

# Sensor News



Dear readers,

in times like these, when people are moving closer together again in their thoughts and are looking for solutions together to preserve the lives of as many as possible, we become aware again of the contribution our products make to society. Pyroelectric detectors from InfraTec can be found in a wide variety of applications. Most of them have one central theme – people's lives.

Starting with the desire to improve life, such as the safe laser treatment of scars. Furthermore, saving lives by diagnosing diseases such as *Helicobacter pylori*, a very common

bacterium in China, which can cause stunted growth in children. Including the discovery of fires thanks to the flame sensors, which warn of danger to life and limb in good time. And finally for preserving life by increasing road safety by means of breath alcohol tests suitable for the masses. To do justice to this mission in terms of the preservation of life, we develop and manufacture detectors of the highest quality.

Factors such as high detectivity, long-term stability, short reaction times and low sensitivity to external interference are important

for the correct and safe functionality of our customers' end products. They rely on our development work, manufacturing skills and technical support. We are also responding to the current situation of the corona pandemic with our ability to react flexibly to customer requirements. Thanks to the expanded production capacities that we were able to achieve with the expansion of our cleanroom, it is possible for us to make our contribution to the sharply increased global demand for detectors, which are needed for ventilation technology, among other things.

## — Cleanroom Expansion by 30% Enables Significantly Higher Production Capacity —



The new building and thus the expansion of the cleanroom at the headquarters in Dresden to 1,600 m<sup>2</sup> has been completed. The next milestone - the renovation and restructuring of the existing cleanroom and the cleanroom area of the R&D department has also been completed. This means that the development now has more space available. Transitions to different

cleanroom levels as well as to the newly designed break rooms and cloakrooms complete the new concept.

In order to meet the increasing demand for sensor products, fully automatic machines have been gradually purchased and old ones replaced. This involves an automatic semiconductor saw with double spindle

for sawing wafer materials, other automatic chipbonders and more powerful machines for wire bonding and IR filter mounting. The coating systems for different applications have also been renewed. In parallel with these implementations, a modern working environment with improved working conditions has been created.

## Pyroelectric Detectors Ensure Safe Skin Treatment

# Scars Fade Thanks to Laser Treatment

Diseases such as chickenpox and acne leave scars that can affect a person for a lifetime. Thanks to dermatological lasers, these can be removed gently and safely without anaesthesia or just with local anaesthetic, even from the face.



Safety is a valuable asset, especially when it comes to your own body and health. Asclepion Laser Technologies GmbH from Jena in Thuringia, a market leader in the field of aesthetic and medical laser technologies, also sees it this way.

The lasers from Asclepion are manufactured according to the highest safety requirements. Many factors, including the built-in pyroelectric detectors from InfraTec, ensure that these are fulfilled and that treatments are equally risk-free for users and patients. They have been used for years in the "MCL31 Dermablade" laser system, the gold standard for dermatological applications. Direct contact of the laser with sensitive skin makes the use of the detectors seem indispensable.

But what does the detector in the device actually do and to what extent does it help to safely start up the laser? The detector measures the energy emanating from the laser beam and checks whether it is correctly emitted by the device during active use. The short response time of the pyroelectric detector is particularly noteworthy.

If the intensity of the laser is detected to be too high, the laser switches off immediately. Fluctuations in the energy supply can be regulated thanks to the measurements.

In detail, this works in such a way that when the laser beam is sent, it only hits a semi-transparent mirror. It acts as a beam splitter. In the process, a large part of the laser beam is reflected and reaches the patient's skin. A smaller part shines through the mirror, is homogenised and hits the InfraTec detector. In this, the pyroelectric crystal is heated. Charges are generated, which are converted into a signal voltage. This generated voltage is used to measure and control the energy emitted from the laser device. On this basis, the device software can react to energy fluctuations and switch off the laser in the event of a fault. Thanks to the long-term stability of the detector, the „MCL31 Dermablade“ is an even more stable laser system, which means that both users and patients can feel completely safe.



MCL31 Dermablade from Asclepion Laser Technologies GmbH

## Highly Accurate Measurement of the Smallest Breath Alcohol Concentrations A New Generation for Measuring Breath Alcohol

Alcohol is the most frequent cause of death in road traffic accidents and 20% of work-related accidents are caused by alcohol. According to the WHO, about three million people die worldwide each year from alcohol consumption – that is more than from AIDS, violence and road accidents combined.



Measuring the breath alcohol concentration when exhaling



Reading the breath alcohol value either directly on the device ...



... or for documentation on the smartphone

Alcohol consumption is a social problem, especially with regard to road safety. The young company OLYTHE from Provence in France has developed a new generation of breath alcohol measuring devices.

OCIGO, a reliable and precise breath alcohol tester – based on a unique and miniaturised infrared technology. Breath alcohol testing devices mostly use electrochemical or semiconductor sensors.

In comparison, the advantages of infrared technology are obvious: Precision and maintenance-free, stable long-term use.

OLYTHE has developed the first compact miniature infrared breath tester for the consumer market with detectors that are less sensitive to external interference. It uses the same technology that law enforcement agencies use to check alcohol levels. With the help of the long-term stable

infrared detectors from InfraTec, the very low breath alcohol concentration is amplified and measured highly accurately and precisely when exhaling. For a compact device like the OCIGO, this requires high performance in terms of measurement accuracy and energy management. OCIGO from OLYTHE was developed specifically to prevent alcohol-related traffic accidents.



## LRM-274

### Intervenes Before it Gets Hot

The latest member of our miniaturised multi-channel detectors has its very own personality. As a specialist for flame sensors, the LRM-274 intervenes before it gets hot. Always alert, the four-channel detector effectively uses its symmetrical field of view of over 90° in combination with a compact design and attractive prices.

- A compact housing: Diameter of just 15.2 mm
- Large aperture: 8.5 × 8.5 mm<sup>2</sup>
- Large pyroelectric chips with 2 × 2 mm<sup>2</sup> per channel for maximum performance
- Extremely high detectivity of 6.0E+ 08 cm·√Hz/W
- Particularly small IR narrow band filters of 2.85 × 2.85 mm<sup>2</sup>
- Thermally compensated for long-term stability

## Reliable Detection of Helicobacter Pylori Thanks to Beijing Richen-Force Science & Technology Take a Deep Breath

Half of the world's population is infected with the bacterium. Thanks to Beijing Richen-Force Science & Technology, Helicobacter pylori can now be reliably detected.

Helicobacter pylori infection is the most common cause of permanent inflammation of the stomach lining and is responsible for various other malignant diseases of the stomach and gullet. H. pylori is transmitted directly from person to person, through saliva, for example. Most infected people have no noticeable symptoms, but long-term effects can occur and even affect the physical growth of children. For this reason, a simple, quick, safe, and accurate method of detecting H. pylori is essential for diagnosis and treatment.

Our customer, Beijing Richen-Force Science & Technology from Beijing, China, uses the  $^{13}\text{C}$ -urea breath test for the diagnosis. It is a non-invasive, safe, accurate and specific method of detection for H. pylori infection. With the help of special narrow-band infrared filters, carbon isotopes can be



$^{13}\text{C}$ -urea breath test device for non-invasive, safe and accurate detection of H. pylori

discerned in the exhaled air. By integrating customer-specific pyroelectric detectors from InfraTec with high detectivity, the detection sensitivity of  $^{13}\text{CO}_2$  can be increased, the measurement accuracy improved, and finally, more precise values can be determined – at a much lower cost than with the mass spectrometers commonly used. This is an excellent requirement for the expansion to general medical examinations and applications.

In Germany and other industrial nations, the number of new infections is decreasing from year to year. In addition to a healthy diet, this is also attributable to affordable diagnostics and good medical developments.

## InfraTec Worldwide



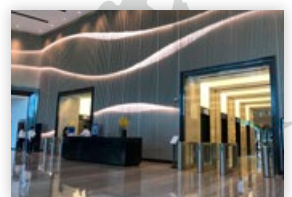
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