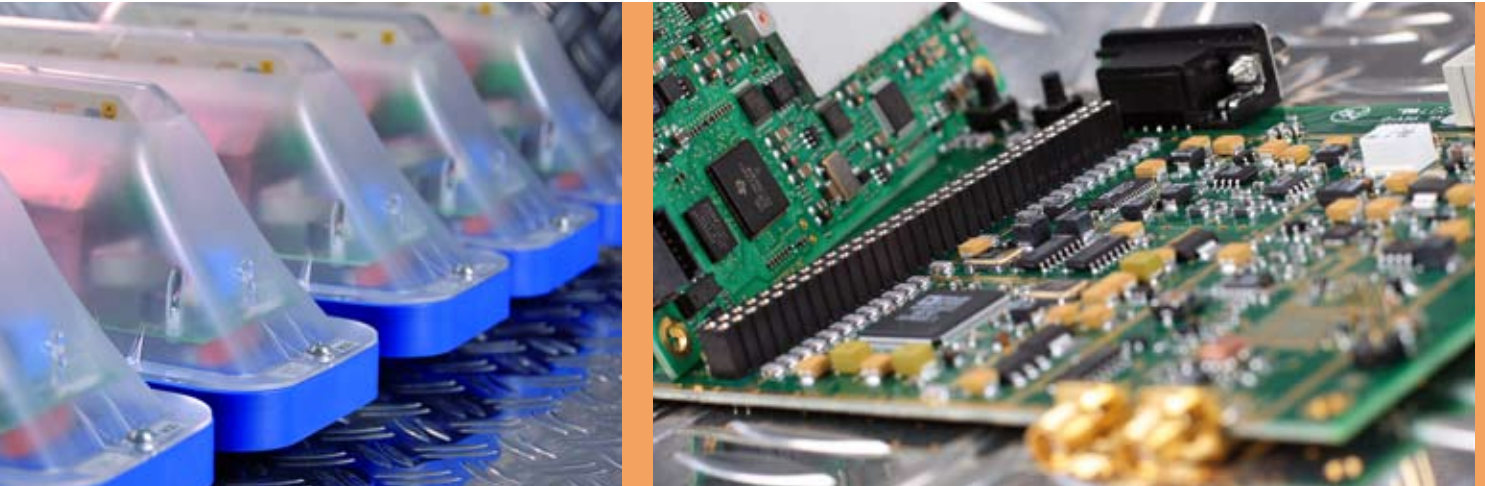




Realtime
Precision
Everywhere

Sensor Technology for Industrial Applications



Precision and reliability in positioning and distance measurement

Efficient workflows in production, logistics, transportation, and other industrial sectors require comprehensive system solutions. Precise positioning, exact distance measurement, as well as unique identification of transport vehicles, people, and objects are central factors in the performance and quality of these applications.

Sensor technology – the crucial connection between the outside world and your IT system

Industrial applications place especially high demands on sensor technology in general, and in particular on the chosen technology for positioning and distance measurement:

In realtime and with high precision
Exact determination – constantly and without delay.

Robust and reliable
An optimal solution for every field of application – even in harsh, dirty environments.

High measurement rates
Precise detection of quick movements – up to the control of robotic vehicles.

Continuous operational readiness
Whether indoors or outdoors, uninterrupted positioning at every location and over great distances.

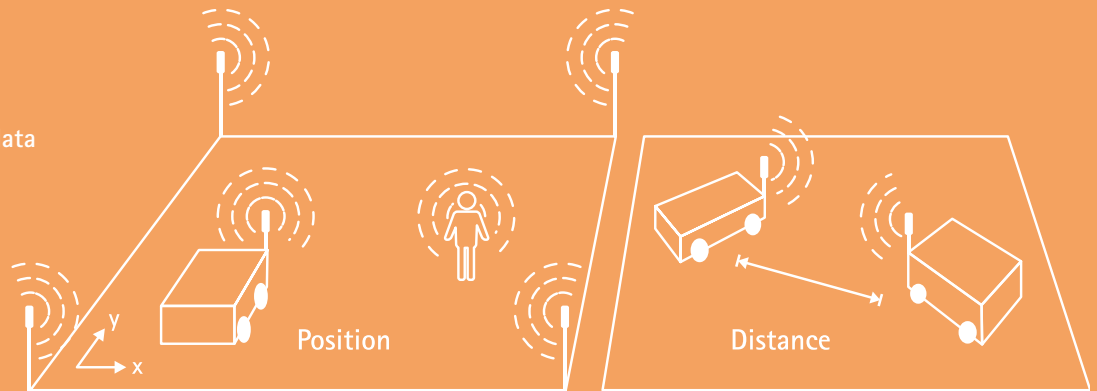
Proven in the field
Proven technology – custom-tailored to individual specifications.

Easy to operate
Contactless and wear-free – scalable and flexible in customization.

Easy integration
Standardized open interfaces – flexible connection to existing IT systems.

How LPR Works (Local Positioning Radar)

- Positioning and distance data in realtime
- Contactless and wireless measurement
- Wear-free technology
- For indoors and outdoors



Symeo – Absolute Positioning

Symeo GmbH develops and produces the most modern sensor technology components, as well as complete systems for positioning and distance measurement for industrial applications. We work closely with original equipment manufacturers, system integrators, and technology partners on a national and international scale.

The advantages for your business:

- Reliable and precise determination of physical location and measurement of distances
- Fast implementation, short project timelines
- Reduction of maintenance requirements
- Flexible and adaptable to changing specifications
- Increased competitiveness
 - Improved process control
 - Accelerated workflows
 - Drastic reduction in error rates
 - Reduction of costs related to logistics and production
 - Higher operational safety (anti-collision, worker and workplace protection)

What we provide to you:

- Development, production, and implementation of sensor technology components and subsystems for positioning and distance measurement
- OEM specifications and series production support
- Consulting, design, and project management
- Technical support service

Symeo: High-performance sensor technology and comprehensive solutions

Your Partner in Meeting the Highest Standards



Flexibility thanks to in-house development

The hardware and software engineers at Symeo GmbH are experts in measurement technology with many years of experience with industrial applications. Customers and solutions benefit from our large development department and its ultramodern technology. Our strength: everything from one supplier – and very close to customers and their applications.

Closely co-operating with system integrators and solution providers

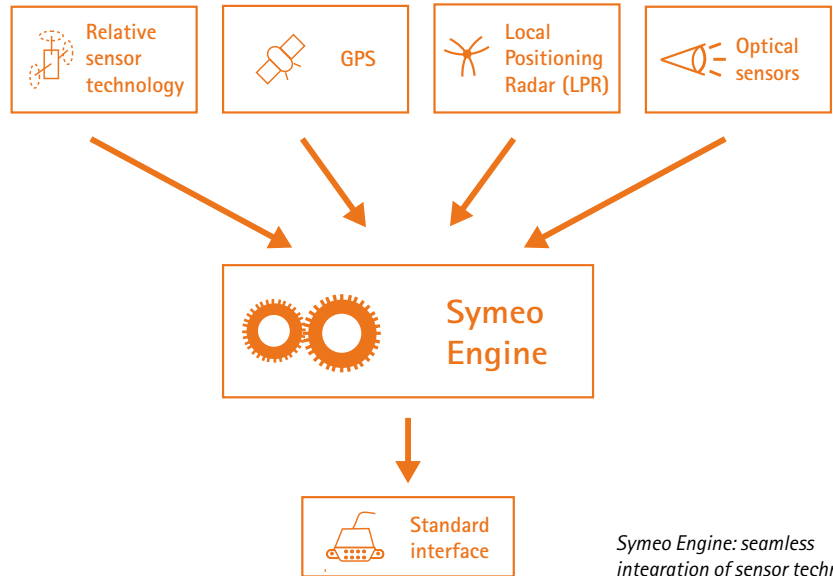
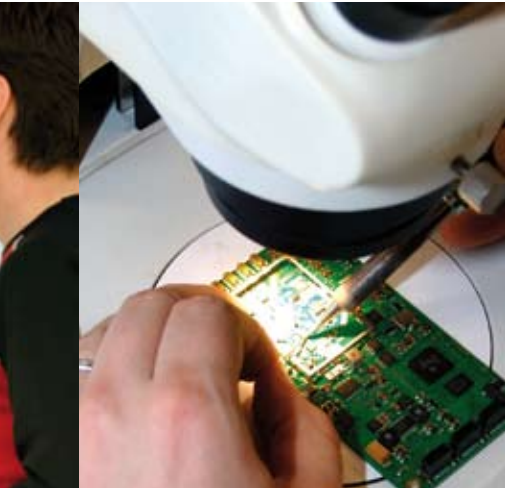
Thanks to our own development resources, we are able to offer sensor technology solutions that are adaptable to the needs of our customers and their specific applications. Our solutions can also be reliably integrated into higher-level logistics and production planning IT systems.

Symeo produces ready-for-use components and complete systems for physical location determination, distance measure-

ment, and collision warning. We deliver quality-certified products that conform to all relevant standards and specifications.

Solution-oriented approach

With our comprehensive selection of sensor technology components and positioning technologies, we are available as a competent and solution-oriented project partner to system vendors and integrators.



Symeo Engine: seamless integration of sensor technology into the system solution

Versatile applicability

Symeo sensor technology closes the gaps of prevalent systems. It lets you monitor the movement of materials and vehicles where other approaches and technologies have been too costly or error-prone. You can profit from precise, contactless position determination, and ensure the highest levels of safety in your business with worker and workplace protection and collision warning systems.

Measurements provided by Symeo systems are based on our unique and proven wireless technology, the Local Positioning Radar (LPR), which can be combined and supplemented with other technologies for specific applications: optical systems, satellite navigation, or inertial sensor technologies.

This allows our solutions to work reliably, in buildings as well as in open spaces, in dusty or damp environments and in all weather conditions. These are the basic prerequisites for successful imple-

mentation in industrial environments.

Easy IT integration

The Symeo Engine software platform processes a wide variety of sensor data. Regardless of the sensor components and technologies used, position data is provided through standard interfaces. There is no easier way to add positioning and distance measurement functionality to existing applications and infrastructures.

Unlimited application possibilities – easy to implement

Symeo Local Positioning Solutions



In our users' steel works, production facilities and warehousing space stretch for many hundreds of yards. Even compactly sized products that are stored side-by-side or on top of each other must be accurately and unambiguously identified.

LPR: Many fields of application

Symeo solutions have a proven track record in many applications and sectors. You and your business profit from our years of experience: Our experts know your industry's processes and requirements.

Metal manufacturing and distribution

Symeo solutions

- Work reliably, even in harsh environments with extreme temperatures and mechanical loads
- When mounted on forklifts or cranes, they determine the exact pick-up and drop-off locations of slabs, coils, and sheet metal over the entire premises
- Enable error-free, centimeter-precise localization of individual products
- When combined with warehouse management software, they offer crane operators a 3D visualization of the entire warehouse – with the exact position and orientation of individual products in the stack
- Enable reliable collision avoidance in crane and forklift operation



Customers from production industry, transport and distribution optimize their internal logistics with Symeo solutions. Their goals: Avoid manual material postings, reduce driving and search times, and minimize error rates.

For the optimization of container transfers and the administration of storage sites, physical location determination is an indispensable part of shipping terminal operation. Equipped with the robust Symeo Local Positioning Radar, special container handling vehicles work with high precision and efficiency in the terminal.

Also can be used to locate people: For picking applications and for activating remotely controlled machines, portable Symeo LPR units enable the dynamic determination of where individual workers are located.

Reel and pallet warehouses

Symeo solutions

- Monitor all movement of goods and storage locations via the position and heading angles of material handling vehicles and cranes.
- Support modern “chaotic” storage strategies
- Determine the exact position of individual pallets or reels in stacks and shelves
- Ensure the traceability of transports
- Increase safety through additional functions such as workplace protection or collision avoidance

Container terminal

Symeo solutions

- Are the basis for driver assistance systems to move into optimal position for loading and unloading – for example, the position of terminal tractors in relation to the loading crane
- Allow gapless container tracing via the positional tracking of a wide variety of terminal vehicles
- Together with the warehouse management system, they provide drivers with added certainty of the predefined drop-off and pick-up locations
- Increase throughput
- Guarantee constantly precise data collection via robust and maintenance-free devices in all weather conditions

Safety and automation

Symeo solutions

- Usable with people, vehicles, and objects of every size and in a wide variety of environments (e. g. mining, production, airports)
- Protects people and workplaces and provides collision warnings
- Provide highly dynamic measurements, which are ideal for controlling driverless transport systems
- Allow gapless measurements – indoors and outdoors
- Enable the analysis of movement profiles
- Can be installed on a temporary basis at changing locations
- High operating distances and system coverage
- Can be flexibly connected to IT systems
- Are easy to configure (measurement rate, range, data transmission)



Symeo GmbH
Professor-Messerschmitt-Straße 3
D-85579 Neubiberg

Tel.: +49 89 6607796-0
Fax: +49 89 6607796-190

www.symeo.com
info@symeo.com