

Portfolio - What we offer

- A comprehensive expertise in sensors and applications
- An interdisciplinary team of experts in sensors, sensor electronics, data analysis, AI methods, and production technologies
- A modular, self-adaptive edge AI sensor platform that combines various sensor modalities, interfaces, and AI data processing approaches
- Two pilot lines to address your questions in process and condition monitoring: one for production processes and another for bioproduction
- Smart production technologies that enable the rapid and efficient production of volumes ranging from individual items to (small) series, tailored to customer requirements
- A wide range of sensors for smart predictive maintenance and condition monitoring, applicable to both technical and biomedical fields
- An intelligent single-channel ultrasonic system consisting of cost-effective, matchbox-sized modules, flexibly adaptable to various acoustic measurement tasks
- Non-contact optical sensor technology for the quantitative detection of movements in three-dimensional sample volumes, such as heart muscle tissue models, flexibly adaptable to various measurement tasks
- A mobile sensor laboratory for the joint development and validation of customized sensorization and data processing concepts on-site (BioSensoLab)

Fraunhofer ZSI – A strategic R&D initiative by:



Our services - We come to you

- Understanding trends and requirements
- Generating ideas
- Developing concepts
- Design and development
- Guidance in setting up a company
- Support as a research partner

Our services cover consulting and feasibility studies, laboratory samples, prototype development, and small series production, extending through to certified product development and approval for safety-critical industrial sectors, as well as biomedical and clinical applications. With our mobile units, we provide co-working spaces and innovation labs, enabling your development team to collaborate with us directly on projects at your location.

Get in touch with us!

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Fraunhofer Center for
Sensor Intelligence ZSI

Fraunhofer ZSI

Intelligent sensor technology by bundling excellence and expertise

At Fraunhofer ZSI, the Fraunhofer Institute for Non-destructive Testing IZFP and the Fraunhofer Institute for Biomedical Engineering IBMT develop sensor systems with AI components for applications in the fields of materials testing, production and bioprocesses as well as in healthcare.

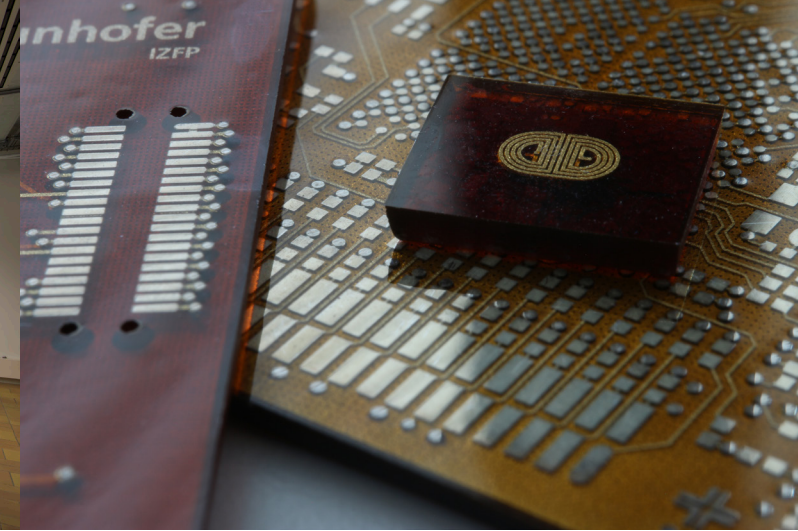
Next generation sensor systems

Modern data value chains need intelligent sensors. There has been a massive rise in the complexity of processes and products, which is difficult to handle with conventional solutions. Intelligent, networked sensor approaches are required.

Throughout this process, everything from data collection up to analysis and evaluation is within the scope of the R&D. For the first time, sensors and sensor systems are being employed, which independently make decisions in real time on-site, and which control processes within a defined scope. The holistic, integrated approach contributes to the development of innovative application systems alongside partners from science and industry.

Fit for Industry 4.0?

Intelligent sensor concepts for optimized, controllable production and bioprocesses



Left: Certified sensor production according to DIN EN ISO 9001; right: 3D-printed electronics/printed circuit board

The mission of Fraunhofer ZSI is based on three pillars

LAB

Areas of research and development for the next generation of sensor systems - adaptive, modular, easy to network, reliable and intelligent - for both production processes and bioprocesses

FAB

Groundbreaking demonstration factory and industrial testing platform - testing and demonstrating innovative concepts for using SIDs in physical production environments

HUB

Transfer platform in collaboration with science and industry - reinforcing scientific excellence, spin-off of startups and education and further training opportunities

Our expertise

Sensor Intelligence Devices (SID)

- Intelligent sensors (multimodal, auto-adaptive, autonomous, self-learning)
- Edge AI technologies (near-sensor AI)
- Specialized sensors and new sensor technologies (soft sensors)
- Data source for Internet of (Biomedical) Things and Industry 4.0

Applications

- Condition monitoring (production, operation, infrastructure, living systems)
- Smart maintenance
- Development of test methods

Sector expertise

- Automotive
- Railway/rail
- Biotechnology
- Energy and plants
- Health
- Infrastructure and construction
- Medical technology
- Environment and climate