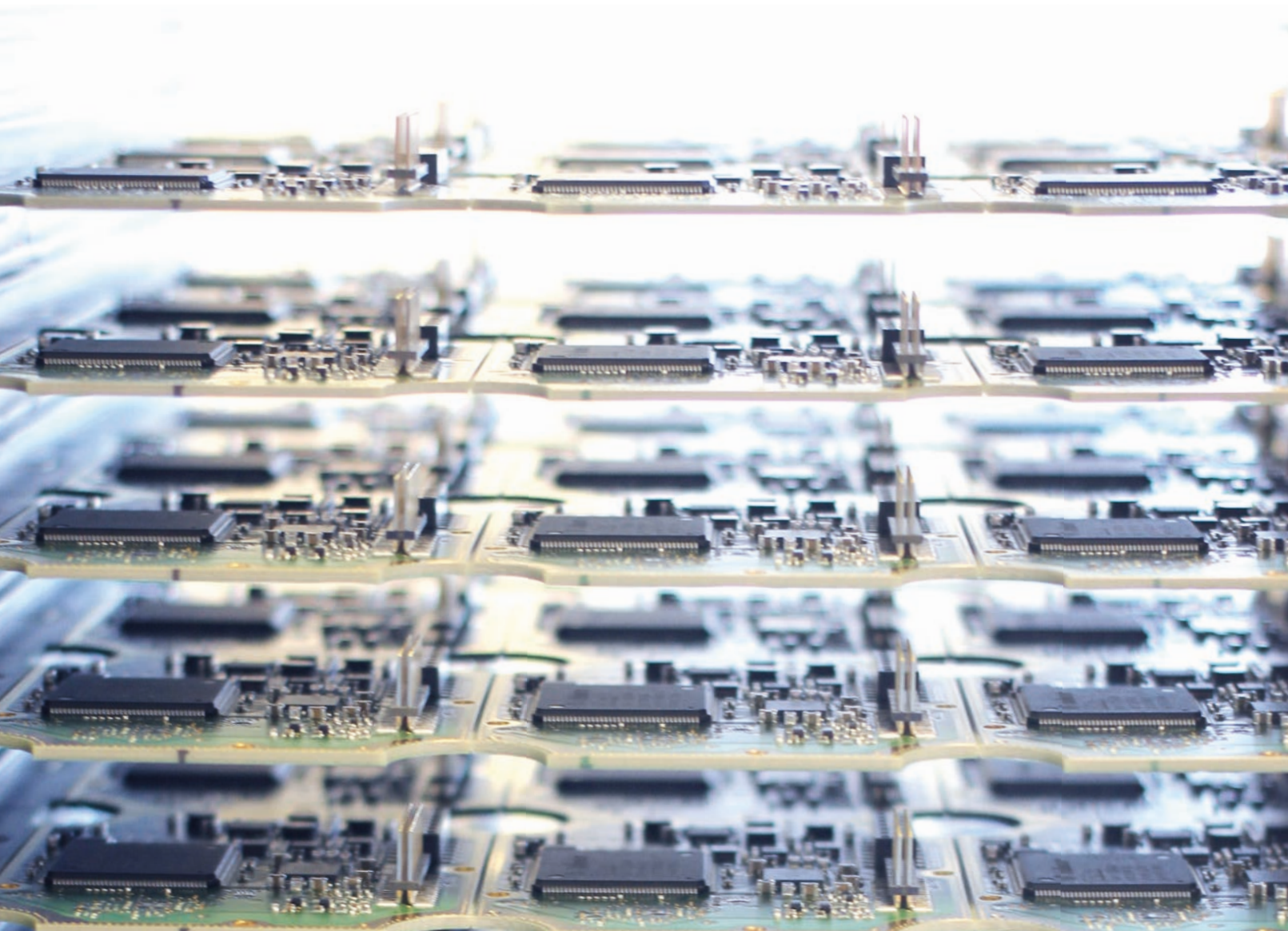


Your reliable partner for
EMS Services



Your Contact Person



Florian Ramser

Sales Representative EMS
Phone: +49-9528-9518-1274
E-Mail: florian.ramser@innosent.de

InnoSenT GmbH
Am Roedertor 30
97499 Donnersdorf

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About InnoSenT GmbH

Radar expertise and high-quality electronic production from Lower Franconia, Germany.

InnoSenT GmbH has been successfully delivering radar components for industrial and automotive applications since 1999.

Thanks to intelligent innovations, the medium-sized company secured its expert status and quickly developed into one of the leading radar equipment companies worldwide.

The company owes this success story to the strong performance of its competent employees, who drive forward radar technology through a strong focus on technological progress, research, and quality.

The radar experts develop a wide variety of sensor solutions for diverse industries with tremendous commitment and a wealth of ideas.

In addition to the series production of standard

radar components, InnoSenT, as a service-oriented company, also creates client-specific solutions.

The development team always views product innovations with foresight and emphasises end users, despite the clear B2B orientation.

The company has always proven its awareness of trends and happily tackles the industry-specific challenges of its clients.

And this is how the most recent business unit at InnoSenT GmbH was created:

EMS Services.

Here, the HF specialists provide clients with expertise and production capacities, to be put to use in the contract manufacturing of their electronic components.



High-quality, client-oriented, & individual: Electronic production at InnoSenT

Long-standing experience in the field of electronic component manufacturing makes InnoSenT a strong partner even for demanding placement tasks.

In addition to the development and production of its own radar sensory systems, the company also offers EMS services.

With our modern machinery, we flexibly, reliably, and individually manufacture your electronic products – from prototype to very small- and large-scale series projects.

Particularly as a young company, you will benefit by drawing on your EMS partner's experience and utilising their technical equipment.

However, outsourcing electronic production is useful for successful large companies as well: you gain additional flexibility and know-how, while

reducing your workload.

Strong team for your order

We boast over 20 years of experience in developing and producing electronic components.

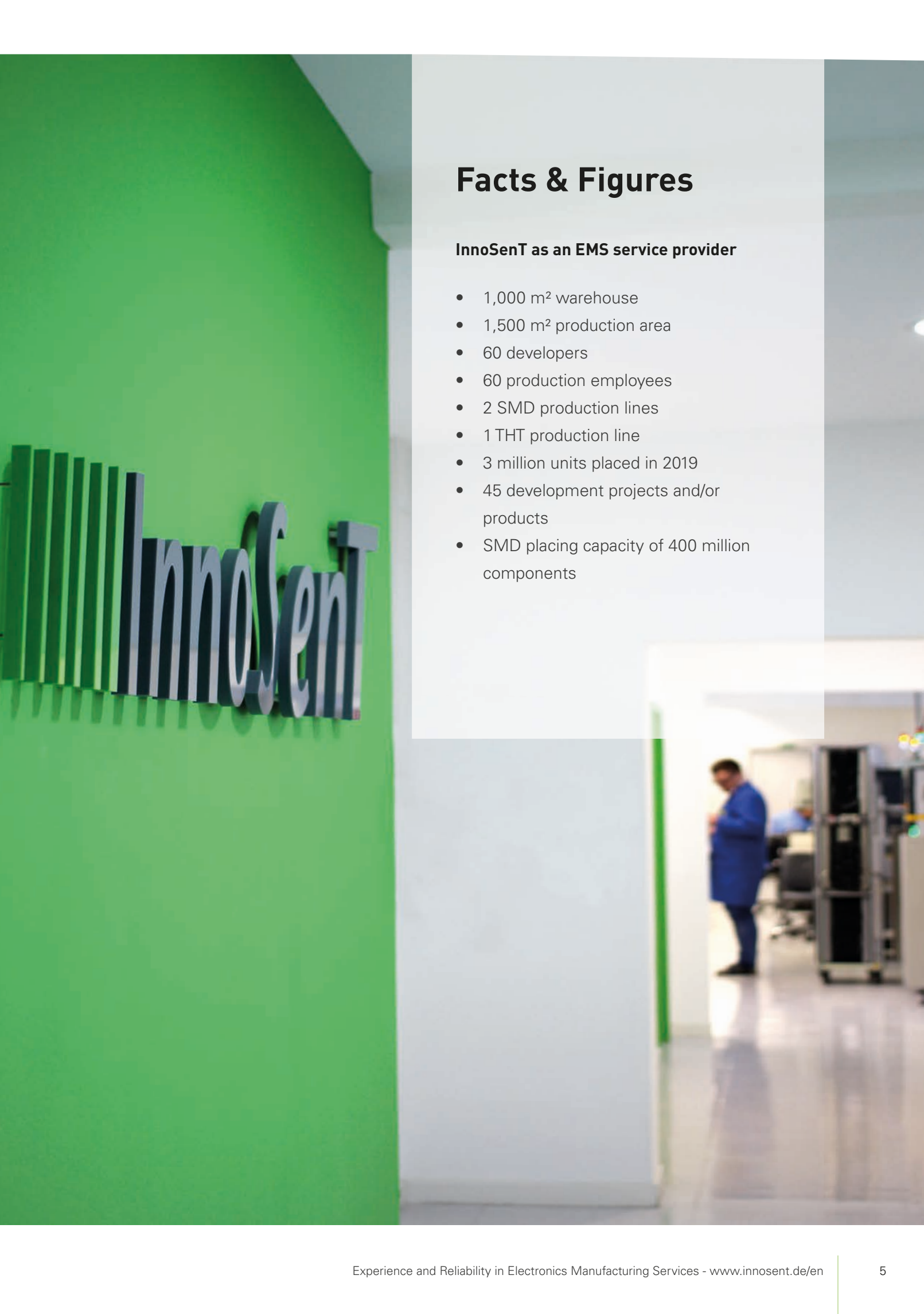
This expertise coupled with the high-performance team of experts from the areas of radar development, production, and testing set InnoSenT apart within the EMS industry:

highly qualified technical staff work on your product with dedication.

They form our foundation for exceptionally high quality and client-specific electronic production.

Our strengths on your radar:

- HF technology experts
- Experienced production team
- Development support
- Calibration and sharpening of lenses
- LED placement
- Automotive industry experience and network
- Standardised processes at the quality level of the rail industry
- Processing of smallest-scale components
- Layout design
- In-house test equipment construction



Facts & Figures

InnoSent as an EMS service provider

- 1,000 m² warehouse
- 1,500 m² production area
- 60 developers
- 60 production employees
- 2 SMD production lines
- 1 THT production line
- 3 million units placed in 2019
- 45 development projects and/or products
- SMD placing capacity of 400 million components

Sector specialisation

Our expertise for your market

InnoSenT's employees intensively tackle the requirements and challenges of a wide variety of industries. That's why we work closely with clients and business partners, expand our competencies, or adapt our processes to your requirements.

Since InnoSenT is also active on the market with its own products in addition to providing EMS services, we are predestined for related areas of application, such as sensor technology.

Particularly when it comes to the production of electronic components for the automotive market, the rail industry, camera technology, and LED placement, we fully unleash our strengths for you.

In light of our experience as a radar equipment company and our successful EMS projects, we are currently focusing on the specialist areas listed below.



Rail industry

Rail suppliers have to adapt their products to extreme conditions. Continued functionality despite vibrations or dirt and the top precision are of great importance.

To ensure the technology's reliability, InnoSenT has established the standardised processes in place for quality assurance in the rail industry.

Few EMS providers in Germany can attest to being ISO/TS 22163:2017-certified.



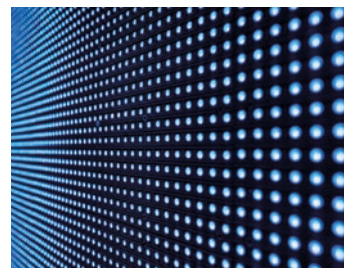
Safety technology

Safety-related applications are subject to many specifications.

Technical failures and malfunctions may have devastating consequences.

Already during the production phase of electronics, it often proves necessary to implement safety-related precautions or take them into account in advance.

InnoSenT has many years of expertise in this field.



LED technology

LED components have been an important part of our own products since 1999.

In the past we didn't just build up know-how but developed a routine.

The processing of LED equipment at InnoSenT ensures you top-rate production results for your production project.



(Stereo) camera technology

Due to intense work with camera manufacturers, we boast extensive skills regarding the production and testing of camera technology. This includes everything, the calibration and opening of lenses. Cleanliness at the production site also plays a role here.

Our employees work in compliance with strict hygiene conditions.



era

the collaboration with manufacturers, we have the expertise and experience in the production of camera technologies, among other things, for the production and sharing of information.

the production of an important role.

are trained and work with very high standards and regulatory requirements.



Automotive

The level of quality we provide as well as the highly competitive market are reflected in our high standards for electronic production.

Through its experience gained in the production of driver assistance systems, InnoSenT is aware of the challenges typical to the sector.

With the IATF 16949:2016 certification, we guarantee compliance with the exacting requirements of the automotive industry.



Measurement and control technology

Thanks to our experience in the radar technology sector, we are the ideal contact for the measurement and control technology industry.

InnoSenT's machinery and laboratory are ideally suited for performing inspections and testing.

As a result, no requests remain unfulfilled for your manufacturing order.



Automation technology

Industry 4.0 is advancing. Automated processes require numerous electronic units that work together perfectly.

In the manufacture of these tiny components, high-precision work is required already in the production process.

We are specialised in manufacturing such electronic equipment and assemblies.

E²MS and support according to your wishes

Take advantage of our broad service portfolio for the outsourcing of your electronic production.

As a service-oriented company, we cover the entire range of EMS services for you.

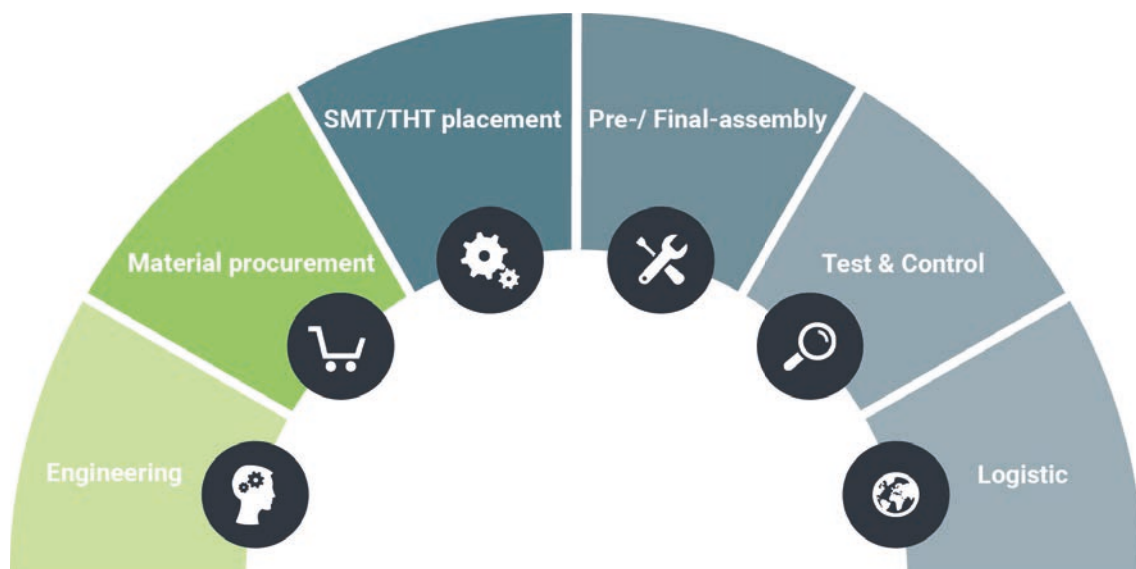
You will receive on-demand support from our experts throughout the entire production cycle:

We are happy to assist and advise you – from the idea to delivery of the product to your customers.

Our personal support and EMS all-round service ensure that individual requirements are implemented efficiently and to a high quality standard.

You decide what services you use and to what extent.

Best service with all project steps



WE PLAN



We reliably carry out your production project, with top-notch organisation. As necessary, our EMS Service team will be happy to advise you on planning the production cycle and support you with specialist know-how during its execution. Our procedures are structured, well-established, and transparent.

WE DEVELOP



Most InnoSenT employees are highly qualified experts in electrical engineering and other engineering disciplines and work in our R&D departments to develop innovative solutions. In light of this, we can offer you unique development services, such as layout design, circuit construction, or assembly tests.

WE PROCURE



InnoSenT maintains efficient obsolescence management. Through strong and long-standing supplier relationships, we ensure the availability of necessary components in operational business and enable cost-optimised production. Our strategic purchasing personnel are happy to support you with risk assessment and material procurement in compliance with RoHS and REACH regulations. We pursue the best-price strategy, ensure accelerated offer submission, and offer you alternative material procurement options.

WE PLACE COMPONENTS



We keep our technical equipment continuously up to date. We regularly invest in new technologies to guarantee optimum production processes and results. All systems are located in ESD protection areas. From cleaning to separation of uses, we produce in accordance with the strict quality requirements of the automotive and rail industry. We also offer the processing of tiny components as well as 100% traceability.

WE INSTALL



InnoSenT's modern machinery allows you to implement your individual wishes during manual pre-assembly or final assembly. For the product assembly of your project, we also offer you a fully automatic solution. If necessary, we perform assembly in accordance with Class 5 clean room conditions compliant with DIN ISO 14644-1.

WE TEST



In the laboratory and the measuring chambers, we have extensive testing equipment for inspecting production errors and making precise adjustments to functionality. We are also happy to carry out environmental trials or product-specific tests for you. Our services also include internal and external test equipment construction as well as random sampling during series production. We are also happy to take on the calibration and sharpening of camera lenses for you.

WE SEND



By handling the worldwide delivery of sensitive radar sensor systems, InnoSenT will find an appropriate solution quickly and easily for your logistics challenge. Our expertise in customs clearance and order processing is also at your disposal. If necessary, we will deliver directly to your international clients.

WE STORE



If you wish, we will tend to the short-duration storage of your electronic components. Across approx. 1,000 m² of area, we professionally store your electronics in MSD dry-storage cabinets or shrink-wrapped with the first in/first out principle.

Better than the standard: **Quality down to the smallest detail**

We manufacture your product in accordance with the highest sector-specific quality standards.

InnoSenT carries out active quality management that is deeply anchored in the company. This is reflected in the overall concept and certifications. Our quality awareness is already evident in the prevention of defects.

InnoSenT always strives for the 'zero-errors' ideal in electronic production.

In the production area, we have integrated high testing standards to test and select the quality of our products.

The employees work carefully and efficiently. They check the production result with exacting and experienced eyes – their precision even frequently surpasses our clients' expectations.

The trained specialist personnel ensure things go

smoothly. We take the repair and optimisation of production results as well as the subsequent fault analysis very seriously.

Furthermore, we constantly reassess the established processes critically and realistically in order to achieve continuous improvement. This way, the company maintains top-rate contract manufacturing.

We supply our clients with perfect, quality products and the best-possible service.

Electronic production:

Sustainable and resource-sparing

We bear responsibility for future generations. This is our emphatic conviction. We reduce resource use, energy consumption, waste, and emissions in a sustainable manner.

When purchasing and shipping, we place emphasis on efficient transport routes and environmental compatibility.

If possible, we avoid the use of environmentally harmful substances, and during procurement, we comply with RoHS and REACH regulations. Environmentally conscious use of resources is

a matter of course for us. This starts with the purchasing of goods, is demonstrated through environmentally friendly production, and ends with measures for occupational safety and the protection of employees' health.

With the ISO 14001:2015 and ISO 50001:2011 certifications, we ensure specifications are complied with.



Certified quality

In order to ensure the value of its products, InnoSenT is certified to:

- **Quality management standard ISO 9001:2015**
- **Automotive standard IATF 16949:2016**
- **Railway standard ISO/TS 22163:2017**

Advanced technology for your manufacturing order

InnoSenT's technical equipment provides the ideal basis to enable top-rate, cost-effective and smooth production. We are constantly upgrading our modern machinery spanning 1,500 m² in order to guarantee the best-possible performance for your manufacturing order.

THT placement

Modern machine unit for manual individual placement and selective soldering, for instance for custom-made products, prototypes, or very small series production runs.



SMD placement lines

Fully automated placement systems from Siplace for automatic in-line placement. The units manufacture top-rate quality. They boast sufficient flexibility and capacity to fill orders on short notice and carry out large-scale series production runs.



Reflow soldering

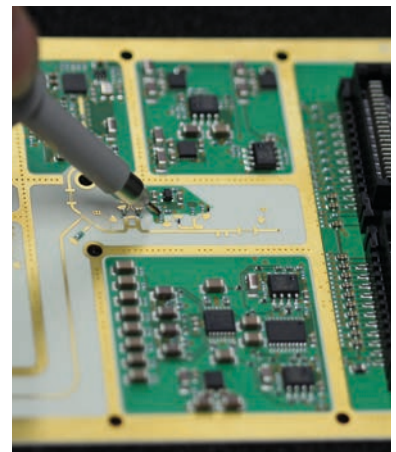
(in-line vacuum soldering on demand)

The use of vacuum technology can reduce voids. This means that the soldering points are highly reproducible, offer improved thermal connectivity and increased shut-down stability.



Automatic optical inspection (AOI)

This inspection detects soldering faults or component misalignments already before the actual final test – a clear increase in productivity.



3D x-ray inspection (AXI)

The system inspects even large series and sophisticated assemblies at high speed and in detail. At the same time, it records the top and bottom sides as well as concealed soldering points of the electronic component.

Paste printer

Fully automatic in-line paste printer with PROACTIV technology for process-reliable printing of the smallest component connections.

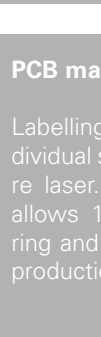
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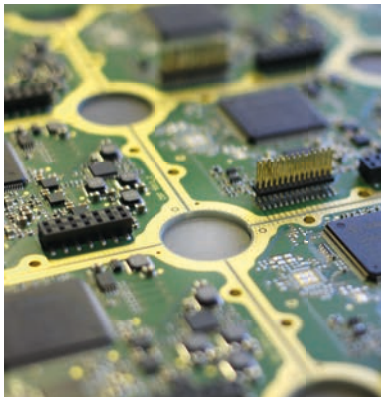
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Inspection

Dimensional inspection of the printing process with automatic good/poor sorting. This is the volume of the amount of solder.

This method increases the probability and connection of the components to the printed circuit board. This is particularly significant for small components.



In-house test equipment construction

Our development team is directly on site and allows product-specific testing equipment to be designed. This saves time and money for your production project.



In-circuit test (ICT)

In this test procedure, we use a special adapter to test for faults in the conductor patch routing and components, for example in order to determine short circuits. ICT is ideal for large-scale series production runs. It is also possible to program the components as an option.



Planing system

Automatic machine (PB ADC) for contactless and charge neutralised printed circuit boards in order to prepare them for the next process.



Marking

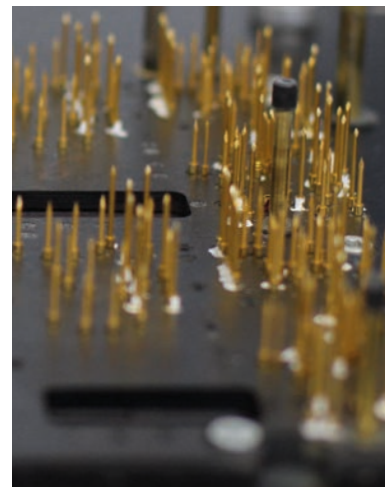
Marking of all PCBs with an individual serial number using fiber laser. The indelible marking enables 100% process monitoring (traceability) in production.

Flying probe

In the flying probe method, we inspect your components using fine test needles to check specific points for faults. These selective measurements enable assemblies to be tested individually. They are ideal for sample or small-series runs. Here too, it is possible to optionally program components.

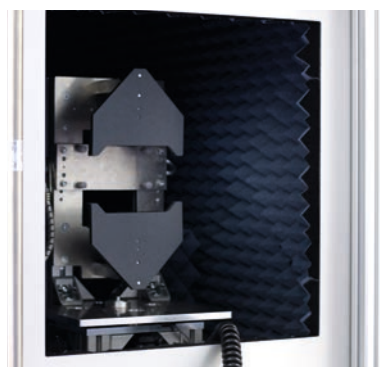
Testing & measuring technology

We have extensive, industry-specific testing and measuring equipment to carry out relevant tests in our laboratory in line with your expectations. This ranges from environmental tests to random sampling tests performed during series production as well as temperature and vibration load tests.



Depaneling machines

We have different depaneling machines at our disposal in order to separate PCBs and process them as cut-outs. Depending on the requirements in terms of precision, quality, and material characteristics, different procedures are used, such as milling, sawing, or parallel cutting blades.



Absorber chamber

We test the resistance to interference and emitted interference with high-frequency components for you in our modern measuring environment.

Best equipment for that little bit more

Across its 1,500 m² of production area, InnoSenT offers not only efficient standard processes but also individual modifications despite complex requirements. Our know-how and technology give you that little bit more in terms of quality and efficiency, for a perfect result in your application. Together, we achieve more for your customers!

Premises and staff

- ESD-compliant production (workstations, floors)
- Specialists in vacuum soldering technology

Production volumes and capacity

- Placing capacity: approx. 400 million components SMD ('on-demand' capacity)
- Flexible production: large-series production (industrial and automotive) and prototype and small-series production

Component spectrum

- Standard SMD components
- Component size up to 0201
- BGAs
- THT components

Testing & inspection

- Series-accompanying random sampling, temperature & vibration stress
- Environmental testing in our own laboratory
- Development team directly on site
- Testing and measurement technology available for the industries specified
- In-house test equipment construction

Quality assurance

- Certification in accordance with Automotive Standard IATF 16949
- Quality management certification in accordance with ISO 9001
- Certification in accordance with railway standard ISO/TS 22163
- Process monitoring: 100% traceability through unique serial number

Sustainability

- ISO 50001 & ISO 14001
- Compliant with RoHS and REACH

Processable panels

- From 50 mm x 100 mm to 320 mm x 280 mm

Machinery:

Technical data

PCB marking (ASYS Insignium 4000)	<ul style="list-style-type: none"> • PCBs and benefits of labelling with data matrix code/Plain text • Data matrix code for traceability (custom content possible) • Customisable plain text labelling possible
PCB cleaning system (PB 500/1 – ADC In Line)	<ul style="list-style-type: none"> • Cleaning of all PCBs before paste printing with ionised air and extraction system
Paste printing (DEK Horizon 03iX)	<ul style="list-style-type: none"> • Fully automatic in-line paste printing with ProActiv technology
3D SPI (Koh Young Aspire)	<ul style="list-style-type: none"> • Automatic 3D inspection of the printing process • Automatic good/poor sorting
SMD placement (ASM Siplace SX2)	<ul style="list-style-type: none"> • Siplace automatic PCB placement machine • Placement in flux (dipping module), with epoxy (glue feeder) and pin-in-paste (twin-head) possible • Placement from tray also possible
THT placement (Ersa ECOSELECT 4)	<ul style="list-style-type: none"> • Selective soldering system • More precise soldering of individual components than with a wave soldering system
Reflow soldering (SMT Quatro Peak S N2)	<ul style="list-style-type: none"> • Nitrogen reflow full convection ovens • In-line vacuum soldering on demand
AOI (VISCOS S6056)	<ul style="list-style-type: none"> • Automatic optical inspection of the flat assemblies in accordance with IPC-A-610 Class 3 • 100% testing of all placed assemblies
AXI (Göpel X Line 3D X10)	<ul style="list-style-type: none"> • 3D X-ray system • Specially for concealed soldering points
ICT (Aeroflex 4250)	<ul style="list-style-type: none"> • Ideal for larger series • Optional programming of components possible
Flying Probe (TAKAYA APT-1600 FD-A)	<ul style="list-style-type: none"> • Individual assembly testing • Ideal for samples and small series • Optional programming of components possible
Testing	<ul style="list-style-type: none"> • Internal and external test equipment construction for creating product-specific test equipment • Absorber chamber for measuring high-frequency components in the frequency range > 10 GHz
Depaneling machines (Hölzer low 4233 D/R)	<ul style="list-style-type: none"> • Milling & sawing • Parallel cutting blades

Top-rate service: **We are here for you!**

As a medium-sized company, we offer you a wealth of advantages that provide you with a competitive edge.

Thanks to strong network and years of experience, we achieve attractive prices and efficient production processes for maximum client satisfaction.

We offer

- Client-oriented and individual service
- Cost-optimised production
- Flexibility and rapid response times
- Certified quality and efficient processes
- Adherence to schedule and reliability
- Straightforward project processing

Would you like to outsource the electronic production of a product or benefit from our expert knowledge and technologies?

Then contact our sales representative Florian Herbst for an initial consultation in order to discover our options for your production project.

Together, we will work out what potential is capable of being unlocked for your electronic production by collaborating with us and will take note of the rough scope and

key data regarding the project.

We look forward to meeting you!

You can also find out more at:

www.innosent.de/en/manufacturing.





InnoSenT GmbH

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Germany

Phone.: +49-9528-9518-0
Fax.: +49-9528-9518-99
Mail: info@innosent.de



www.innosent.de/en