


**SENSITEC**  
 KUMBER SOLUTIONS  
 20 years

# Sensor. Cosmos.



Fig. 1: The new Sensitec headquarters in Wetzlar.

## Who cares if ...

... a sack of rice falls over somewhere in the world? With this jokingly and disparagingly used phrase, one expresses disinterest or signals the perceived insignificance of a topic. The expression has become rather out of fashion in recent years. BUT: We are in the age of globalization, and one thing is clear: there is nothing happening in the world that is not our business! Especially in Corona times, stable supply chains and reliable partners are essential for companies to survive.

The year 2020 will go down in history like no other. Lockdowns, contact and travel bans, closures of schools and daycare centers. All non-systemically relevant institutions and industries were temporarily closed and led to a far-reaching economic standstill. The global supply chains of many materials and components in the automotive sector, mechanical engineering or medical technology collapsed at the beginning of the pandemic. Many companies are affected by insolvency and layoffs.

All these events drastically demonstrate how closely the world economy is linked internationally and that globalization brings not only opportunities but also risks. In the long term, many companies and also states may be considering whether this dependency should be maintained or whether

preference should be given to customer and application-specific solutions from the neighbourhood. „Sensors made in Germany“ - that is what Sensitec stands for. The products are completely manufactured in Germany. Depending on requirements, standard products, modified standard products or customer-specific solutions are supplied. In order to guarantee delivery reliability to customers even in corona times, Sensitec works with selected partners who share the high demands on durability, reliability, quality and price/performance ratio.

Sensitec has a particularly efficient wafer factory for the production of magnetoresistive chips at its Mainz site (Fig. 2). In recent years, large sums have been invested in a low-energy infrastructure and more sustainability at both

locations. In these times, it is our customers who benefit most from this. The new site in Wetzlar (Fig. 1), which was occupied in June 2020, is now fully equipped. Here, the chips produced in Mainz are supplemented with electronics and completed to form a sensor

system in accordance with the requirements of the demanding global market. MR sensors are particularly robust, precise, dynamic and small. They solve measuring tasks for variables such as path, angle, position, current or magnetic fields. For more than



Fig. 2: The high-tech wafer production process takes place under cleanroom-conditions at the wafer fab in Mainz.

Cover story | Continuation

20 years Sensitec has been a reliable partner for innovative sensor solutions in industrial automation, mechanical engineering, power electronics, automotive, aerospace and renewable energy. The applications range from high-precision positioning of machine axes with linear and angular measurement systems in machine tools to numerous applications in the automotive industry or e-mobility. In many cases, Sensitec responds to the different requirements by developing special sensor chips designed for the application. Innovative products already secure sustainable competitive advantages for many customers.

Let's go back to the beginning. On the one hand it is clear: Nothing happens in the world anymore that is not our business. But still everything that can be changed is what happens on our own doorstep. Maybe that is the big task of this century.



Fig. 3 and 4: Impressions from the production in Wetzlar. The tiny sensor chips manufactured in Mainz are completed to a complete sensor system in Wetzlar. (Photos: Ralf Niggemann, c/o Communication between people and brands)

Sensitec's Corona-News

Sensitec is also available to you as a reliable partner during the corona crisis. The current situation can change very quickly and without warning, which we experience almost daily through corresponding guidelines, regulations and decisions of higher authorities.

What does this mean for your orders? For orders already in progress, we expect a maximum of isolated effects, since the primary material for these orders has already been purchased for the most part. We are in close and active contact with our suppliers to ensure the supply chain. If your current orders are specifically affected by bottlenecks (e.g. due to disruptions in the cross-border movement of goods), our order center or the sales representative responsible for you will contact you immediately to discuss possible alternatives.

For new orders, our general recommendation is to plan as soon as possible and in the long term, so that we can meet your specific requirements. For this purpose, framework agreements are suitable, which enable us to plan and secure input material on a long-term basis. We recommend that you plan your new projects and orders as quickly as possible and as long-term as possible. Please let us know your current requirements at short notice.

Company | News

# Sensitec sensors again on the way to Mars

## International cooperation with NASA continued

It is said to be the largest and most intelligent rover ever sent to Mars by the US space agency NASA: „Perseverance“, which means „determination, persistence“. It even has a small helicopter in its luggage.



Fig. 1: „Perseverance“ is NASA's most challenging Mars mission to date. The sensor technology used will be particularly high exposed to mechanical loads. (Source: NASA/JPL-Caltech)

Mission Mars 2020. Another supermodern Mars rover called „Perseverance“ was launched on 30 July 2020 and is expected to land on the surface of the red planet on 18 February 2021. Once again, 15 robust and high-precision sensors from Sensitec are on board.

The rover is to search for traces of life on the Red Planet. It has taken off successfully - in seven months it should land. „Perseverance“ is the fifth and technically most sophisticated Mars rover in the USA. Among other things, the vehicle is equipped with a robot arm and around 20 cameras, and

for the first time with a mini helicopter. NASA hopes that this will actually be the first helicopter to fly on another planet. An Atlas V launch vehicle with the rover on board has been launched on schedule from the Cape Canaveral spaceport in the US state of Florida. The mission in search of clues to earlier microscopic life on Mars is NASA's most ambitious mission to the Red Planet to date. The rocket has separated from the first stage and will be carried into orbit by the second stage, NASA twittered shortly after launch. A second ignition

will steer it towards Mars. Similar to earlier Mars missions, the miniaturized MR sensors provide angle information on the position of wheels, steering, camera and communication antenna. For Sensitec, this is now the third trip to the Red Planet: „Spirit“ and „Opportunity“ landed in 2004, „Curiosity“ followed in 2012. MR sensors owe their repeated use in space projects in part to their robustness. They prove time and again that they are resistant to radiation and can withstand extremely high mechanical loads and temperature fluctuations.



Fig. 2: „Ingenuity“ will be the first „helicopter“ to fly on another planet. (Source: NASA/JPL-Caltech)

# Research for the Future: BMBF Project KI-PREDICT

## Using MR sensors and artificial intelligence together for condition monitoring and improving product quality

At Sensitec, participation in national and international research projects has a long tradition. For many years, the resulting project cooperations have made a significant contribution to the competence development of the experts involved.

In the new BMBF-funded research project KI-PREDICT, eight companies and research institutions are working together by using different sensor systems and methods of artificial intelligence (AI) to enable condition-based, predictive maintenance of process plants and the monitoring of product quality directly in the production process. (AI). In preliminary research, especially by the project partners, it could already be shown that process data can be collected with inexpensive sensors, from which the necessary information about the condition of the plant and the quality of the product can be extracted with AI methods. It is also possible to detect and diagnose damage and incorrect measurements of sensors before these „artifacts“ affect the actual condition and

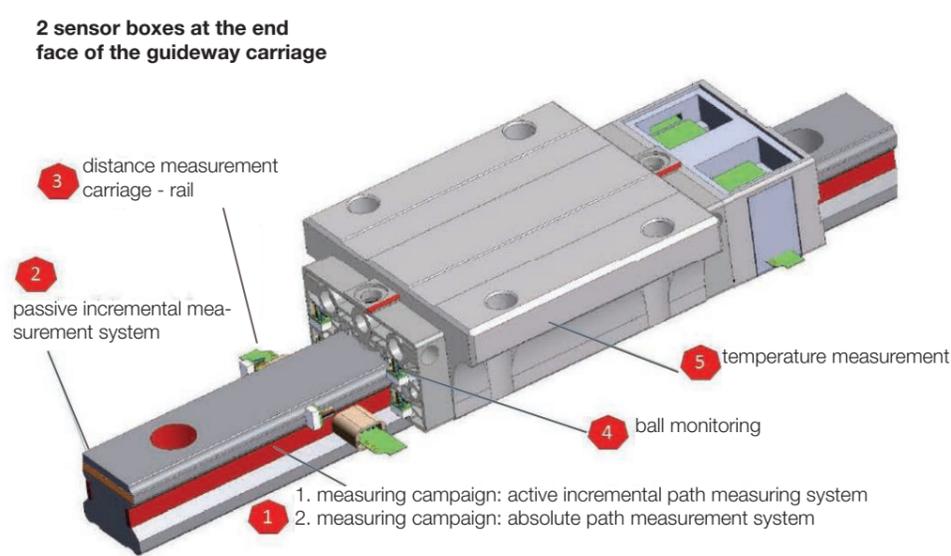
quality assessment. Sensitec, SNR Wälzlager and Saarland University have selected the application „linear guide“ for a subproject and plan to equip a sample plant with numerous sensors whose measurement data will be evaluated by means of AI algorithms. Figure 1 shows a schematic diagram of the additionally integrated sensors

for ball monitoring, displacement, distance and temperature measurement.

The evaluation of the planned series of measurements should first provide information about which sensors can contribute to the condition monitoring of the linear guide and derived product quality and

which AI algorithms can improve the quality of the condition monitoring information and thereby product quality.

Dr. Joachim Hölzl



**Fig. 1:** The schematic shows the linear guide with the planned sensor arrangement. The data shall be evaluated by means of AI algorithms. (Source: SNR Wälzlager GmbH, Sensitec GmbH)

### Product Tip | AA746

## Precise Angle Sensor

### Especially for large working distances

The new AA746 FreePitch sensor from Sensitec comes into play when the application requires a large working distance between sensor and scale and high precision at the same time. It functions reliably under harsh environmental conditions and is characterized by a higher sensitivity than comparable sensors.

The design and layer structure of the AA746 are such that the effective field strengths of the magnetic scale from about 3 mT are sufficient to bring it into saturati-

on mode, thus achieving optimum performance in terms of resolution and measuring accuracy.

When designing the encoder system, the AA746 can be placed further away from the measuring scale (such as a pole ring). The angle sensor is therefore ideal for heavy-duty encoders where thicker walls or greater distances from the scale are required. Due to the magnetic, contactless measuring principle, the sensor can be completely encapsulated and has an extremely robust design.



**Fig. 1:** Precise yet tough: with the AA746 angle sensor, large air gaps between sensor and measurement scale are possible. This makes it suitable for constructions in the heavy-duty sector, among others.

### Book-Tip | Reading

Sensor technology plays an important and rapidly growing role in the automobile. In the course of the rapid developments on the In the field of automotive engineering - such as automated driving and e-mobility - ever more precise and robust sensor information is indispensable.

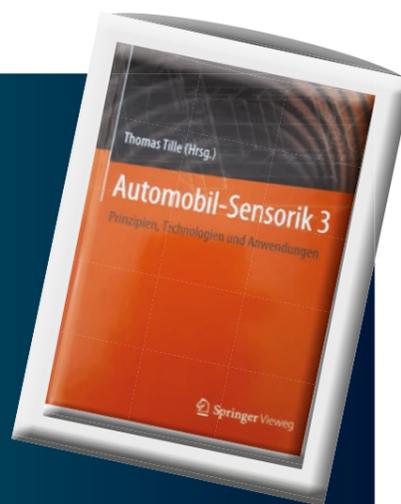
This book describes sensor principles and technologies that reflect the trend of current sensor developments for future-oriented vehicle application areas. The focus of this issue is on sensors for autonomous driving and assistance functions, sensors for e-mobility, air conditioning, operator recognition, conventional engine management and exhaust gas control systems as well as sensors for general automotive body functions.

Springer-Verlag: „Automotive Sensor Technology 3“

It is already available on the market:

<https://www.springer.com/de/book/9783662612590>

Sensitec's contribution deals with „Highly integrated current sensors for electric vehicles“. As an accompanying event, the conference „Sensors in the Automobile“ took place in Munich on September 17<sup>th</sup> and 18<sup>th</sup>, 2020.



Staff | Personnel News

## Cong Liu

### Sales High-Volume Wafer Business



Cong Liu: on September 1, 2020 he has taken over the high-volume wafer business at Sensitec.

Cong Liu has several years of sales experience in the automotive sector and profound knowledge of sensor technology, mechatronics and industrial electronics. He completed his mechanical engineering studies in China and then completed a further course of study in Germany to become a process engineer. Initially he worked in Europe and Asia in the field of development. He then switched from development to project management and purchasing and worked in the field of e-mobility at Siemens and Porsche.

**Reinforcement in sales:** Since September 1, 2020, **Cong Liu** is the new International Sales Manager High Volume Business and thus the contact person for customers in the chip and automotive sector.

In his private life he is a big table tennis fan and is passionate about calligraphy. Since he likes delicious food, cooking is also one of his leisure activities. Customers can contact Cong Liu at [cong.liu@sensitec.com](mailto:cong.liu@sensitec.com).

Preview | Training

## 16th XMR-SYMPOSIUM

MAGNETORESISTIVE SENSORS & MAGNETIC SYSTEMS



## Knowledge and Training

### Use event-free time sensibly

Under normal circumstances, you would have already received the invitation and detailed information about the 16th International Symposium „Magnetoresistive Sensors and Magnetic systems“ on the table. The symposium was planned for March 9 and 10, 2021, in the Wetzlar City Hall.

However, due to the impact of COVID-19 on all areas of life and the existing uncertainty, we regret to

announce that the organization team at Sensitec has decided to postpone the symposium by one year to March 15 and 16, 2022.

We are convinced that the health protection of all participants is now a top priority. We thank you for your understanding and look forward to seeing you again in March 2022.

Further information about the seminars of AMA is available at [www.ama-sensorik.de](http://www.ama-sensorik.de) or under [www.ama-weiterbildung.de](http://www.ama-weiterbildung.de)

Fair | SPS - smart production solutions

## sps connect

The digital automation hub

### VIRTUAL TRADE FAIR

24<sup>th</sup> - 26<sup>th</sup> November 2020: SPS - smart production solutions becomes virtual SPS Connect

The trade fair world does not stand still. Automation technology does not have to completely do without its important industry meeting place: Even before the cancellation of the live trade fair, the organizer mesago informed that there will be a virtual offer. Thus, for the SPS, which will take place in November, the form of the exhibition will change and the trade fair and match-making will be purely virtual. Exhibitors and visitors will have the opportunity to digitally and interactively exchange information on the latest developments and trends in the automation industry from November 24<sup>th</sup> to 26<sup>th</sup>. The focus will be on networking between exhibitors and visitors, manufacturers and users, and a varied program of lectures on current industry topics. Especially in the current situation, companies should keep an eye on all developments and changes in order not to miss anything. Otherwise they run the risk of losing their competitive advantage. Use this platform to keep in touch with your customers, suppliers and interested parties.

What's exciting at Sensitec?

- EBx7914 – High resolution standard incremental encoder module: compact, for pole lengths from 0.5 to 5 mm
- EMI7913 – Flexible sensor module for linear motor applications: motor magnets used as measurement scale
- EBM7921 – 360 ° Off-Axis sensor module: absolute angle measurement at hollow shaft, based on modern TMR-technology
- TF952 – 2D magnetic field sensor: with wide linear range, TMR-Sensor, linear measuring range from +/- 20 mT

We look forward to interesting discussions with you during SPS Connect from 24<sup>th</sup> to 26<sup>th</sup> Nov. 2020. Register at <https://sps.mesago.com/events/de.html> with this personal code for free participation: **SPS2XCENSEN**.

In the past, participants of the symposium have repeatedly expressed the wish for a workshop on the fundamentals of MR technology. We would have liked to offer this workshop to newcomers and those interested in familiarizing themselves with the topic or refreshing their knowledge as an additional event to the MR Symposium in March 2021. Due to the postponement we would like to refer to the AMA Association for Sensor and Measurement Technology and its advanced training seminars.

AMA offers an extensive range of seminars, including a workshop under the direction of Prof. Dr. Andreas Schütze from the Chair of Measurement Technology at Saar-

land University on the topic of „Magnetoresistive Sensors“. Our tip: Use the more or less trade fair and event free time for personal further education - as an investment in your future.

In the meantime, if you have any suggestions or questions, please feel free to contact Sensitec as the representative of the „magnetic community“.

Further information on the spring 2022 event will be published in time at [www.xmr-symposium.com](http://www.xmr-symposium.com).

Stay healthy and confident.



Publisher



**Sensitec GmbH**  
Schanzenfeldstr. 2  
35578 Wetzlar · Germany

Tel. +49 6441 5291-0  
Fax +49 6441 5291-117

[www.sensitec.com](http://www.sensitec.com)  
[sensitec@sensitec.com](mailto:sensitec@sensitec.com)

Redaktion: Ellen Slatter  
[ellen.slatter@sensitec.com](mailto:ellen.slatter@sensitec.com)

