

THORN
LIGHTING



HAP FOR INDUSTRY

High Accuracy Positioning for Industry with real-time analytics



**WE
MAKE
LIGHT
WORK**

ENHANCING YOUR PRODUCTION PROCESSES, IMPROVING EFFICIENCY, QUALITY AND DECISION-MAKING

We are now in the fourth industrial revolution, often described as 'Industry 4.0', where technology is being widely integrated into manufacturing and industrial practices. By leveraging big data and analytics through HAP sensors integrated into a modern lighting scheme, you can stay better informed thanks to real-time monitoring, with the ability to optimise processes and improve decision-making. You can also create more efficient manufacturing activities leading to improved productivity and enhance the working environment to boost employee and customer satisfaction.

Using industry-standard Bluetooth® technology, Thorn's High Accuracy Positioning (HAP) system offers a reliable, versatile, highly customisable, fully scalable and cost-effective Real-Time Locating System (RTLS) solution for industrial applications such as manufacturing, logistics and stockholding.



Industry



Logistics



Manufacturing



Warehousing



Retail



HAP BENEFITS

The use of a Real-Time Locating System (RTLS) such as HAP can significantly improve manufacturing processes by providing instantaneous sub-meter accurate reporting about the movement and location of assets, tools, and personnel within an industrial facility.

HAP utilises an open API, allowing businesses to integrate into existing ERP systems and build future-proof reporting applications. HAP enables the management of multiple projects across multiple sites to build a scalable location-based solution.

By integrating an RTLS into manufacturing operations, companies can achieve greater visibility, control, and efficiency, ultimately leading to higher productivity, reduced costs, and improved overall performance. Who wouldn't want that?

ASSET TRACKING

Asset location awareness and utilisation monitoring is made easy with HAP. With its wide coverage and Bluetooth low energy technology, it's suitable for fast-moving objects in challenging environments. HAP can track the location and usage of equipment like forklift trucks, autonomous vehicles and critical tools with sub-meter accuracy, minimising time spent searching for assets, improving asset utilisation and minimising loss.





INVENTORY MANAGEMENT

Real-time visibility of inventory levels and location is possible with HAP. Tags can be attached to products being assembled or in a finished state. As items move through the production process, the system can automatically update inventory records and this streamlined inventory process reduces both stockouts and overstock, in addition to streamlining audits.

WORKFLOW OPTIMISATION

Tracking the movement of materials, products and people through different stages of the production process is made effortless with HAP. Workflows, picking processes and routes, as well as bottlenecks can all be identified, reducing production delays and improving operational efficiency and production scheduling for reduced lead times.

PREDICTIVE MAINTENANCE

In many industrial facilities forklift trucks and autonomous robots are continuously in motion. The HAP system will collect location, time and distance travelled, making performance and wear analysis straightforward. Unplanned downtime can be prevented by predicting maintenance needs and wear-levelling routines can be implemented, reducing maintenance costs and extending the lifetime of machinery. HAP can even help maintenance personnel locate and service equipment quickly. In a large industrial building with no location data this may not be a straightforward process! What's the result? A more efficient maintenance team.

EMPLOYEE SAFETY AND INCIDENT RESPONSE

By employees wearing HAP tags, typically as part of their security and access lanyard, location tracking can be monitored. This can be especially useful in hazardous or restricted areas and to locate personnel in case of an emergency. Worker safety can be enhanced, and management can ensure personnel are compliant with workplace safety regulations. Response times in emergencies can also be improved and accident and injury prevention is possible by analysing commonly used routes and enhancing safety such as barriers along a well-used walkway or eliminating a shortcut if potentially hazardous.

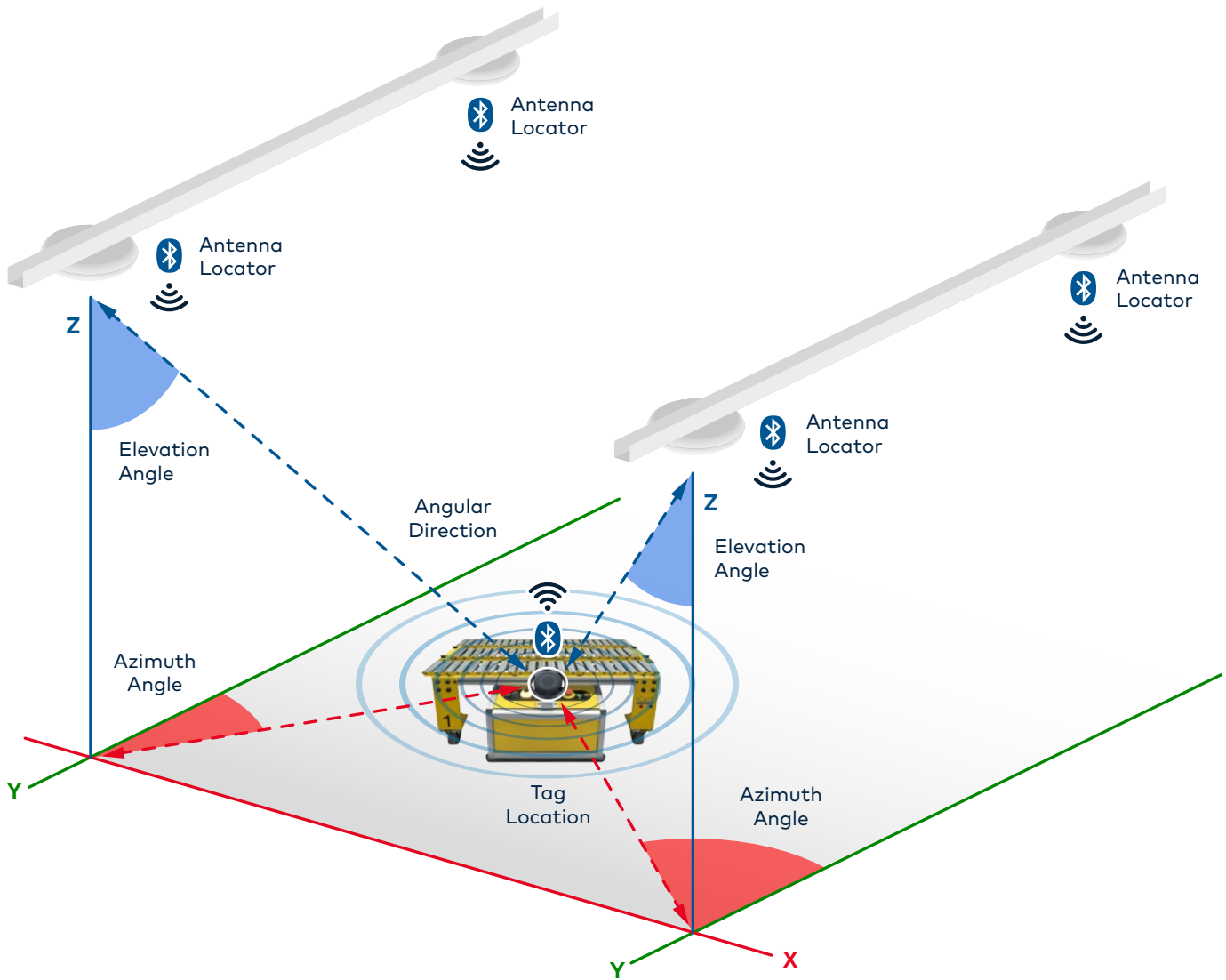
TRACK YOUR INDUSTRIAL PROCESSES IN REAL-TIME



HAP TAGS

HAP tags are small and discreet Bluetooth Low Energy (BLE) wireless devices that are affixed to mobile items such as equipment, automated guided vehicles (AGVs), forklift trucks, or worn by personnel – all with the same objective, to help track or manage their location in real-time. Thanks to excellent power optimisation, each tag embedded with a cell battery will last for up to five years.





ANGLE OF ARRIVAL

The Angle of Arrival (AoA) technology provides real-time tracking of moving objects, making it highly useful in dynamic industrial environments like logistics warehouses and manufacturing plants. AoA uses Bluetooth Low Energy wireless communication to precisely determine the direction from which a signal is received, proving invaluable in applications involving location tracking and navigation across buildings of varying sizes, potentially into the thousands of square metres.

HOW IT WORKS:

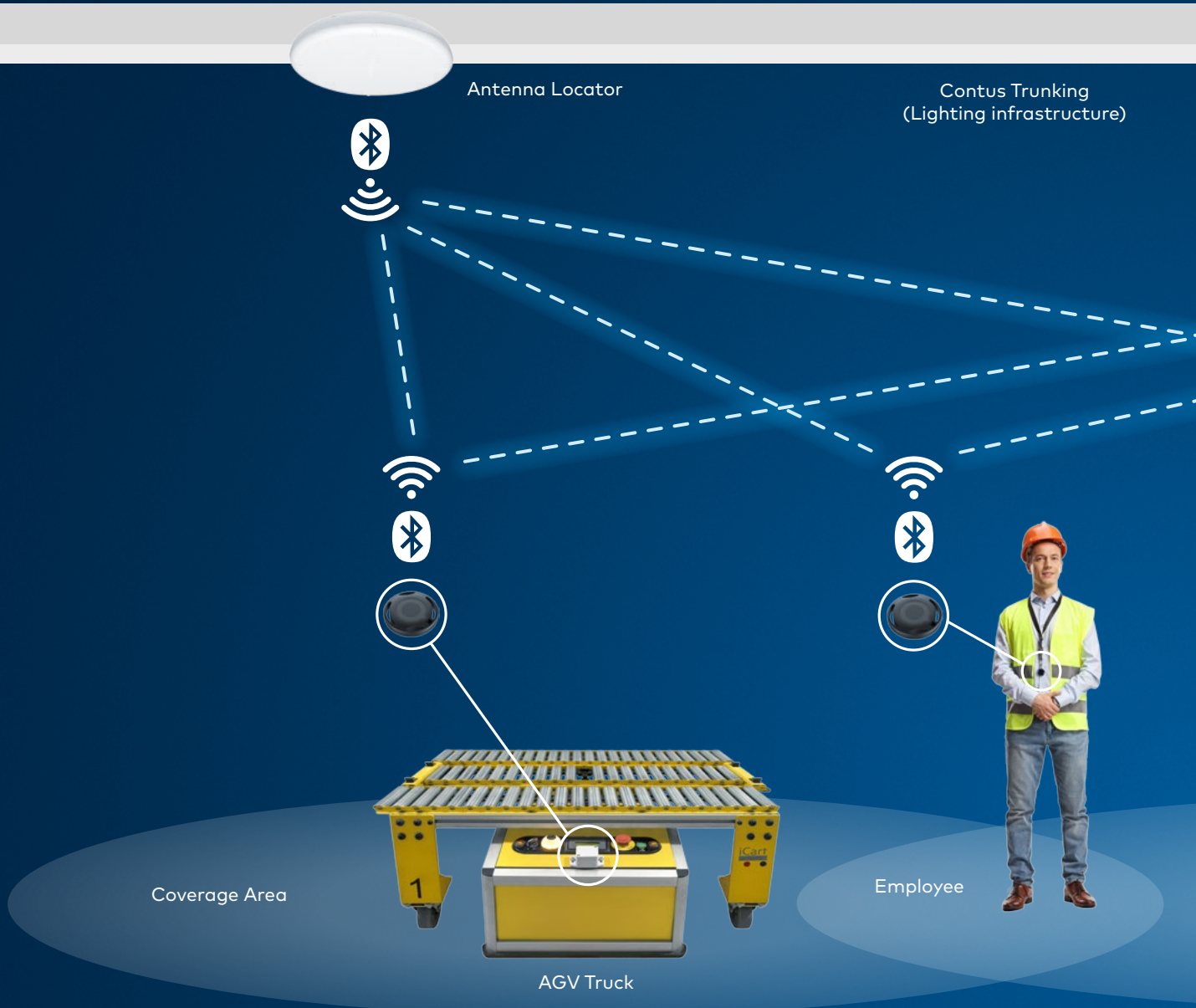
A tag transmits a BLE signal, which is then captured by the antenna locator. The antenna locators, strategically positioned at known distances apart, can accurately measure the phase or time difference of the incoming signal. As the signal reaches different antenna locators at slightly varying times or with different phases due to their spatial separation, the system can effectively measure these differences. The phase or time difference plays a critical role in calculating the angle.

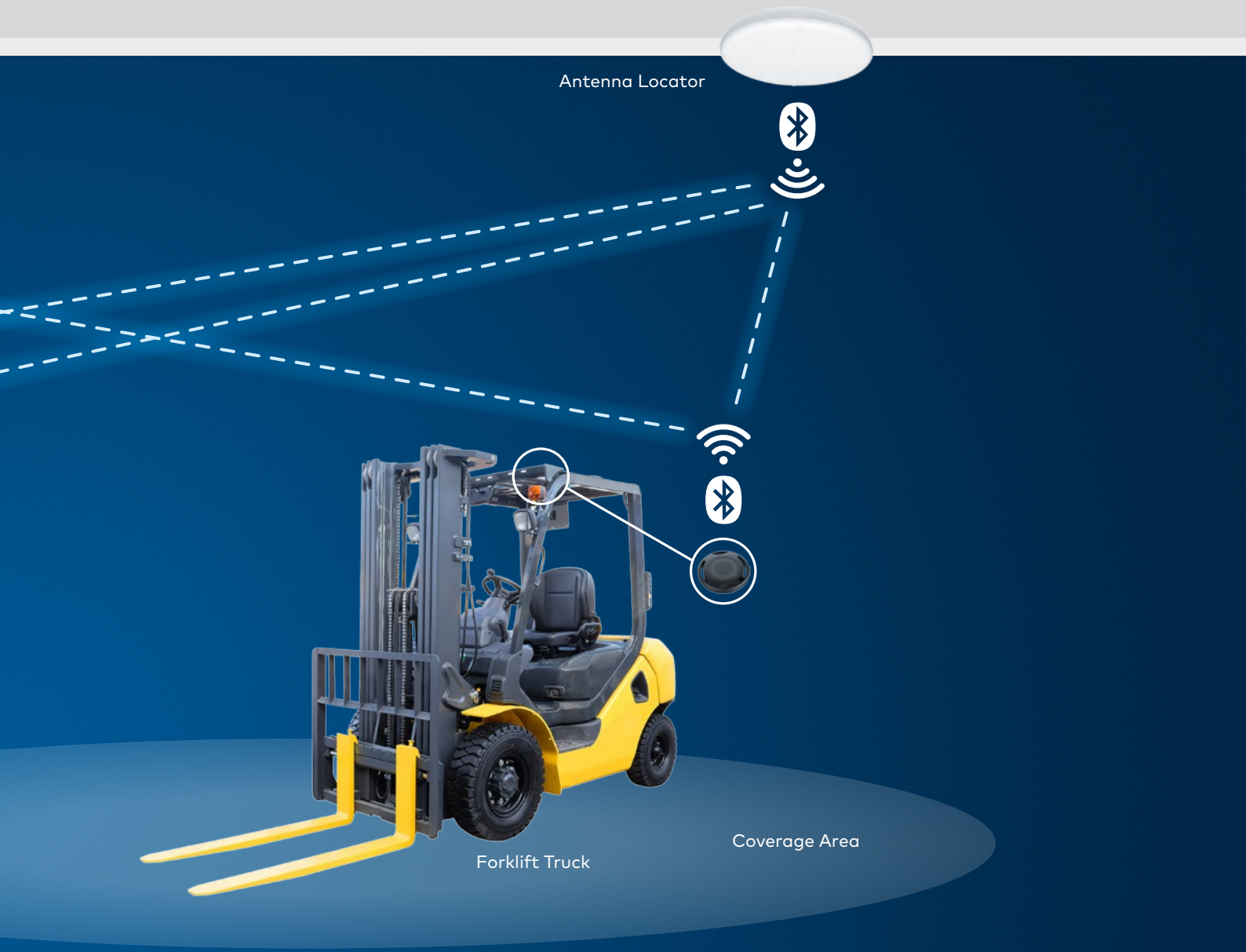
The calculated angle indicates the direction from which the signal is coming relative to the receiver. This directional data can be leveraged to accurately locate the signal source. Therefore, AoA provides precise directional data, enabling exact location tracking within fifty centimetres.

HAP ANTENNA LOCATORS

Thorn offers two sizes of antenna locator. The Q35 with IP66 certification is suitable for indoor and outdoor applications and due to its wide internal antenna array it can overcome the challenges associated with metal intensive environments often found in industry and logistics. It can be used with any HAP tag or sensor and also with the Q17 antenna locator. The IP44-rated Q17 model is suitable for multiple indoor applications including retail. Both antennas are powered via a 48 V Power over Ethernet wire.

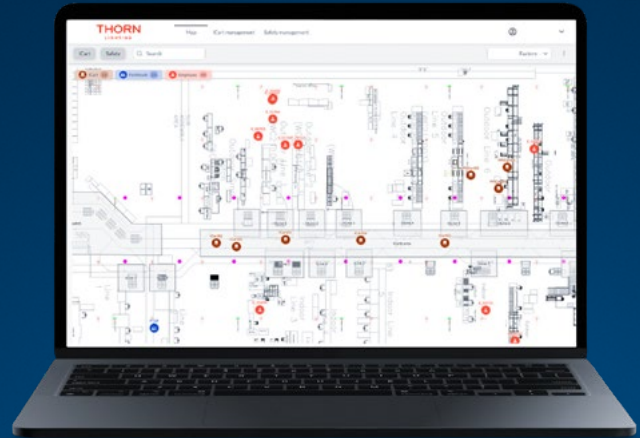
A C-shaped bracket has been designed to conveniently mount HAP antenna locators to Thorn's Contus trunking system. The bracket has undergone various tests to ensure safety and compatibility and to guarantee the functionality of both the luminaire and the antennas without compromising the performance of either. The linear nature of Contus means that an aesthetically pleasing installation can be achieved without untidy looking cabling, as the PoE wire can be easily attached along the top surface of the trunking.





THORN MAKES IT HAP-PEN

THIS YEAR, WE'VE INTRODUCED THE HIGH ACCURACY POSITIONING (HAP) SYSTEM TO OUR MANUFACTURING FACILITY IN SPENNYMOOR. ALREADY WE'RE SEEING AMAZING RESULTS. SO – WHAT DID WE DO TO MAKE IT HAPPEN?



Thorn's main manufacturing plant in Spennymoor, UK encompasses a 40,000 square meter facility. On an average day, we produce several thousand luminaires thanks to our passionate and dedicated team of up to 500 employees. The site is flexible and has the capacity to operate on a 24/7 basis when required, with 37 multi-functional assembly lines, 3 paint plants, as well as numerous other examples of cutting-edge equipment.

Spennymoor's philosophy is to maximise the capability of each production line by increasing its ability to run multiple product families and types. How? This is achieved by developing assembly lines that can switch between different products and specifications with minimal change over times, resulting in an increase in the number of units that can be produced per hour.

In recent years, the Spennymoor plant has invested in automated guided vehicles (AGVs), which transport materials and finished stock around the facility. The AGVs have facilitated a massive reduction in forklift trucks operating on site, improving efficiency and safety.

The most recent upgrade to Spennymoor, however, was the roll-out of our High Accuracy Positioning (HAP) system. This enables real-time location tracking of key production materials, AGVs, forklift trucks, as well as our own production colleagues who all carry individual HAP tags. Thanks to Thorn's Contus track running across the factory ceiling, installation of the HAP antennas above production and assembly areas was both quick and easy.

Within the first three months of installation, preventative maintenance of AGVs was modified, thanks to the superior analytical data provided by the cloud-based HAP dashboard. Safe crossing points for our workforce on the factory floor were also enhanced to add an additional layer of protection, taking into account some 'close proximity of forklift and employee' warnings that the HAP system notified our factory supervisory team of. Finally, we gained some additional efficiencies by being able to find luminaire production materials faster, using the real-time, high accuracy positioning capabilities of HAP to the full. So, next time you're upgrading your manufacturing facility, be sure to incorporate HAP technology to see an improvement in efficiency, production and health & safety.



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**1 YEAR
GUARANTEE**

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