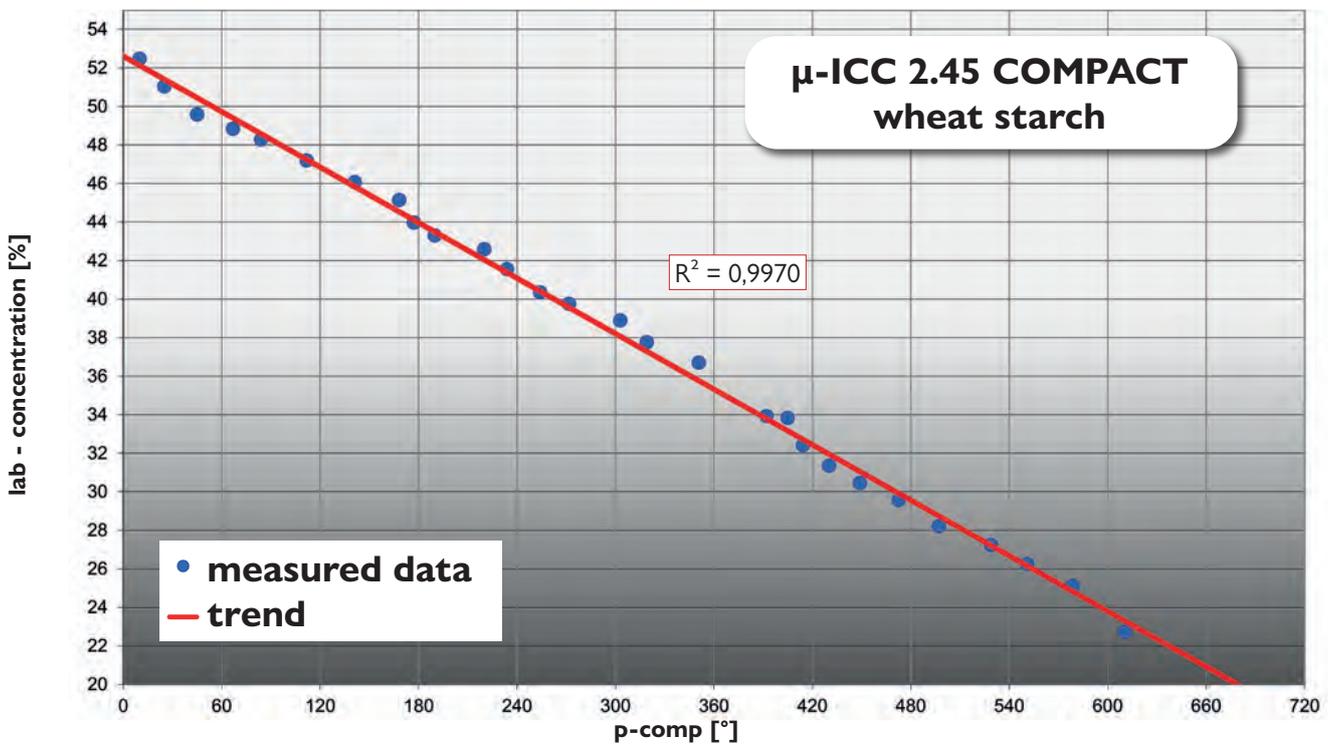
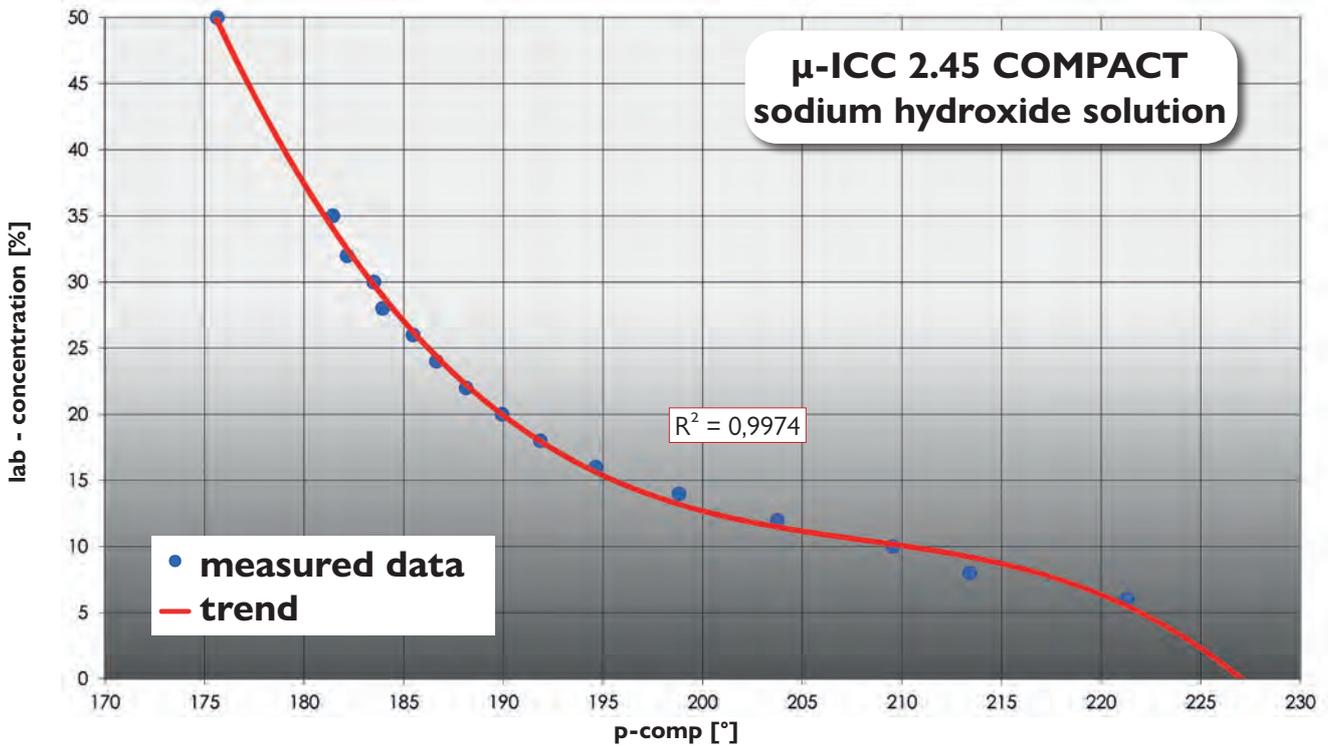
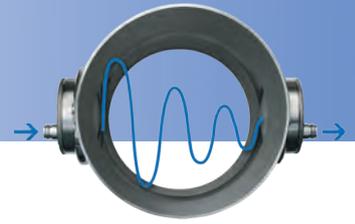


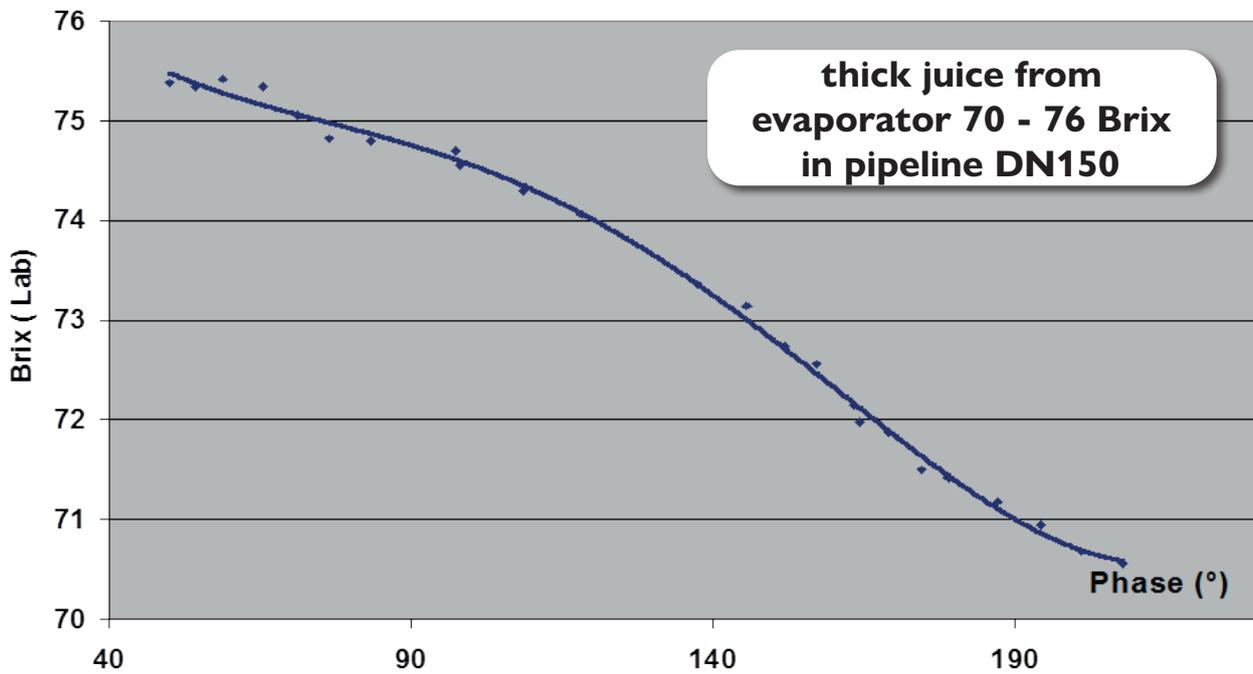
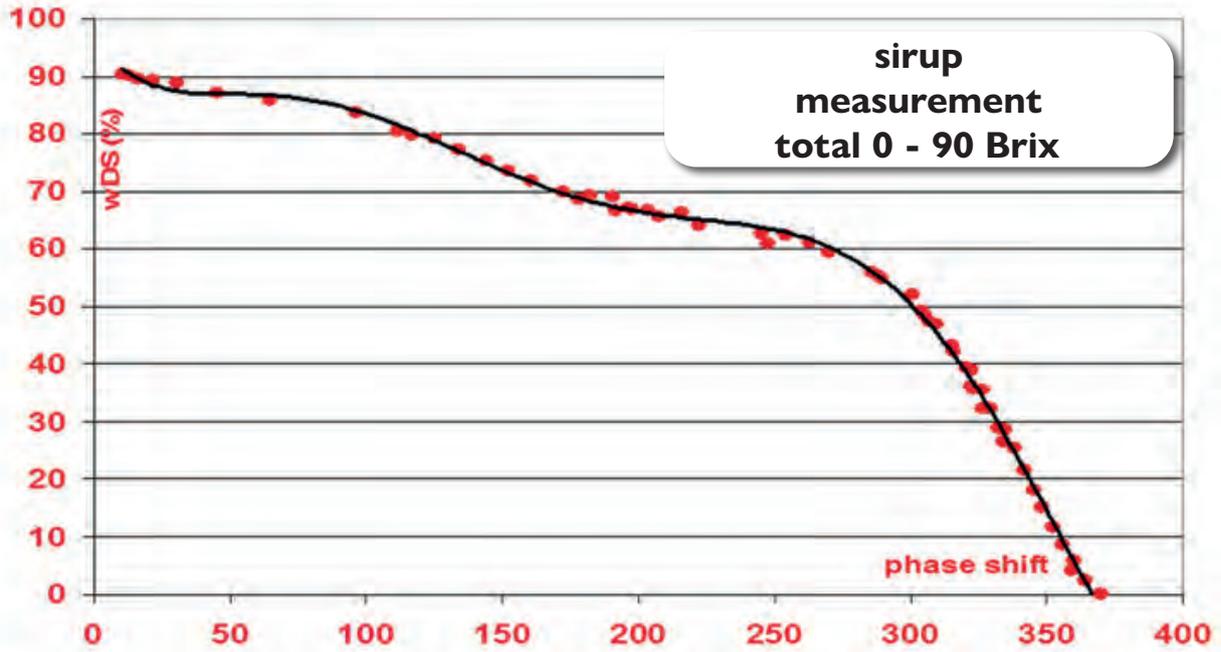
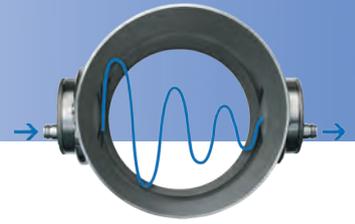
DN	40	50	65	80	100	125	150
A	38	50	66	81	100	125	150
B	110	125	145	160	180	210	240
C	150	165	185	200	220	250	285
D	4 x Ø 18			8 x Ø 18			8 x Ø 22
E	264	270	340	350	354	360	410

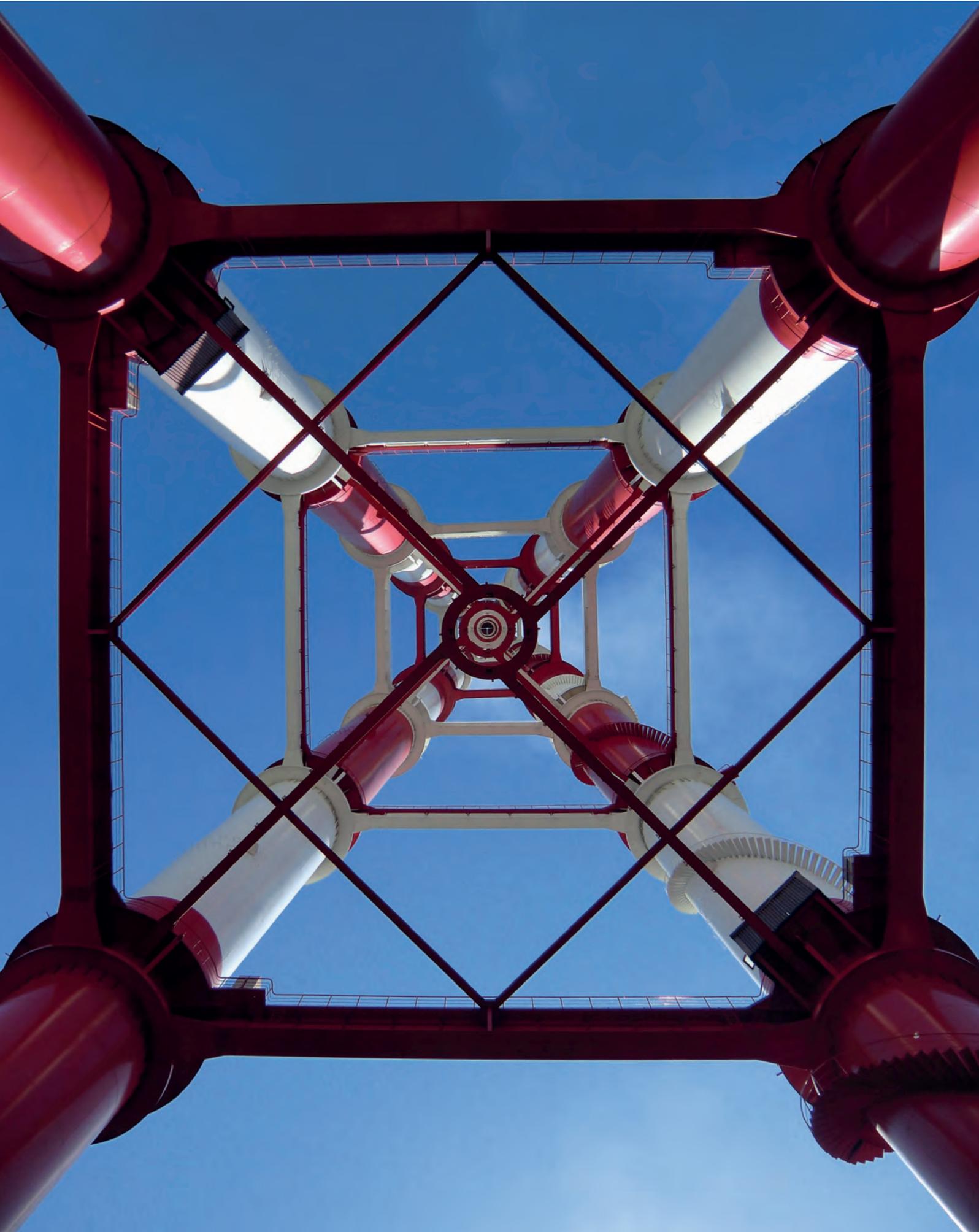
accord. DIN 11850

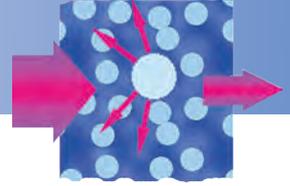








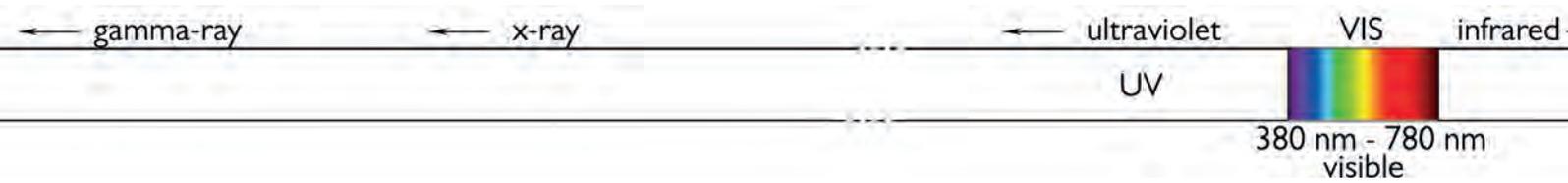




# ITC 880

## Inline Turbidity Control





ITC detects the turbidity of a liquid reliably and precisely.

The inline measurement occurs directly within the liquid stream. The turbidity can be displayed as a concentration in ppm or as a solids concentration in g/l.

The measurement is based on the transmitted light method, which is carried out with a near-infrared light beam that is emitted by a LED with a specific wavelength of 880 nm.

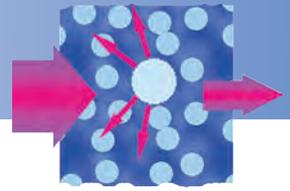
Due to the selected higher wavelength of near infrared light in comparison to the visible light the ITC system detects the solids concentration reliably regardless of the color of the medium to be measured.



The ITC measurement is designed as a screw-in sensor with a ½ inch thread. Due to the contact with aggressive and abrasive media the installed sapphire window is able to withstand easily the extreme conditions.

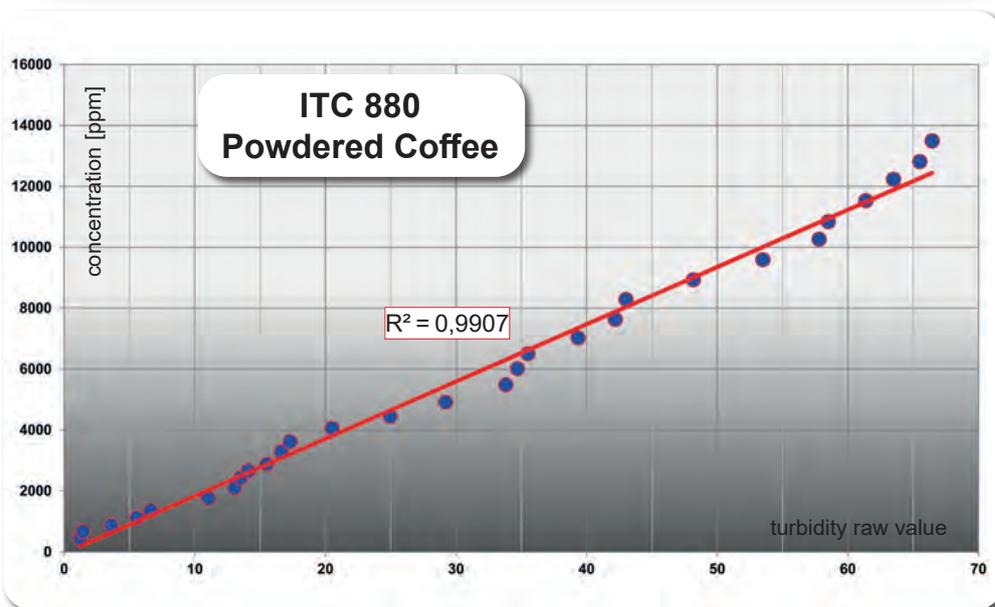
The different measuring optical path lengths (OPL) ensure the ideal adaptation to the required measuring range and the achievable resolution.

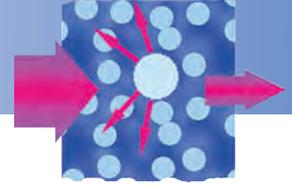
# Application Examples



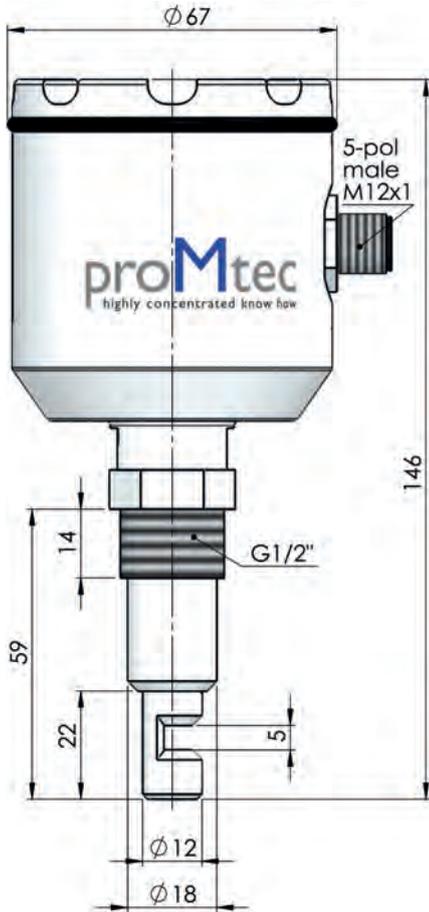
microwave / radiowave →

← NIR - near infrared 780 nm - 2,5 µm | MID - mid infrared

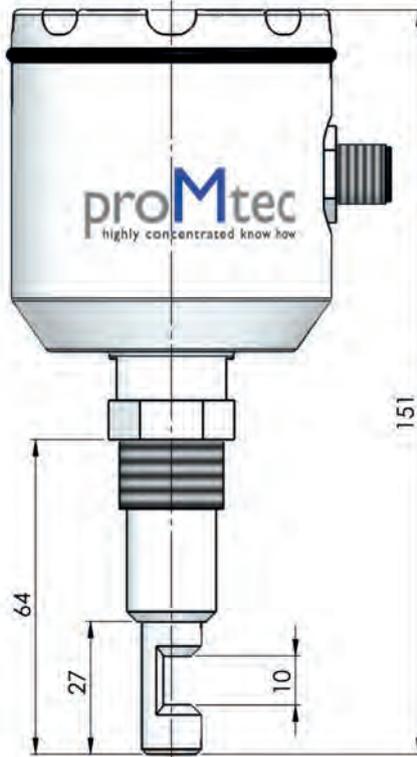




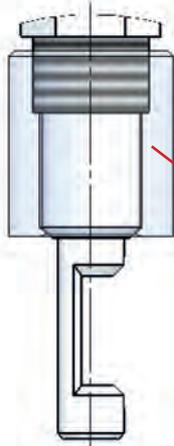
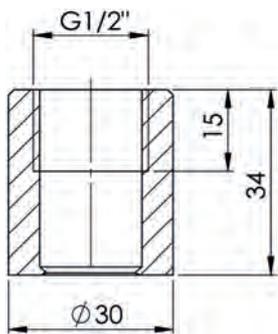
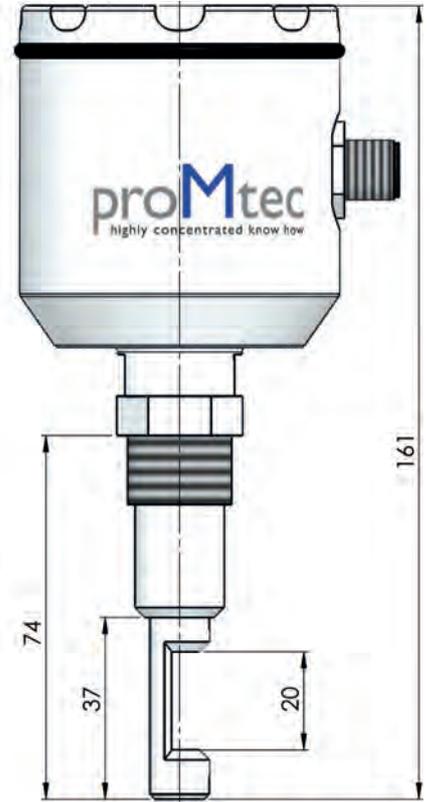
ITC 880-A05



ITC 880-A10

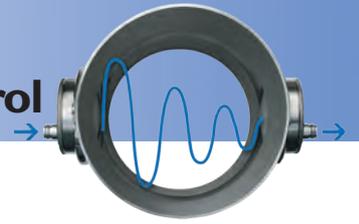


ITC 880-A20



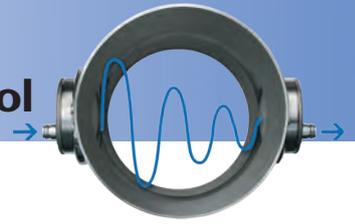
further options for connection:  
- weld-in ball socket or  
- varivent flange



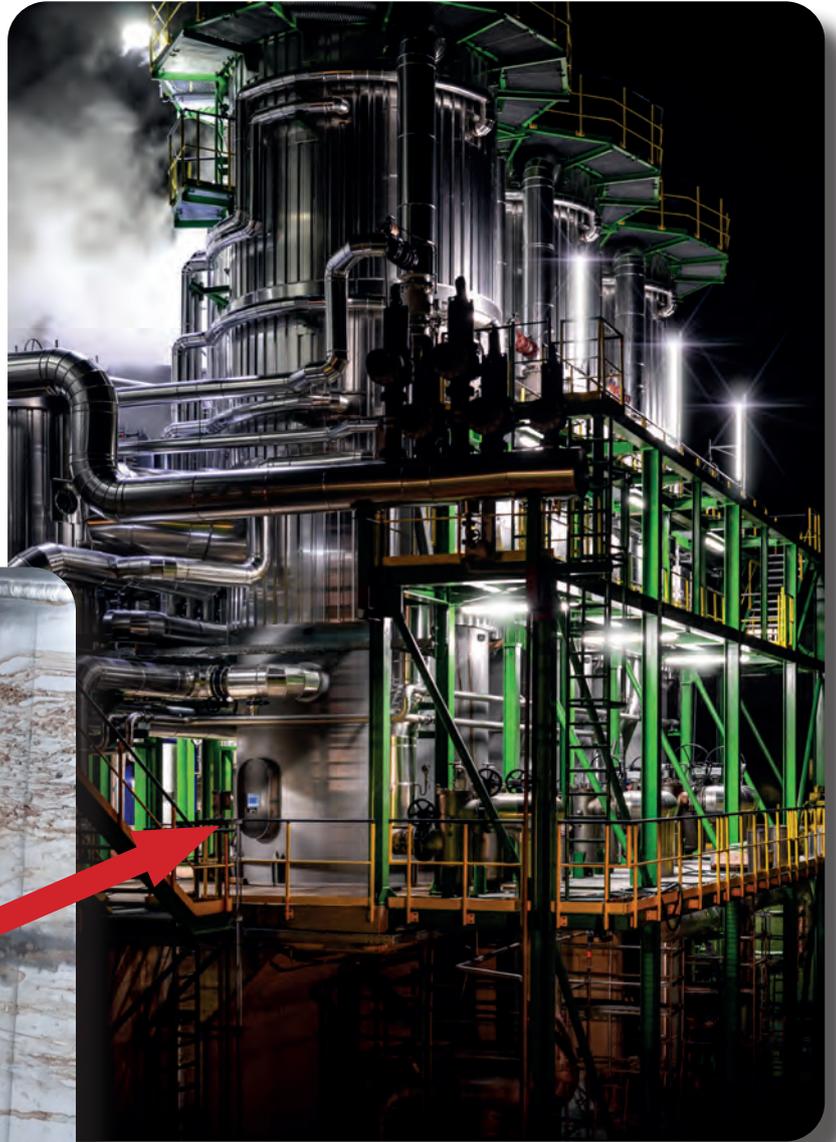


# us-ICC 1500 „TOF“

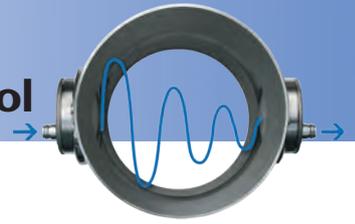




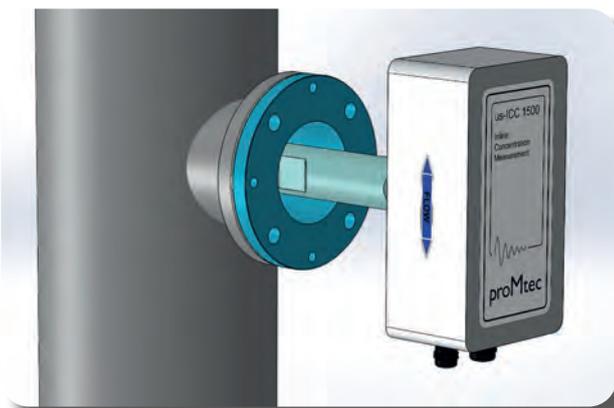
# us-ICC 1500 „TOF“





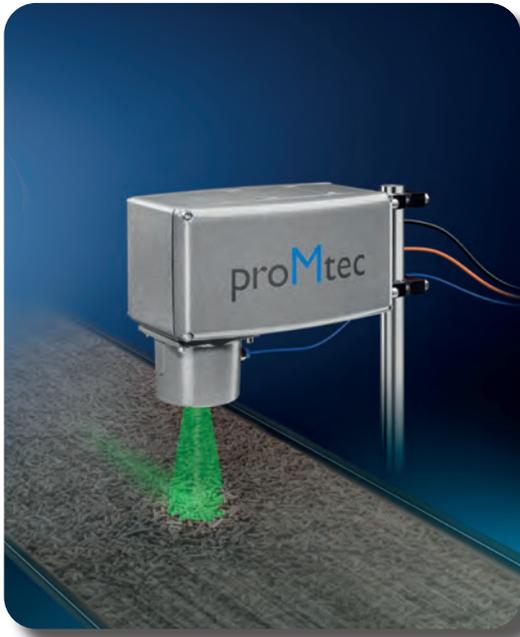
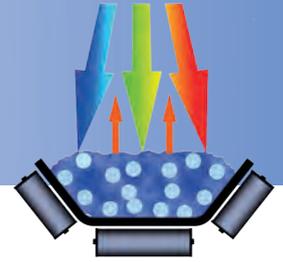


**Inline Concentration Control  
for measurement of a brix range 0 - 99 %**



**for any pipe diameter**





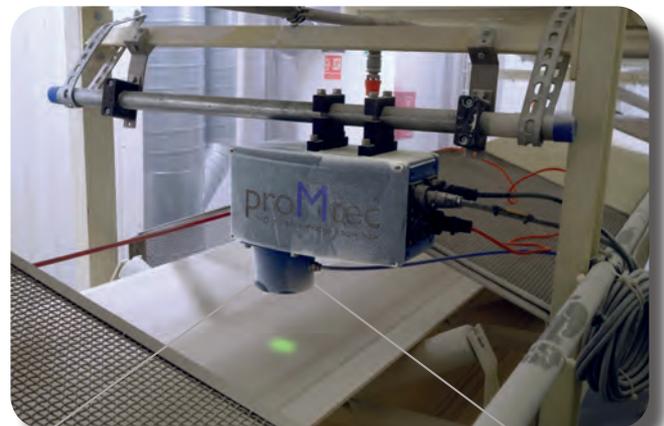
# OMC 2500

OMC 2500 reliably and precisely determines online the moisture or dry mass of bulk materials, suspensions or pasty materials.

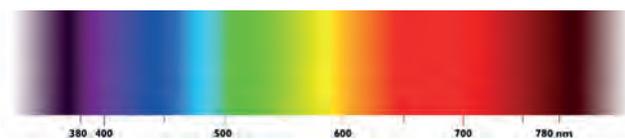
The measurement is done contact-lessly with near-infrared light (NIR). Due to the significantly higher wavelength of NIR compared to visible light (VIS), there is a greater penetration depth into the sample regardless of its color.

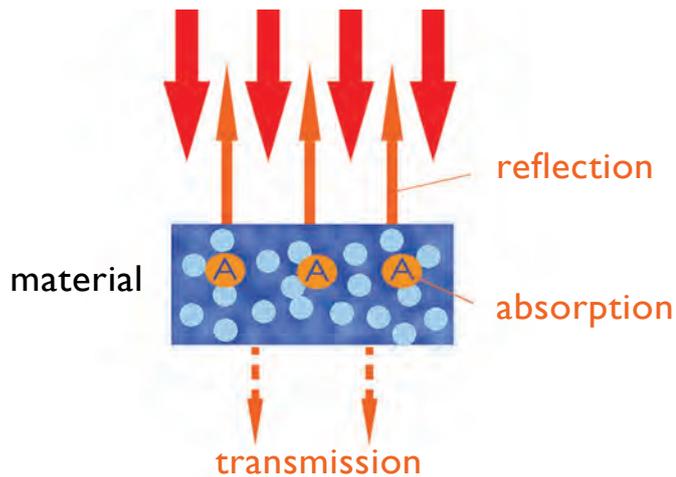
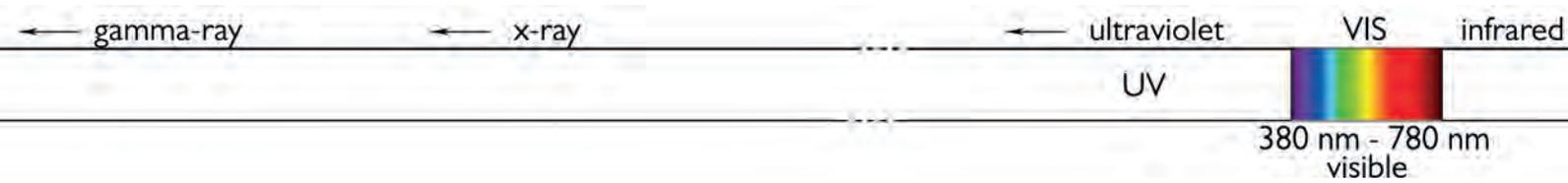
OMC reacts largely insensitive to unevenness of the material to be measured, such as particle size and material height fluctuations.

The use of a well-suited wavelength of NIR light ensures precise measurement under difficult industrial process conditions - even in dusty or steamy environments almost independent of temperature and daylight.



**NIR**  
**near infrared**  
**780 nm - 2500 nm (2,5  $\mu$ m)**





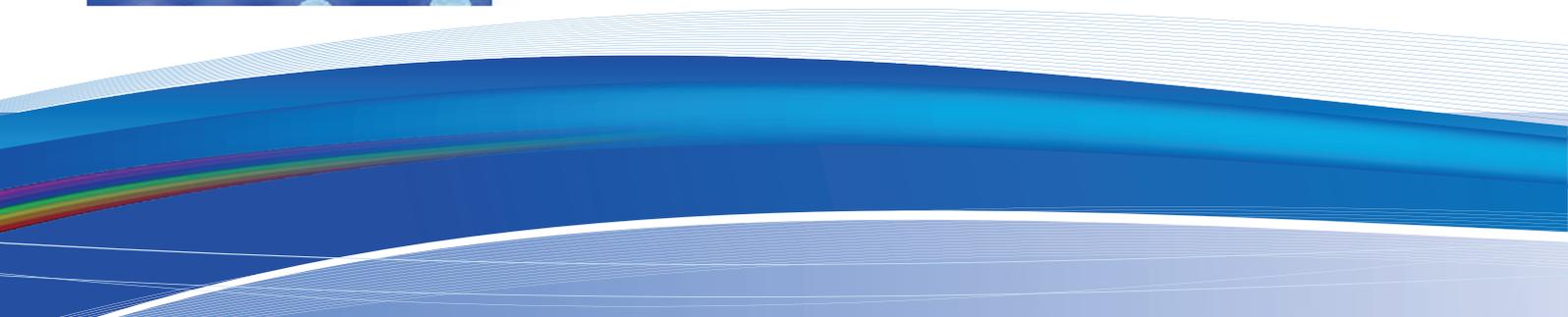
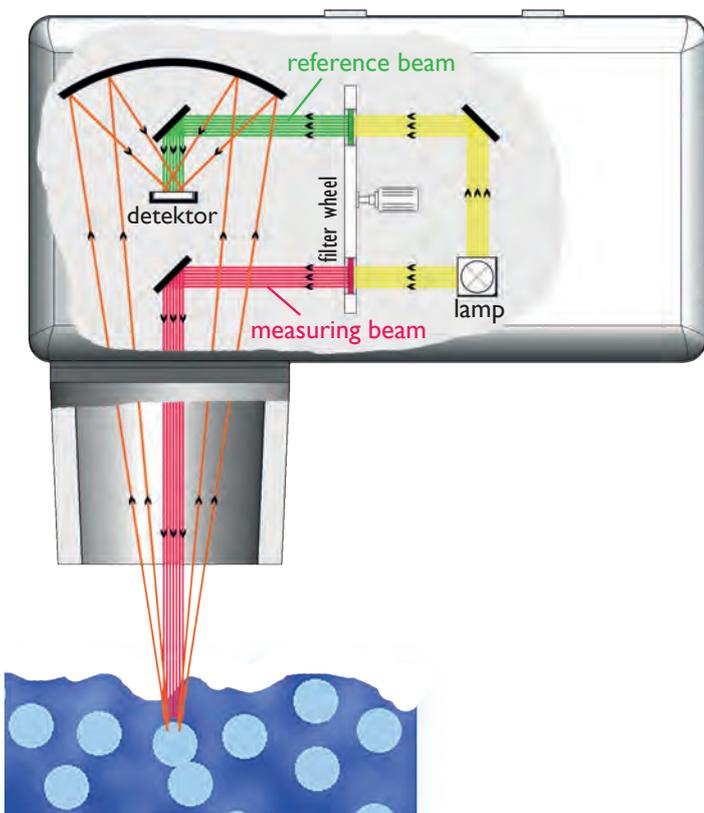
To determine the moisture content, the material to be measured is irradiated with a precisely filtered NIR light of specific wavelength.

Water molecules contained in the material are absorbed by NIR light in the range of 1100 to 2450 nm. The unabsorbed transmitted and backscattered residual light is a measure of the absolute moisture or dry matter content of the material.

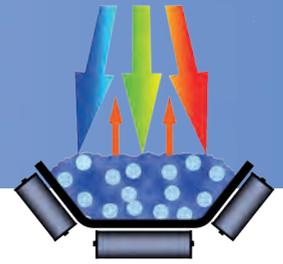
OMC 2500 takes advantage of the NIR reflection achieving a precise, reliable and contactless measurement from almost all wet material surfaces.

Through the evaluation of an internal precisely filtered NIR reference beam from the same light source of the NIR measuring beam ensures maximum stability and a drift-free measurement over a long period of operation.

To calibrate the device, the referenced NIR measurement values of the known material moisture are gathered. Multiple data points are interpolated within the device-internal fitting curve and stored as a final calibration curve for the specific material.

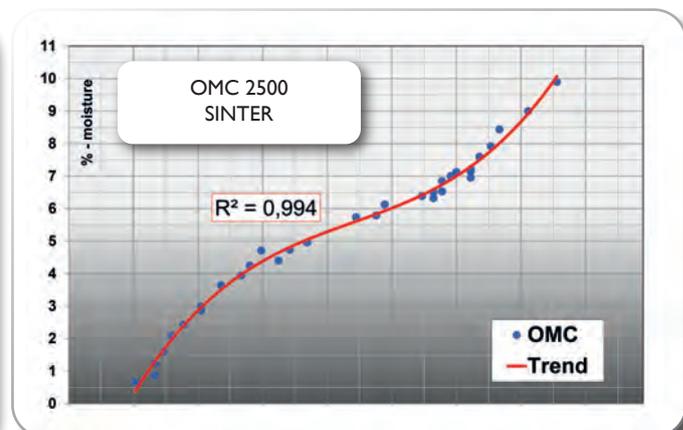
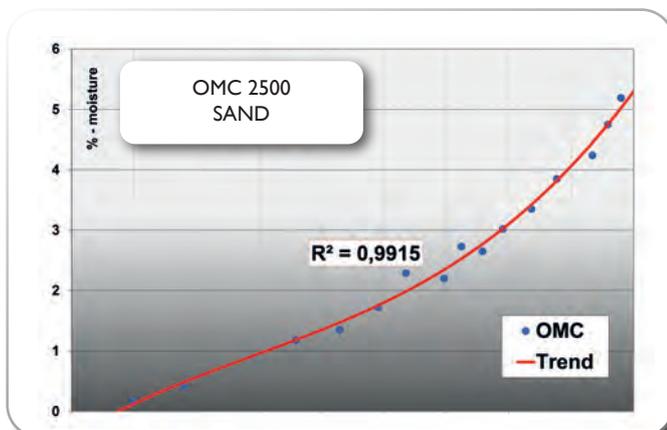
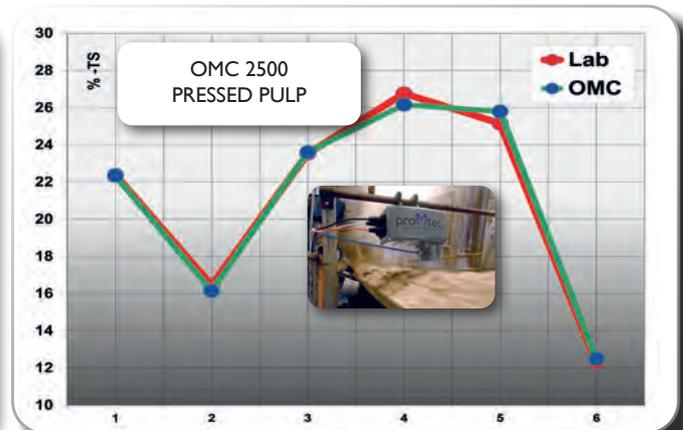
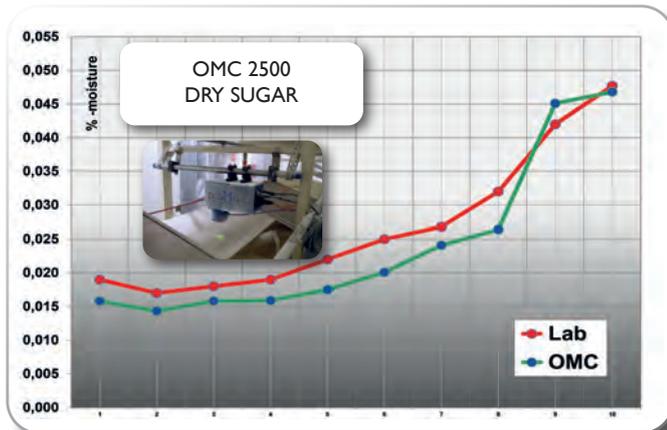


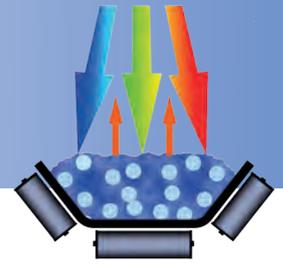
# Application Examples



microwave / radiowave →

← NIR - near infrared 780 nm - 2,5 μm | MID - mid infrared





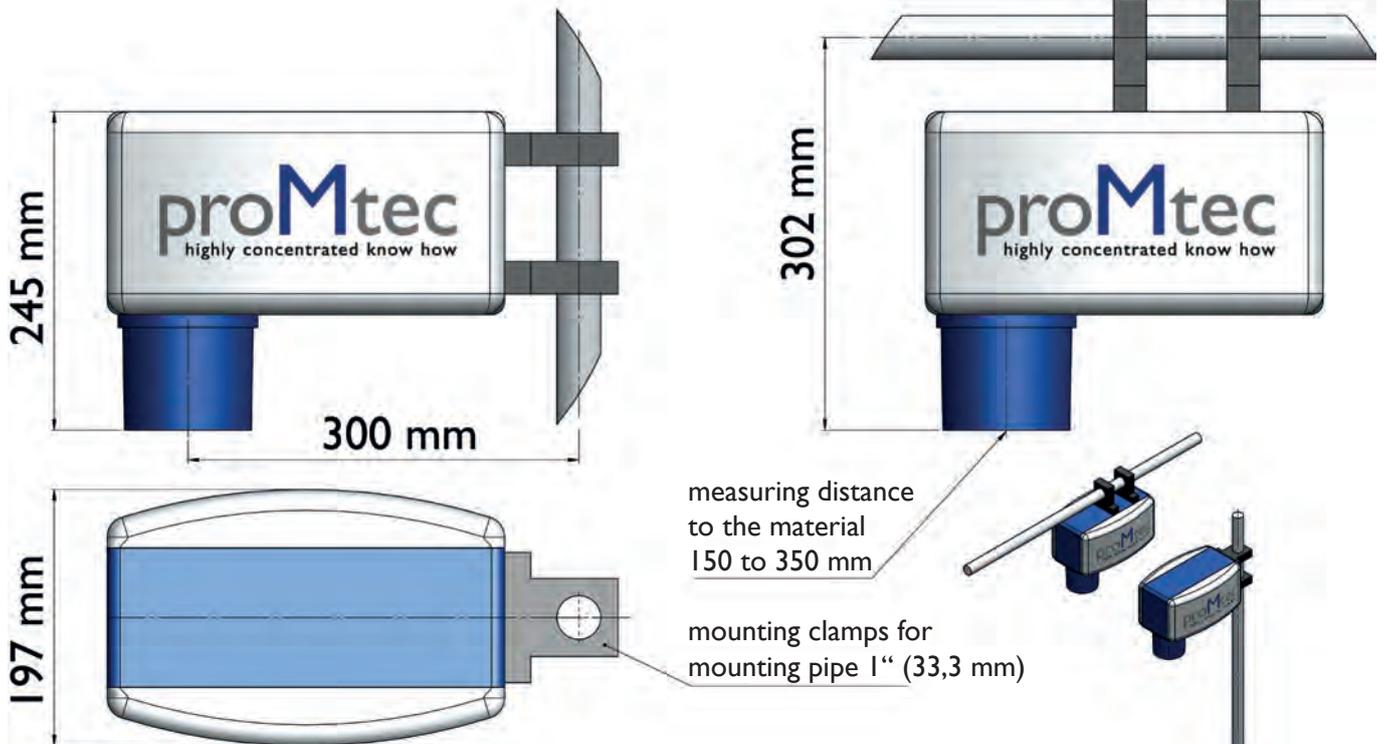
The OMC 2500 works with monochromatic light in the near-infrared-range.

The measuring distance to the material should be between 150 mm and 350 mm.

- 16-bit data resolution
- digital noise filtering
- pre-programmed measurement algorithms and calibrations
- management software and configuration program compatible for PC or Mac operating systems
- dirty window detector and alarm
- enclosure: NEMA4/ IP65
- Power input: 80 - 260V AC (50 Hz/60 Hz), 24V DC

**interfaces for integration into the process control:**

Standard outputs:	Optional outputs:
RS232/485	Devicenet
Ethernet TCP/IP	Profibus
Ethernet UDP	Profinet
3 analog outputs 4-20mA	Ethernet/IP
	Modbus



Subject to technical changes





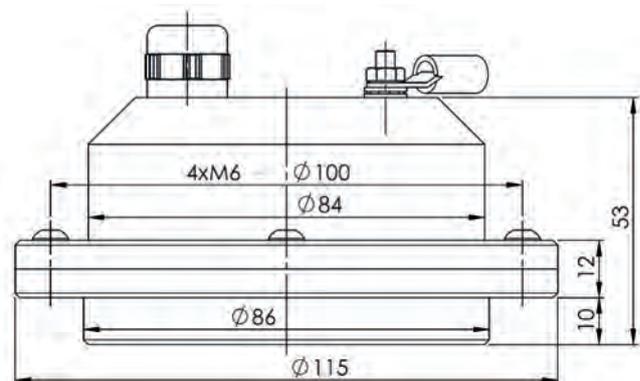


### Controller OMC 200

Housing	Aluminium wall housing, robust design, protection IP 65 Dimensions: 160 x 160 x 120 mm, ca. 3 kg
Mounting	4 holding flaps; H x W = 120 x 180 für Ø 6
Power supply	24 V DC, max. 1000mA
Measuring range	Moisture or dry substance 0,000 - 100,000 % freely scalable
Display	Monochrome QVGA-LC, 320 x 240 Pixel, illuminated, Large display of the measurement result and drag pointer with analogue bar graph displays of deviation of the measurement in its defines scale
Handling	Foil keyboard with 4 soft keys, well structured multilingual
Status display	LEDs for status of the measurement and access-PIN for parameter
Output	4 – 20 mA, isolated output for moisture, load max. 500 Ω
Data interface	USB2.0-interface for measurement data and parameter setting/calibration/software-update via PC
Data memory	for max 30 calibration data sets SD-/SD-HC-Card-Slot for writing/reading measuring date and storage of calibration data sets
Signal inputs	RS 485 von moisture sensor with M12-connector. Additional Pt100 temperature sensor 4-Leiter with M12-connector.
Environment temperature	0 bis 50 °C

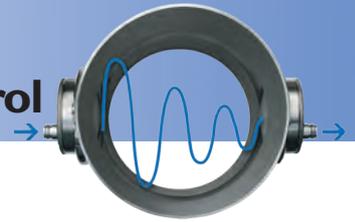
### Moisture sensor - planar

Sensor option	<b>ULM</b> for moisture ca. 0,1-0,5 % <b>LOM</b> for moisture ca. 1-30% <b>HIM</b> for moisture ca. 30-70%
Optimized for temp. range	<b>NT</b> for ca. 5-40°C <b>HT</b> for ca. 20-85°C
Material measuring surface	<b>KE</b> ceramics <b>PO</b> POM <b>TE</b> PTFE
Housing	Stainless steel 1.4307, ca. 1 kg ø116 mm x 53 mm, IP67
Mounting	4-hole-mounting 4 x M6 mit bolt circle ø100
Measuring surface	ø86 mm x 10 mm pressure load max. 6 bar
Connection cable	shielded cables, 4 x 0,5 oder 0,75 mm², max 500 m
Process temperature	-10°C bis 90°C according to area compensated, Temperature sensor integrated, displayed in controller



Subject to technical changes





## Technical Training - Calibration and Setting-up Microwave Concentration Measurement

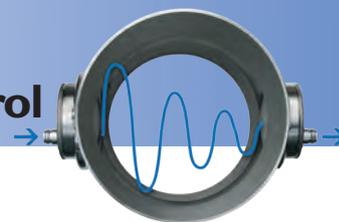


### Content:

- **Microwave measurement principle**
- **System components**  
instrument device, sensors, cables
- **Installation requirements**
- **Instrument operation handling:**  
user interface menu topology,  
software update, reset,  
PC-remote-operation
- **Parameter setting:**  
measurement mode + range,  
HF-amplification,  
temperature compensation,  
start coefficients, reference point
- **Calibration:**  
sampling, coefficient calculation,  
saving configuration, data logging via USB,  
SD card handling

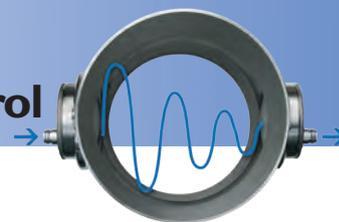
**Duration:** 2 days  
**Location:** customer side  
 or proMtec in Germany  
**Price:** on request  
**Contact:** info@pro-m-tec.de





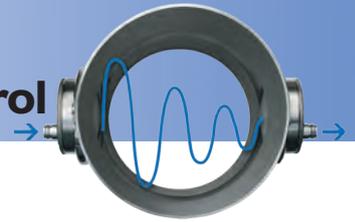
**Plenty of space for your ideas and notes:**





**Plenty of space for your ideas and notes:**





## About us

- Founded in 1996 - almost 30 years of successful operation
- Development, production and distribution of measuring instrumentation for the industrial process control
- Company headquarter in Bensheim, Germany with 4 company locations across germany
- well-distributed distributor network spread all over the world



### **A brilliant idea was turned into a product and the product generates added value.**

proMtec combines competence and experience from 22 intensive years of operation in the industry expertise and experience together from over 25 years of intensive industrial operation - under harsh process conditions worldwide - on every continent until today in over 60 countries.

The company management has a background in both mechanical and electrical engineering, with the expertise of over 30 years in industrial measuring technology worldwide in the most important extractive industries: *food, chemistry, mining, waste water treatment, paper industry, material industry and especially in the sugar industry.*

Since the beginning of the company, the expertise has been continuously brought into the team through training and operations with further development. Our basis and core competence lays in our in-depth knowledge of „on-line measuring the density, concentration and humidity of product materials under real industrial conditions - ideally contactless“.

