Use Cases | **Industry 4.0**

RTLS in the Manufacturing & Logistics Industries

Manufacturing and logistics companies are a key part of the economy, producing and delivering products to both consumers and businesses.

In many ways, the sector has always been a leader for innovation. For example, the introduction of mechanised production during the First Industrial Revolution, the expansion of electricity and the introduction of mass production during the Second Industrial Revolution and the implementation of automated production solutions through connectivity during the 20th Century.

We have now entered the next wave of innovation for industry. The so-called Industry 4.0 stage, which introduces the idea of smart factories. These are facilities that are automated and optimised for best performance using a combination of digital technologies.

One of the key technology solutions being leveraged to create these smart factories is real-time location systems (RTLS). RTLS offers a wider range of location-based solutions that can improve operational safety and efficiency.

Improving Security & Safety

Workers and machinery work side-by-side in industrial facilities. This typically means that spaces are vast, the number of workers is large and accidents can potentially cause serious bodily harm to workers. For these reasons, companies are exploring the options RTLS offers for mitigating any potential safety hazards.

Some examples of how RTLS can improve safety:

- **Collision Avoidance**
- **Evacuation Efficiency**
- **Worker Tracking**
- **Danger Zone Detection**
- **Vital Sign Monitoring**
- **Equipment Inventory**
- **Man Down Detection**
- **Visitor Tracking**

RTLS can improve the day-to-day safety of workers in many ways. The system can prevent collisions between workers and machinery by alerting workers to likely collisions calculated by using real-time route information. The same system can also alert workers to the fact that they are entering a danger zone. It can even perform a personal equipment inventory for the worker, checking that they are wearing all of the required safety equipment (e.g. work boots and helmets) when they enter a work site. And what's more, all of these safety measures can be implemented without adding to anyone's workload as the system is fully automated.

Location-based solutions can also improve safety in cases of emergency. For example, sensors that monitor workers' vital signs can be added to detect the need for medical attention or evacuation. The system can be programmed to alert in cases where the height of a tag attached to a worker's helmet drops suddenly, suggesting that the worker has fallen and may need medical attention. The RTLS can also be used at designated evacuation assembly points to get real-time information about which workers are present and which are still within the evacuated facility. In all of these cases, the system can then guide help to the workers in need of assistance.

Improving security and safety in manufacturing and logistics is important as it improves worker well-being, reduces costs as well as ensures compliance with regulations.

Increasing Operational Efficiency

The aim of manufacturing and logistics companies, just like any other business, is to generate profit. Finding ways to increase operational efficiency by implementing innovative technologies, such as RTLS, is a great way to maximise profit.

Some examples of how RTLS can improve efficiency:

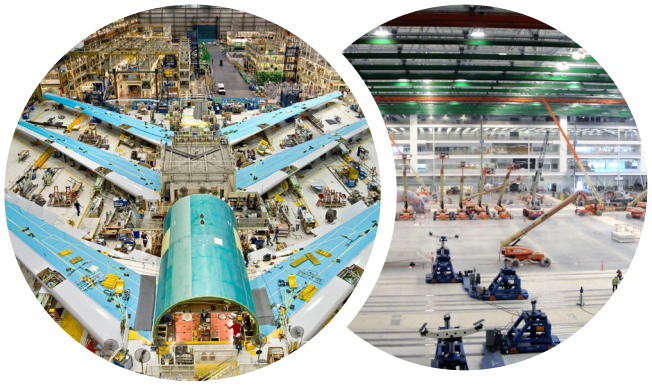
- **Inventory Management**
- **Route Optimisation**
- **Asset Tracking**
- **Paperless Orders**
- **Maintenance Process Optimisation**

RTLS is a particularly effective solution for inventory management and asset tracking. By tracking the real-time location of products or pallets of products within the facility, inventory counts can be automated and any misplaced products or materials can be located without delay. More efficient inventory management can reduce the need to order extra items to replace lost ones. Knowing where products and materials are reduces the time spent searching for items, shortens production cycles and enables workers to use their time more productively. All of this adds up to significant savings and more profit for the company.

Location-based solutions can also reduce the paperwork load for workers. In many industrial facilities, work orders and other unit specific information is still printed out and attached to the relevant pallet so that the information moves through the facility together with the products. What location-based solutions offer, is the real-time information of which pallet is which and where it is located, enabling all additional information to be stored in a digital format. This can significantly reduce the amount of paperwork that needs to be done by workers.

RTLS also opens to door for optimising other processes. Having access to the location of machinery helps get maintenance to them quicker when needed, reducing downtime. Analysing the typical routes taken by workers can identify where time is wasted by inefficient facility layouts or work processes. Checking to flow of products making their way through the facility helps identify work-in-progress (WIP) inefficiencies if partially finished products are waiting to be completed for unnecessarily long periods of time.

Implementing even seemingly small improvements to operational efficiency can add up to surprisingly large saving for the company.



Analytics for Optimising Operations

One of the great advantages of digital solutions is the access they provide to previously unavailable data. This data can help companies to optimise operations, prepare for future maintenance needs and ensure that processes are implemented as promised.

Some examples of how RTLS can be used to optimise operations:

- **Equipment Usage Analytics**
- **SLA Analytics**
- **Quality Assurance**

The equipment usage analytics provided by RTLS can help companies plan for maintenance needs based on actual usage rather set time intervals. Optimising maintenance intervals can save companies money, because machinery that is in heavy use will require more frequent maintenance than equipment that is only used occasionally. Preemptive maintenance can reduce downtime and save money.

Analytics from location-based solutions can also be integrated into the company's quality assurance process to ensure that the company can maintain the desired level of quality for their products. The system can be set up to send out automatic alerts when deviations from the intended processes happen. This can be useful in catching errors and other quality issues before the end products make it out of the facility to the customer, reducing returns from customers. Similarly, RTLS can also help companies assess whether their subcontractor service-level agreements (SLA) are being honoured and if proactive measures need to be taken to fix any issues.

The above mentioned examples are just the tip of the iceberg for the industrial use of location technologies. New applications and service solutions are being developed constantly. But one thing is for sure: industry continues to lead the way to innovation. This time it is with the help of location-based solutions.

For more information about Quuppa's RTLS solutions please visit our website: www.quuppa.com