

# 10TH ANNIVERSARY OF WI.TEC-SENSORIK GMBH

Wi.Tec-Sensorik GmbH was founded on December 4, 2014 in Schermbeck/Germany. Since then, a wide range of products has been developed and successfully used in various application areas. By using high-quality sensor technology (MEMS) and innovative optoelectronic elements (UVLED), the Wi.Tec team has repeatedly succeeded in solving new applications that were previously only possible with complex large-scale equipment (FTIR, DOAS, GC, etc.). Since then, Wi.Tec has been one of the leading manufacturers of OEM gas measurement modules with analyzer quality.

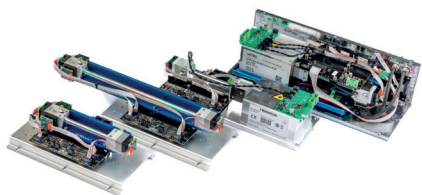


Teamparty 2021

## The early years

The company Wi.Tec-Sensorik GmbH was founded out of Dortmund University of Applied Sciences. At that time, Professor Wiegleb was working on a research project to investigate the use of new types of UV light-emitting diodes for gas analysis. Together with the company Bruker, as a user of this technology, a high-precision SO<sub>2</sub> gas sensor with UV LED technology was developed and patented for use in elemental analysis systems. The detection limit of this sensor was 10 times higher than comparable IR gas sensors, with a comparatively fast response time of <1 second. This was the first product (ULTRA.sens), which was already available when the company was founded and was subsequently manufactured in large quantities. Further applications for this NDUV technology were the use in emission measuring devices (flue gas analysis) and in the maritime measurement of SO<sub>2</sub> emissions on ships (MARPOL).

The ULTRSA.sens process was then continuously developed and expanded for other gases such as ozone, nitrogen dioxide, nitrogen monoxide, hydrogen sulphide, chlorine and chlorine dioxide.

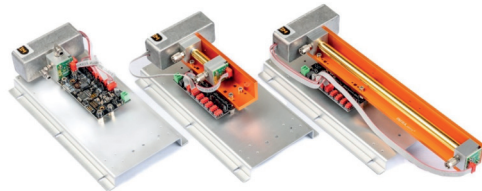


Different ULTRA.sens versions for gas analysis

## Technological advancement

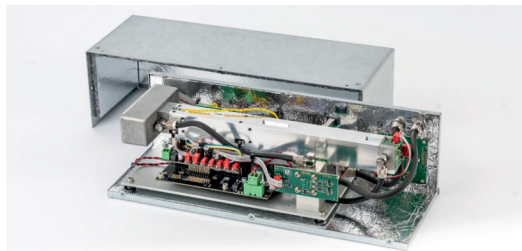
At the same time, the modular photometer system was also expanded for the infrared range (NDIR). For this purpose, new MEMS IR emitters were used, and multi-channel IR detectors were integrated. This enabled a multi-gas measurement that could be used for new applications. The resulting INFRA.sens now offers a wealth of gas measurement options for high-precision detection of CO, CO<sub>2</sub>, SF<sub>6</sub>, CF<sub>4</sub>, CH<sub>4</sub>, C<sub>n</sub>H<sub>m</sub>, N<sub>2</sub>O and H<sub>2</sub>O in complex gas mixtures. The measuring ranges go from a few ppm in TOC gas measurement (e.g. CO<sub>2</sub>) up to 100 % by volume for biogas analysis. For the first time, a direct and precise water vapor measurement in the ppm range has been achieved. With

this technology, it was also possible to develop a multi-range gas measurement system that enables CO<sub>2</sub> content from 0.3ppm to 20 vol.% with consistent accuracy thanks to a mathematical merging function.



Different INFRA.sens modules for use in trace gas analysis (ppm range) and for quality control (vol.% range)

Gradually, extended measurement options were created for this basic NDUV and NDIR technology. Thermostatization and integration into a modular housing (thermobox) opened the possibility of measuring in humid process gases and increasing temperature stability. The use of resistant materials (Teflon, stainless steel, etc.) opened the use of this technology in process gas analysis (corrosion-resistant cuvettes and gas path piping). The integration of further gas sensors for oxygen measurement (O2.sens) and humidity measurement (HUMI.sens) rounded off the product range.



Thermostated version of the INFRA.sens in a thermobox for use in municipal wastewater treatment plants for simultaneous detection of N<sub>2</sub>, CO<sub>2</sub>, CH<sub>4</sub> and oxygen.

Product development at Wi.Tec was accompanied by government-funded research and development projects. In cooperation with innovative partner companies and world-renowned research institutes, groundbreaking innovations have been created that have been incorporated into the respective product range. Wi.Tec therefore has extensive knowledge in the field of industrial gas analysis at a globally high level. Professor Wiegleb has also summarized this knowledge in his book Gas Measurement Technology in Theory and Practice, which was published by Springer Verlag in 2023.

## Marketing and Sales

Wi.Tec has been exhibiting regularly at international trade fairs since 2016 and is also represented locally by external sales partners. In Southern Europe, we are represented by the company Technosens in Brescia/Italy. Our partner company M&C Techgroup in Shanghai is responsible for the People's Republic of China. In Asia, we also have sales partners in Korea/Seoul (KINSCO Technology Co., Ltd.) and Japan/Tokyo (IR-System Co., Ltd.). The international sales network is constantly being expanded to improve the company's global presence.

The Wi.Tec team also deals with different application areas in order to align the products with these focal points. The focus on specific areas of application has meant that Wi.Tec can not only supply the appropriate measurement technology, but can also advise customers in this area with its application knowledge.

## Current topics are

- Gas sensors for TOC water analysis
- Gas sensors for solid elemental analysis



Exhibition Sensor + Test in Nuremberg 2024

- Gas measurement technology for municipal wastewater treatment plants
- Gas sensors for renewable energy sources such as hydrogen, ammonia, ...
- Gas sensors for breath gas analysis, CH<sub>4</sub>, C<sup>12</sup>C<sup>13</sup> test, ...
- Gas analysis for plant physiology (CO<sub>2</sub>, H<sub>2</sub>O)
- Hydrogen Technology



The founders and managing directors of Wi.Tec-Sensorik GmbH Prof. Dr. Gerhard Wiegleb and his son Dipl.-Ing. Sebastian Wiegleb (from left)

## Outlook

Wi.Tec is striving to further develop the existing technology and include additional gas components in the range. To this end, we will also develop further measurement methods in the future and integrate them into the product range. Furthermore, new areas of application are constantly being opened up that can be solved with Wi.Tec technology. To this end, we will continue to expand our application knowledge and share it with our customers. On this technological and economic basis, we see great potential that needs to be tapped. The Wi.Tec team has the relevant knowledge and the motivation to successfully implement this in the coming years. The team has now grown to 14 people. More employees will follow to expand the team for the future and to meet the challenges. We are looking forward to the next 15 years until the silver jubilee.



Wi.Tec Building in Wesel Germany

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The Gas Measurement Company

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