
Individual
sensor solutions for the
automotive industry

Our applications and products



First Sensor AG is one of the world's leading suppliers in the field of sensor systems. Our company develops and manufactures standardized and customized sensor solutions for applications in the industrial, medical and mobility growth markets.





Developing tomorrow's products together today

First Sensor AG is one of the world's leading suppliers in the field of sensor systems. With over 800 employees, we are represented at six German locations and also have production and sales sites in the USA, Canada, China, Great Britain, France, Sweden, Denmark and the Netherlands along with a worldwide partner network. Together we identify, meet and solve the challenges of the future with our innovative sensor solutions early on.

„First Sensor is increasing its presence on its target markets through new smart sensors systems that react intelligently to the measurement results and communicate with other systems.“

Dr. Mathias Gollwitzer, Executive Board, First Sensor AG

In the growth market of sensor systems, First Sensor develops and produces customer-specific solutions for the ever-increasing number of applications in the industrial, medical, and mobility target markets. Based on tried-and-tested technology platforms, we develop products such as chips, components, sensors, and entire smart sensor systems. These products give you a real competitive edge. Trends such as Industry 4.0, autonomous driving, and the miniaturization of medical technology will drive our growth extremely rapidly in the future.

Using our detailed understanding of your specific application, we develop solutions whose capabilities go far beyond those of standard components already on the market. By focusing on technology-driven target markets, we are already playing a role in their exceptionally rapid growth. In the future, too, we will benefit from the megatrends that drive these markets. Our goal here is to identify and meet the challenges of the future early on – a goal that is firmly anchored in our corporate culture.

Among the customers of First Sensor are well-known industrial groups and young technology companies that utilize our know-how and many years of expertise to develop their own innovative products. They appreciate the opportunity to make individual adjustments at every stage of the value chain in order to create exceptionally powerful sensors and sensor systems with tailored features. This joint development work frequently forms the basis for long-standing partnerships.

Our expertise – Your success

We have developed into an integral, internationally oriented technological company over the past few years. Numerous long-standing customer relations with OEMs, system providers and device manufacturers vouch for our professionalism and expertise.

We can advise you what sensor is best suited to your application or whether a custom solution might even attain a better „total cost of ownership.“ We place great importance in understanding your application so that we can literally „talk the same language.“

No matter whether specific quality criteria have to be complied with or new developments are to be integrated promptly and seamlessly in the existing technological environments. Our project management expertise ensures that all process steps are oriented to your needs – from development and production to quality testing and logistics.

Innovative products are frequently associated with high investments and quality standards. That makes long-term production and supply certainty all the more important. Our project

team can therefore accompany you through the entire process while offering advice on all levels.

You will already find the right solution to many applications in our wide and field-tested range of high-performance product platforms: We detect light, radiation, pressure, flow, level and acceleration. Our sensors can also be adapted specifically to your application or even developed individually. This will help you to save time and resources!

1 State-of-the-art production in our own clean rooms



Triple the experience and innovation

First Sensor is focused on three core markets: Industrial, Medical and Mobility. We support these markets with our Competence Centers Research & Development and Production as well as Sales via all levels. This organizational structure enables us to orientate our research and development along with production to your specific performance requirements..

Proximity to markets and customers is for us the key to economic success. The development and production of sensor solutions with you and for you is therefore the central focus of our business model. We see you and your markets from a future-oriented perspective and ask questions like: In what direction are the markets developing? What will be needed in the years ahead? Where can we offer you added value and a competitive advantage? The answer to these and similar questions is custom sensors and sensor system solutions from our company – smart, miniaturized and reliable.

This market- and customer-oriented strategy is clearly aligned to the core markets of industrial applications, medical technology as well as automotive and transport. These core markets all share common ground: They combine above-average growth and a technological challenge that can only be mastered by an innovative and professional company like First Sensor.

In the Industrial market First Sensor has many years of experience and expertise in development and production engineering, allowing it to offer a wide variety of high-quality sensor solutions that can be adapted to your specific requirements. The focus of the applications includes length measurement, radiation and security, smart building as well as industrial process control. Another complex field of application is aerospace. Here some of the requirements are very high, which in turn calls for our custom solutions.

First Sensor has been manufacturing and supplying sensor solutions for medical technology for over 30 years and has extensive experience in this field. Our specialists are dedicated to not simply providing sensor solutions but also finding and implementing the solution for the relevant measuring task that is the best possible in terms of technology and also affordable. Medical technology is there to save lives, enable patient healing, improve medical treatments and help those affected gain a better quality of life. That means we have to take a

special degree of responsibility as a company – a challenge we gladly rise to.

We are about to enter a new era in mobility. Smart mobility has already become an everyday feature in new automobile models: With driver assistance systems from automatic start-stop systems and parking aids to options for semi-autonomous driving. The foreseeable future is set to witness fully autonomous vehicles that can transport their occupants safely and comfortably from A to B. First Sensor will accompany the automotive industry into this new era with its sensor solutions.

We work closely with you in the development of new sensor solutions right from the start. You describe your application, and we contribute the technical standards and our expertise. This means we can jointly configure a perfectly tailored solution. The spectrum ranges from wafers and individual sensor components to conventional sensors and smart sensor systems.

Industrial

Optical and radiation sensors for

- Laser rangefinders
- Laser scanners/LIDAR
- Laser alignment systems
- Encoders
- Spectrometers
- Baggage and container scanners
- Passenger counters

Pressure, flow and level sensors for

- Volumetric flow controllers
- Filter monitoring
- Leak detection
- Level sensing
- Industrial printers
- Cabin air pressure

Inertial sensors for

- Condition monitoring
- Control and navigation systems



Highly accurate inertial sensors for condition monitoring

Medical

Optical and radiation sensors for

- Computer tomographs
- Videoscopes
- Pulse oximeters
- Blood sugar measuring devices
- Gamma probes

Pressure, flow and level sensors for

- Respiratory devices
- Sleep diagnostic devices
- Sleep apnea therapy devices (CPAP)
- Spirometers
- Anesthetic devices
- Dialysis machines
- Infusion pumps
- Oxygen concentrators
- Insufflators



Highly reliable pressure and flow sensors for respiratory devices

Mobility

Cameras and optical sensors for

- Advanced driver assistance systems
- LIDAR
- ACC (Adaptive Cruise Control)
- Collision avoidance systems
- Traffic sign recognition
- Blind spot detection
- Lane departure warning

OEM pressure sensors for

- Tank pressure measurement
- Fuel delivery
- Tank leakage diagnostics
- Tank air intake and extraction
- Brake booster systems
- Start-stop systems
- Power-assisted steering
- Engine suspension
- Air-conditioning systems
- Exhaust gas recirculation systems
- Filter monitoring



Camera systems and optical sensors for advanced driver assistance systems

Sensor solutions for the automobile and vehicle industry

For First Sensor, the reliable partnership with you is the foundation for our high performance products and system solutions. We have many years of application and project experience and know the special requirements in the automotive and vehicle industry.

For cars, trucks, buses, special vehicles as well as agricultural, construction and mining machines. First Sensor develops and manufactures innovative pressure sensors and cameras designed to withstand the toughest conditions: cold, heat or continuous vibrations. We have the technology, capacity and experience to adapt and optimize our sensors to your individual requirements and markets. At First Sensor, the entire production process is implemented as a coherent whole – from processing the sensor chips through to the prefabricated sensor or camera system. By manufacturing all central components ourselves, we ensure the

long availability of all OEM products for series production and the aftermarket. All customized pressure sensors and cameras are developed and manufactured in accordance with the quality management system for the automobile industry ISO/TS 16949.

Our effective CMOS cameras are used in advanced driver assistance systems or agricultural and construction machinery, where they warn against obstructions, help to prevent lane departures and detect speed restrictions. That means our modular camera concept with various physical interfaces and data formats

saves you unnecessary development expenses when it comes to integration into your systems.

Our compact pressure sensors for major series production are available in various pressure ranges from vacuum to high pressure and with customized and electrical or pressure connections for measuring the oil, tank and gasoline pressure as well as detecting leaks. We also offer a wide range of analog and digital interfaces.

The entire value added chain



Flexibility in the supply chain is set to become increasingly important for you. As a reliable partner, we offer a range of services from tailored solutions to integration in your value and supply chain. As a global provider of sensors, we maintain an extensive international presence - with our corporate headquarters in Germany as well as sales and production locations in Europe, America, and Asia. Talk to us - and reap the benefits of a perfect sensor solution from First Sensor for your specific application in automobile and vehicle technology.

1 State-of-the-art production processes in packaging technology (Photo: GiS pix)

Advanced driver assistance systems – ADAS

Driver assistance systems both increase the safety and efficiency of motor vehicles, commercial vehicles and special vehicles and shape the mobility of tomorrow. Thereby highly resilient and reliable cameras, optical sensors and LIDAR systems are essential for applications such as reversing aid, adaptive cruise control (ACC), traffic sign recognition, blind spot detection, blind spot assist, lane departure or warning 360° all-round view. First Sensor supplies OEMs, integrators and retrofitters at various levels of the value chain from components to modules and complete systems.

Advanced driver assistance systems

Advanced driver assistance systems support the driver with additional information, warn against potential dangers and spare you the effort of dealing with certain tasks. Statutory regulations are increasingly stipulating advanced driver assistance systems as a mandatory component in cars, trucks as well

as commercial and special vehicles. Automobile manufacturers throughout the world are currently developing the next generation of advanced driver assistance systems – self-driving cars that can steer, accelerate and brake fully autonomously.

Vehicle applications place high demands on the reliability and resilience of the sensors used. Vibrations, dirt, moisture or extreme

heat or cold must not change the specifications of the systems used. In addition, it must be possible to integrate the cameras and sensor systems easily and flexibly in advanced driver assistance systems and vehicle electrical systems. Various sensor technologies are also often combined, while camera and LIDAR data is typically consolidated in order to increase the range, accuracy and reliability of the advanced driver assistance systems.



1

1+2 Resilient cameras and optical sensors for advanced driver assistance systems – ADAS



2

First Sensor camera solutions for ADAS

First Sensor develops and manufactures robust digital HDR CMOS cameras for advanced driver assistance systems in cars, trucks as well as agricultural, construction and mining machines. With their large dynamic range, the cameras are ideally suited to poor light conditions and major differences in brightness. The automobile cameras provide a wide range of digital interfaces and can also be equipped with a digital signal processor (DSP) and internal memory capacities. This allows the images to be processed and evaluated directly in the camera system via software algorithms, while the images can also be merged with other sensor signals such as radar or LIDAR data. The camera then has its own „intelligence“ and can forward both the images and the information obtained from the image evaluation, which considerably reduces the amount of data. All cameras made by First Sensor are subject to the quality management system ISO/TS 16949 for the automobile industry and

can be adapted quickly and flexibly to custom requirements. By manufacturing all central components ourselves, we ensure the long availability of all products for series production and the aftermarket.

First Sensor OPTO solutions for ADAS

For distance measurement and generation of three-dimensional images of the environment, LIDAR systems are integrated ever more frequently into vehicles and mobile machines. A pulsed laser beam measures the signal's transit time from the object back to the detector. To measure the light pulses in the nanosecond range, First Sensor offers highly sensitive avalanche photodiodes (APD) with internal amplification across a wide dynamic range as well as wide bandwidths. To achieve the high spatial resolutions required in optical LIDAR systems, First Sensor develops APD arrays that consist of multiple sensor elements. Standard products are available with linear 8

or 16 pixels and matrix configuration using, 5 x 5 or 8 x 8 pixels. Custom specific arrays can be designed and optimized to your specific application.

Development modules for APD arrays from First Sensor feature a temperature compensated high voltage supply and are ideal for test runs in research and development as well as for integration into OEM LIDAR devices according to the time-of-flight principle. Their highly accurate amplification provides excellent APD signal quality. The modules can be adapted to your specific application, for example as development boards with digital output signal and LVDS interface.

Already today, First Sensor is setting the course for the next development step – its own LIDAR systems, which integrate the laser, detector and the optics in a single component in a confined space and manage without mechanically moving parts.

OEM pressure sensors

First Sensor develops and manufactures innovative and reliable OEM pressure sensors for integration in motor vehicles, commercial vehicles and special vehicles, which can be adapted to your individual customer requirements with a high level of application expertise. By manufacturing all central components ourselves, we ensure the long availability of all products for series production and the aftermarket.



1

OEM pressure sensors

The number of sensors in modern vehicles and mobile machines is continually increasing. Sensors supply the measuring values for the electronic control units and are therefore an essential component for the safe, comfortable and economic operation of cars, trucks and buses. The extreme conditions in automobile applications such as heat, cold or continuous vibrations place high demands on the reliability and resilience of sensors. At the same time, the sensors need to be small, energy saving and cost effective.

Our sensors are available in various pressure ranges from vacuum to high pressure and with customized and electrical or pressure connections. We also offer a wide range of analog and digital interfaces, for example ratiometric signals, SENT, LIN, PWM and I²C. All custom OEM pressure sensors are developed and manufactured in accordance with the quality management system for the automobile industry ISO/TS 16949.

First Sensor solutions for fuel applications

Our OEM pressure sensors for fuel applications are used for tank pressure measurement, tank leakage diagnostics and fuel delivery and optionally come with an integrated temperature sensor. The sensors are installed on the tank wall or directly in the tank, where they completely enclosed by fuel or fuel vapors. For

- 1 OEM pressure sensors for the safe, comfortable and economic operation of cars
- 2 High pressure sensors for hydraulic applications

measurement in the tank, we offer patented technologies and processes that enable space-saving, maintenance-friendly and cost-effective sensor solutions. The sensor can also be mounted on components of the fuel supply system such as a tank flange or a fuel line or can be directly integrated into the fuel delivery module. Our highly accurate low pressure sensors are used for leakage measurement, as they are able to detect minimal pressure changes in the fuel tank. To regulate the tank air intake and extraction, pressure sensors from First Sensor monitor negative pressures and overpressures in the fuel tank.

Further First Sensor solutions for the vehicle industry

In brake booster systems, our vacuum pressure sensors measure the negative pressure for controlling the vacuum pump and thus ensure optimal support for the braking action as well as the start/stop function. For electrohydraulic power-assisted steering, we offer high-pressure sensors and multiple integrated pressure connections for measuring different pressures and temperatures. To set the damping of the engine suspension First Sensor develops and manufactures pressure sensor solutions with very fast signal processing by using application-specific integrated

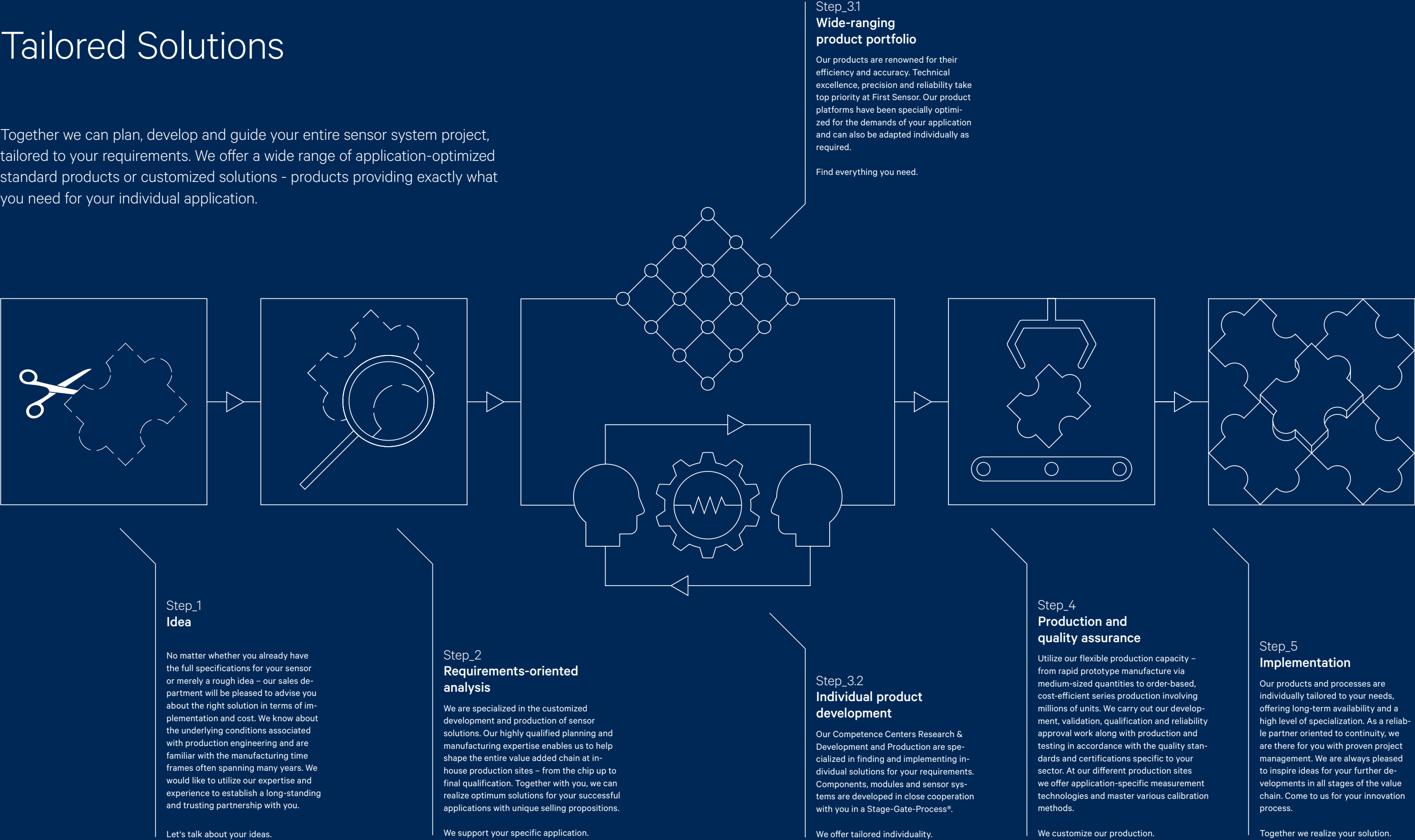
circuits. In automobile air-conditioning systems, our sensors measure pressure and optionally also temperature of refrigerants such as R134a, R1234yf and R744 (carbon dioxide). Further application areas of our sensor solutions are exhaust gas aftertreatment (SCR) systems, common rail injection up to 3000 bar, high and low pressure applications for hydrogen fuel cell vehicles and exhaust gas recirculation systems (EGR).



2

Tailored Solutions

Together we can plan, develop and guide your entire sensor system project, tailored to your requirements. We offer a wide range of application-optimized standard products or customized solutions - products providing exactly what you need for your individual application.



Detect more, achieve more – our products

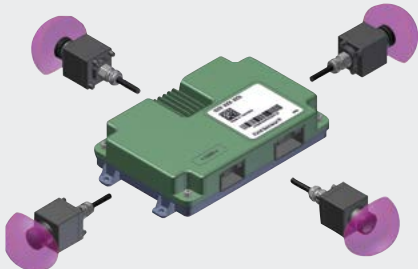
What would you like to find out today? Or what would your product, your customer or a user like to find out? Whether it involves light, pressure or flow – we know which sensor is right for you and will provide you with the precise value.

Our sensor modules and systems immediately convert this value into results and signals that can be used digitally, thereby giving your product eyes, ears, or a sense of touch. Needless to say, we can adapt all our products – or develop them specially to fit your application. You will already find the right solution for many applications in our broad and field-tested range of high-performance product platforms. This will help you to save time and resources!

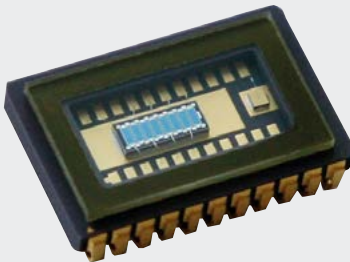
Light



CMOS cameras
– Rugged digital HDR CMOS cameras
– Programmable VGA CMOS cameras



Embedded Area View



Optical sensors for LIDAR
– Avalanche photodiodes (APDs)
– APD hybrids
– Development modules

Pressure



Pressure sensor for fuel tank and pump pressure



Multi pressure port sensor for electrohydraulic steering



Hydrogen (H₂) pressure sensor for fuel cell cars

Applications of our HDR CMOS cameras and optical sensors

Turn assist
with blind spot recognition

Multiple front cameras
Object recognition, Far and Near
ASIL conform



Night vision / sensor fusion
360° area view camera systems
ASIL conform

Active brake assist / ACC

Adaptive cruise control
Emergency break control
Accident reduction
Night vision



Cross traffic assist

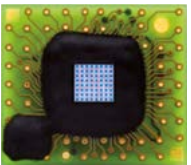
Embedded sensor fusion center



Smart rear camera
Park Assist, Trailer assist,
self-parking, night vision



Pre-crash-side assistant



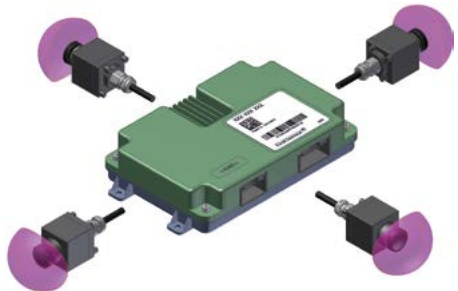
Interior camera
Driver monitoring,
gesture recognition



Mirror replacement rear
High resolution and HDR,
blind spot detection

CMOS cameras

Our rugged and compact cameras withstand the toughest conditions: cold, heat or permanent vibrations to name only a few. At First Sensor the complete assembly process is under one roof - from the processing of the sensor chip to the finishing of the camera system. At the same time we save you unnecessary development effort during the integration into your systems due to our modular camera design with different interfaces and data formats. All cameras can be adapted quickly and flexibly to customer-specific requirements.



Embedded Area View

The Embedded Area View application from First Sensor is the latest technology of driver assistance systems coupled with long-term automotive camera design know-how. Area View delivers real-time images not only from a bird's eye view, but from any angle in a 360° all-round view. The application architecture on hardware and software side meets embedded requirements, e.g. hard real-time and secure abilities. The system is developed under Automotive SPICE (ISO/IEC 15504-2) process rules and meets the Automotive Safety Integrity Level (ASIL). Additional functionalities like object recognition of pedestrians or traffic signs, distance measurement of objects, tracking, etc. are modular addable.



Parameter	Special features
Connections	Up to 6x HDR CMOS cameras
Field of View	190° per camera
Resolution	Up to 2 megapixel each
Calibration	Automatic
Video streams	2x independent
SW-Module	Modular SW according to A-Spice
Diagnostic function	ASIL support

Rugged digital HDR CMOS cameras

With their extremely large dynamic ranges >120 dB the digital megapixel cameras are ideal for high brightness differences and low light conditions. The cameras offer a wide range of digital data interfaces for easy and flexible integration into automotive on-board networks and driver assistance systems. In addition, the rugged housings protect the cameras against the ingress of water and dust.



Parameter	Special features
High dynamic range (HDR)	120 dB
Resolution	1.2 / 1.3 / 2 megapixel
Input voltage	PoE, Clamp15
Current consumption	<150 mA
Data interface	Ethernet (2-wire & 4-wire), Quiet-wire optional, Power over Data Line optional, LVDS
Diagnostic function	ASIL support
Temperature range	-40 ... 85 °C

Programmable VGA CMOS cameras

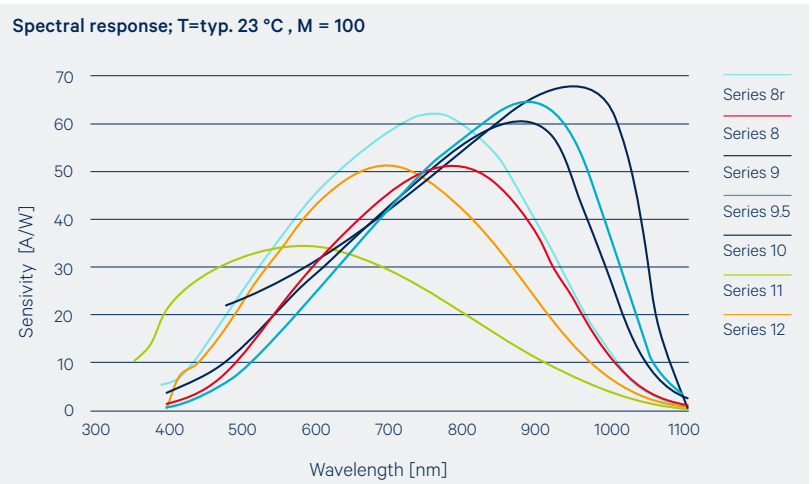
These analog cameras with a screw thread are especially designed for mobile video surveillance applications. A programmable interface allows individual settings of brightness adaptation and mirror functions. In addition, the rugged housings protect the cameras against the ingress of water and dust.



Parameter	Special features
Memory	8 KB flash
Input voltage	12/24 V _{DC}
Current consumption at 12 VDC /30 fps	55 mA
Data interface	Analog (PAL/NTSC)
Operating temperature	-40 ... 105 °C

Optical sensors

First Sensor develops and manufactures a large selection of photodetectors with high sensitivity, high speed, and low dark current which can be adapted to your specific requirements. Our sensors are optimized for ultraviolet, visible, and infrared light. Package solutions include surface mount (SMD) and through hole (THD) devices.

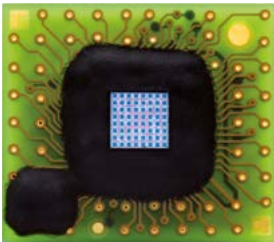


APD series	Optimized for	Special features
Series 11	350...550 nm	Blue enhanced, high speed
Series 12	550...750 nm	Ultra-low temperature coefficient, flat frequency response up to 3 GHz
Series 8r	620...750 nm	Optimized for 650 nm, fast rise time, low capacitance, flat gain curve
Series 8	750...820 nm	High speed, low temperature coefficient, high gain bandwidth product
Series 9	750...930 nm	Fast rise time at higher NIR sensitivity, high gain
Series 9.5	800...950 nm	Excellent responsivity in 950 nm range, fast rise time, low dark current
Series 10	900...1100 nm	Sensitivity at 1064 nm close to physical limits

First Sensor has many years of experience in sensor technology in the automotive sector. Our Series 9 APDs are ideal for distance measurement applications due to their fast rise times at increased NIR sensitivity. The Series 9.5 has been specially designed to meet the requirements for both higher sensitivity at higher wavelengths and fast rise times.

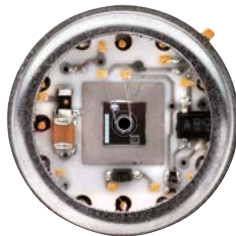
Avalanche photodiodes

Silicon avalanche photodiodes (APDs) are optical detectors with an internal gain mechanism capable of a high gain bandwidth product. Due to their very high sensitivity avalanche photodiodes are ideally suited for measurements of very low light levels. First Sensor provides single element APDs as well as linear and matrix APD arrays with multiple active areas e.g. with 8, 16, 5 x 5 or 8 x 8 pixels.



APD hybrids

First Sensor offers compact integration of photodiodes and amplifiers. The amplifier is matched to the specific features of the detector. Contact us to find your specific sensor solution.

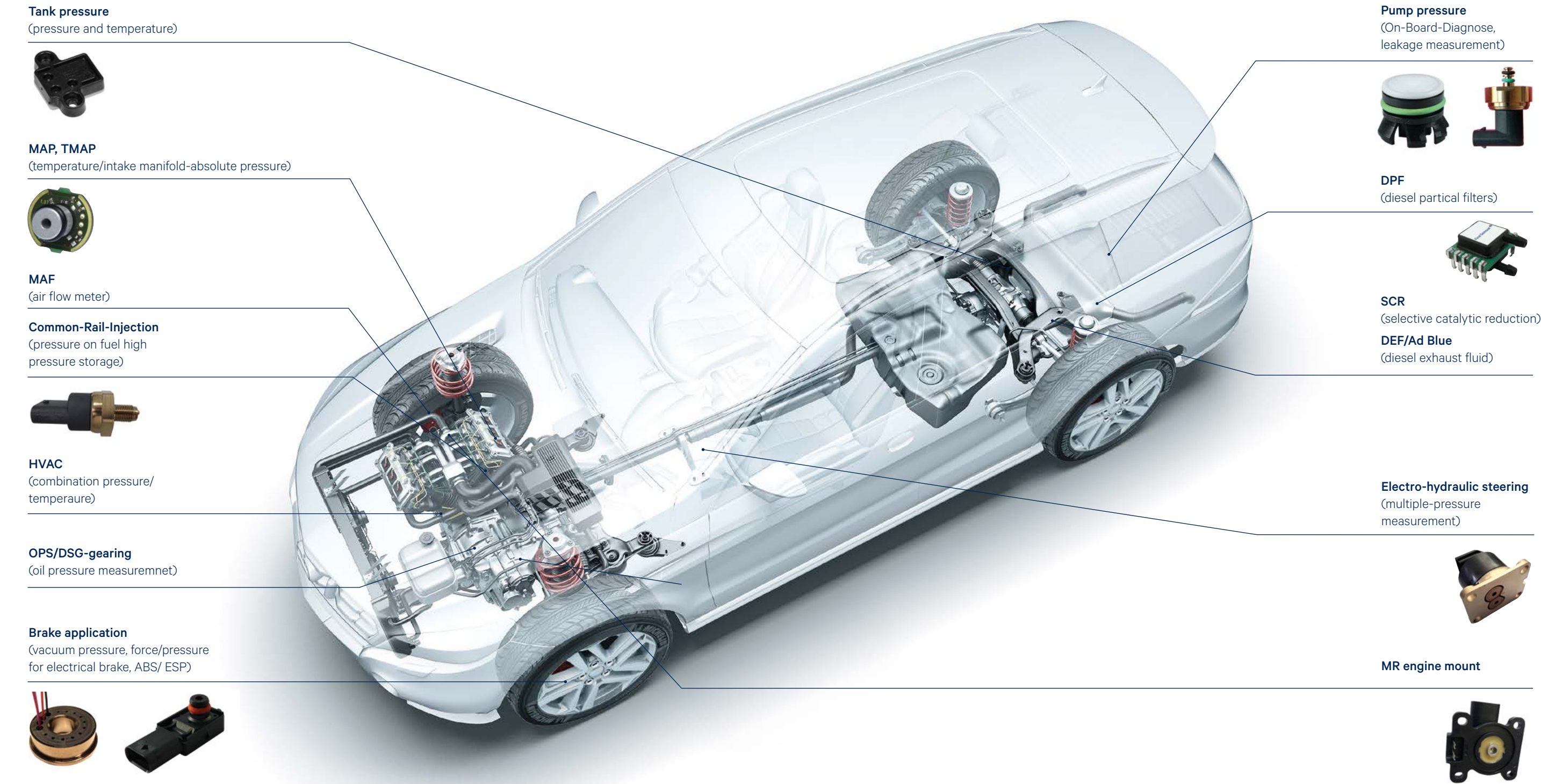


Development modules

Modules and development boards for APD detectors from First Sensor provide fast test runs as well as easy integration into your system. They feature a temperature compensated high voltage supply and highly accurate amplification. Our modular development modules can be adapted to your specific application.



Applications of our OEM pressure sensors



OEM-Pressure sensors

First Sensor develops and manufactures innovative and reliable pressure sensors for OEM applications that are adapted to your specific requirements with the help of our vast application experience. Due to our in-house production of all main sensor components we are able to ensure long product availability for your serial production as well as the aftermarket.



Pressure sensor for fuel tank and pump pressure

First Sensor offers sensor solutions for all fuel tank related measurement tasks. Known for their media resistant design our sensors help you to decrease emissions as well as fulfill OBD regulations. Whether mounted inside the tank or outside of the tank - with their wide temperature and pressure range this sensor portfolio can offer the tailored solution for your application.

Parameter	Specification
Pressure Range	-0.2 to 11 bar
Pressure Mode:	absolute, gage
Output Signal	Analog Voltage, LIN, SENT
Temperature Range	-40 to 90°C
Accuracy	< 0.5 %FS to 2 %FS



Hydrogen (H₂) pressure sensor for fuel cell cars

Alternative drive systems are the business of the future. First Sensor is on board with high and medium pressure sensor solutions for fuel cell cars. With our T-Bridge technology we solve problems as hydrogen embrittlement and can support you to achieve the strong safety requirements. The required pressure and burst resistance is widely excelled by our hermetic metal design.

Parameter	Specification
Pressure Range	16 to 900 bar
Pressure Mode:	absolute, gage
Output Signal	Analog Voltage, LIN, SENT
Temperature Range	-40 to 130°C
Accuracy	0.5 %FS



Multi pressure port sensor for electrohydraulic steering

For safety relevant applications such as electrohydraulic steering First Sensor produces and develops multi pressure port sensors to achieve the necessary ASIL requirements. The sensors pressure ports are decoupled from the ground plate to achieve higher sensor accuracy. This is enabled by the versatile design options of our T-Bridge technology.

Parameter	Specification
Pressure Range	<10 to 120 bar (3000 bar)
Pressure Mode:	absolute, gag
Output Signal	Analog Voltage, SENT
Temperature Range	-40 to 150°C
Accuracy	1 %FS



Development and production services

As a manufacturer of sophisticated systems, are you always facing new challenges because of global competition, increasing process requirements and new customer requests? Are you looking for ways to distinguish yourself and your products? You can do this with even more precise and faster measurements, more efficient and cost-reducing integration, application-specific combinations of measure-

ment procedures, special form factors of sensor systems and/or greater reliability. Standard sensors are often no longer enough to distinguish yourself from the competition. Sustainable application, quality and cost advantages can only be achieved and guaranteed with customized sensor systems. The development of application-specific sensor systems

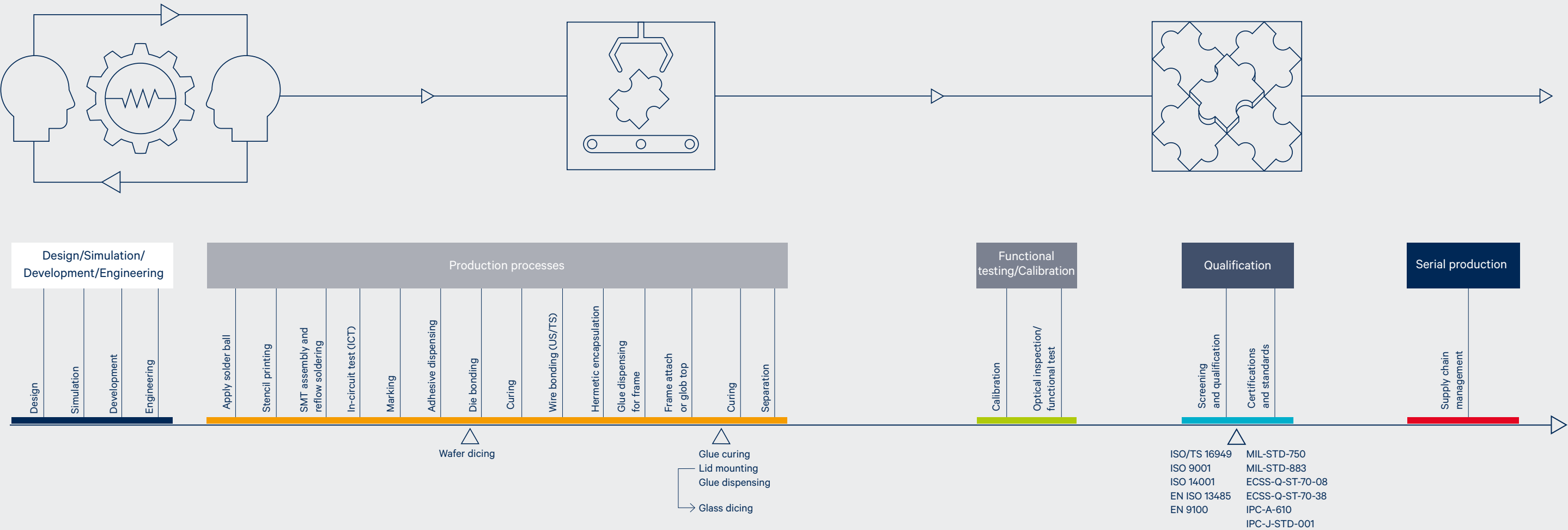
therefore presents you with a make-or-buy decision. Even if the sensor technology is an extremely important system component of your targeted solution, you are often unwilling or unable to allocate the development resources and expertise required for such developments.

The reasons for this are manifold:

- Capacity bottlenecks: internal development teams are tied up in other projects.
- Specific expertise: you do not have the metrological know-how to develop and produce specific sensor systems reliably and efficiently or to integrate new sensor technology.

- Outsourcing strategy: sensor technology is part of your own applications but is not considered a core competence.
- Risk and cost management: you want to speed up development projects significantly, limit cost and technology risks or achieve a predictable ROI via external development projects at fixed prices.

First Sensor is your first port of call if you are looking for a competent, reliable partner with many years' experience for the development and production of high-performance, customer-specific sensor systems.



Strategic partner for development and production of customized products

As a specialist in the development and production of sensor systems, we have been enabling long-term differentiation from the competition for many years. We provide all the expertise, technology and capacity this requires:

- Complete development services ranging from the solution concept and initial proof-of-concept to prototypes and serial production maturity; from hardware to software and integration; microsystems technology from the ASIC and the module to the end product.

- Design and implementation of technologies that enable many sensor functions and applications in the first place.
- State-of-the-art production capacity for a broad range of volumes – from rapid prototype production to order-based, cost-efficient serial production of millions of units.
- Support for development by metrology specialists from various disciplines and the use of application-specific metrological test stations and calibration services.

- Development, validation, qualification and reliability certification, production and testing according to industry-specific quality standards and certifications (e.g. EN ISO 13485 for medical devices and ISO/TS 16949 for the automotive industry)



1

Tried-and-tested approach for maximum efficiency and minimum risks



2

We offer you not only metrological know-how, but also seasoned project management that allows highly efficient as well as low-risk developments.

1 State-of-the-art production processes according to ISO/TS 16949 (Photo: GfS pix)

2 Packaging technologies according to certified processes

LOCATIONS

First Sensor worldwide

First Sensor is headquartered in Berlin and represented at six locations in Germany and also operates sales and production sites in the USA, Canada, China, UK, France, Denmark, Sweden and the Netherlands as well as a global network of partners.

Australia	Israel
<div><div></div> Sydney</div>	<div><div></div> Rishon Le-Zion</div> <div><div></div> Tel Aviv</div>
Belgium	Italy
<div><div></div> Zaventem</div>	<div><div></div> Aicurzio</div> <div><div></div> Rom</div>
China	Japan
<div><div></div> Hangzhou</div> <div><div></div> Shanghai</div>	<div><div></div> Tokio</div>
Denmark	Canada
<div><div></div> Copenhagen</div>	<div><div></div> Montreal</div>
Germany	Korea
<div><div></div> Berlin-Oberschöneweide</div> <div><div></div> Berlin-Weißensee</div> <div><div></div> Dresden-Klotzsche</div> <div><div></div> Dresden-Albertstadt</div> <div><div></div> München (Puchheim)</div> <div><div></div> Ulm (Oberdischingen)</div>	<div><div></div> Cheonan-si</div>
Spain	Netherlands
<div><div></div> Madrid</div>	<div><div></div> Eindhoven</div> <div><div></div> Dwingeloo</div> <div><div></div> Valkenswaard</div>
France	Sweden
<div><div></div> Paris</div> <div><div></div> Lisses</div>	<div><div></div> Kungens Kurva</div> <div><div></div> Uppsala</div>
United Kingdom	USA
<div><div></div> Rugby</div>	<div><div></div> Lexington</div> <div><div></div> Mansfield</div> <div><div></div> Westlake Village</div>
India	
<div><div></div> Faridabad</div>	



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