Mobilize production. Maximize visibility.

SIMATIC RTLS, the locating platform for your digital enterprise

usa.siemens.com/simatic-rtls
Locating precision. For the digital enterprise in motion.

Are you thinking about making your production and logistics workflows more dynamic? Do you want to be able to respond faster to market changes, use your capacity better, or manufacture in smaller batches? If so, your keys to these advantages are more flexible and self-organizing production and logistics models using the Siemens SIMATIC RTLS locating platform. It can locate objects and personnel to within inches almost instantly, so you can always know where everything and everyone is at all times, even in motion. Welcome to the Digital Enterprise.
SIMATIC RTLS (Real-Time Locating System) is a key component in the digital infrastructure for smart factories of the future. To manage workflows and respond to changes autonomously, intelligent production systems need to know where objects, assets, and personnel are at all times. That’s especially true for the mobile robots, automated guided vehicles (AGVs), and material-handling conveyance systems that must move efficiently and safely, without collisions. The SIMATIC RTLS platform provides this information accurately and reliably. It can locate anything or anyone with a transponder attached to within inches and in less than a second — delivering the positioning details to higher-level systems in near real time. That’s critical operating visibility plants have lacked. Until now.

SIMATIC RTLS, in effect, enhances a digital production twin of all factory processes with much greater precision of production assets and personnel, whether stationary or in motion. It tracks the changing locations of people and things — from the receiving dock and internal logistics to processing or assembly to outbound logistics. All relevant objects in a production workflow, such as material containers, work-in-progress, tools, AGVs, and robots, can be fitted with a transponder. Workers can also be tagged as part of their employee badge or uniform, so they can be tracked for safety purposes. The transponder’s wireless signals are transmitted to a locating server that calculates their position and relays the information to intelligent automation and manufacturing systems — instantly, precisely, and dynamically.
RTLS and the Digital Enterprise.

1. **RTLS empowers the Digital Twin**
   Increase planning quality and reduce non-conformance costs

2. **Supervision and documentation**
   RTLS maps the 3D model from digital twin with real environment

3. **Increased automation grade**
   Collaborative and mobile robotics

4. **Optimized maintenance**
   RTLS-based guidance and navigation of service staff

5. **Advanced logistics concepts**
   AGV routing or control of picking processes

6. **Continuous monitoring of goods**
   Combine process data and position to reduce waste

7. **Breakup of traditional assembly lines**
   Increased flexibility and utilization thru free-flow of material, goods and workforce
SIMATIC RTLS uses ultra-wideband (UWB) wireless technology. It features a wide frequency range (3–7 GHz) with a channel spacing of 500 MHz or more to transmit its transponder signals. This keeps it from interfering with industrial 802.11 Wi-Fi wireless communications that typically use 2.4 and 5 GHz frequencies. The result is extremely precise and fast object and personnel location updates with accuracies to within 11 inches.

SIMATIC RTLS solutions are quick and simple to install, plus they can easily expand as demands grow. Transponders and other RTLS devices can be added at any time — scaling up to a plant-wide RTLS infrastructure — with no additional configuration cost or time. This deployment flexibility and scalability make RTLS technology especially attractive for any company taking its first steps toward becoming a Digital Enterprise.
Transponders
Available in various models and sizes, transponders are devices fitted to material containers, workpieces, robots, AGVs, forklifts, and even people’s work badges or attire. They transmit their wireless signals at defined intervals. Models are available with data interfaces and transmit location details directly to the local control system or make additional sensor data available to higher-level systems.

Gateways
Gateways bundle all the recorded data received from anchors and transmit it to the higher-level locating server. Gateways can also be deployed as anchors. The difference: Gateways IT network interfaces. This enables localization data and optionally application-specific data to be exchanged between the SIMATIC RTLS system via the IT infrastructure.

Anchors
Anchors are typically wall-mounted devices that receive transponder signals, giving each transponder a fixed position and time stamp. They then pass on the bundled data to gateways or, in small deployments, directly to the locating server. With at least three mutually synchronized anchors, a transponder can be located in 3D with an accuracy of less than 4 inches.

Locating Manager
The Locating Manager is a software application on the locating server that calculates the real-time position of the individual transponders and passes the details on to the higher-level systems via defined interfaces and configurable rules.
In smart factories of the future, mobile production vehicles, such as AGVs and robots, will have to operate synchronously around workers, fixed machines, and material-handling conveyance systems.

That’s why the location of these production assets – and, for life safety, personnel – will be critically relevant and highly dynamic variables. In other words, knowing where everything and everyone is in the factory at all times is essential for self-organizing and highly efficient workflows.

SIMATIC RTLS ensures that information on the precise location of these production resources is always available to higher-level intelligent systems. These could be manufacturing execution systems or enterprise resource planning systems, whether on-premise or hosted in cloud-based platforms, such as Siemens MindSphere, the open IoT operating system. These systems can then issue commands for target systems like mobile robots, PLCs or AGVs to keep production moving, efficiently and safely.

SIMATIC RTLS is the locating platform for the dynamic, self-organizing processes that will distinguish smart factories of the future and the Digital Enterprises behind them.

**SIMATIC RTLS – technology that can unleash Industry 4.0 benefits**

- **Improved visibility**, via the continuous monitoring of goods that combines process and position data to reduce waste and improve traceability
- **Better container utilization**, to ensure their location, availability, and accurate assignment
- **Reduced costs**, with more efficient processes and less extra work
- **Improved productivity**, by reducing or eliminating inefficient process steps
- **Better quality**, with fewer potential errors in material handling
- **Optimized maintenance**, with RTLS-based guidance for service technicians
- **Superior logistics concepts**, via AGV or forklift routing and enhanced control of picking processes
- **Improved documentation**, by mapping actual location data of physical objects and personnel in motion against a workflow’s engineered designs

**SIMATIC RTLS: Get started today**
Siemens is your trusted partner when it comes to end-to-end solutions for your Digital Enterprise. We have decades of expertise with innovative technologies for industrial applications in production and logistics.

Siemens SIMATIC RTLS solutions include all components and services for customized locating solutions. We look forward to designing an RTLS solution that can suit your requirements. And you can be sure that our service experts will plan, execute, and document every step of the project, from design through commissioning to employee training.

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