tbm hightech control

DriverAssistanceSystems

DAS

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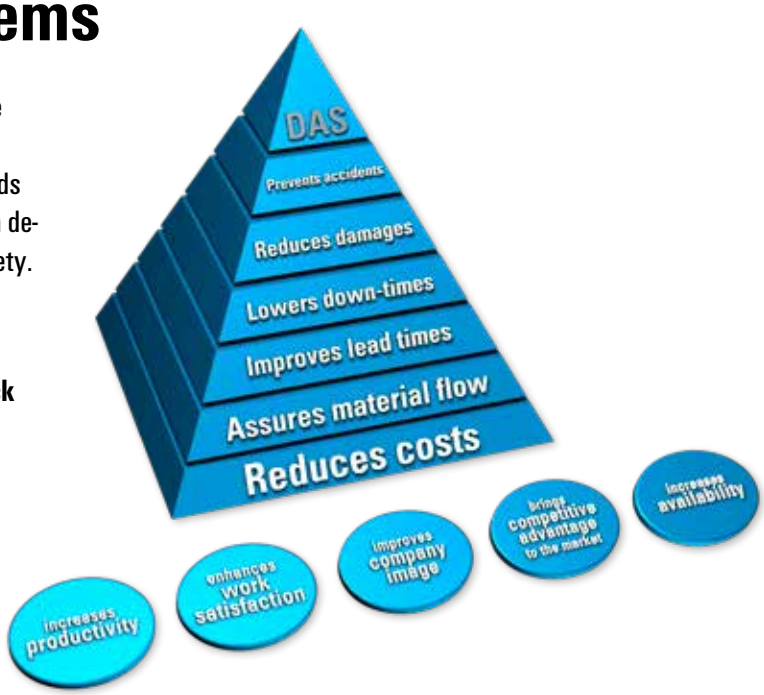
DriverAssistanceSystems

DriverAssistanceSystems are practical helpers that ensure well-functioning logistics. An intelligent sensor technology complements the forklift truck electronics, identifies hazards or hazardous areas and influences the vehicle behaviour in defined situations and areas in the interest of preventive safety.

DriverAssistanceSystems are not safety systems. They increase driving comfort and make daily work easier.

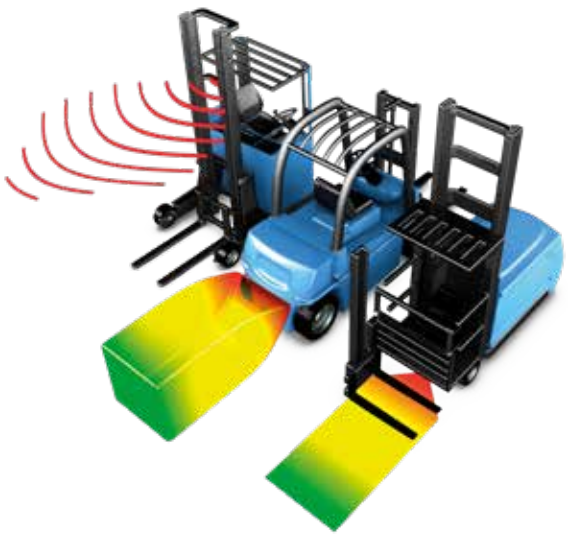
DriverAssistanceSystems provided on the forklift truck support the material flow and enhance work safety.



OUR SOLUTIONS...

- can be used independently of the vehicle manufacturer
- are used in almost all industries and by almost all renowned companies
- are recognised and practical auxiliary features for almost all forklift trucks
- improve throughput times and increase safety
- reduce maintenance costs
- are used by major vehicle manufacturers

Each individual system is specialised for specific hazards and typical situations.



Safety

Our DriverAssistanceSystems support the driver and react independently of the driver without taking the responsibility away from him. They accompany the driver like a co-pilot to achieve a 4-eyes principle.

Efficiency and effectiveness

Our DriverAssistanceSystems are efficient and effective. They effectively prevent typical hazards and damage. This reduces operating and maintenance costs and increases productivity.

Process optimisation

Our DriverAssistanceSystems ensure process-reliable logistics. Throughput time is enhanced by automatic speed reduction in dangerous situations. They have an influence on the productivity and the success of a company.

Logistics performance

Our DriverAssistanceSystems prevent interruptions of operation and increase the operational readiness of the vehicles.

Innovations in work safety

Benefits of the tbm DriverAssistanceSystems

Quality and reliability

We achieve high quality and reliability through in-house development, manufacture and competent service. A strong focus on and consistent implementation of quality management systems ensure the high standard.

Periodic inspections of our manufacturing facilities by the TÜV SÜD verify and improve the manufacturing quality of our DriverAssistanceSystems on a continuous basis.

Plug & Play solutions

The tbm DriverAssistanceSystems are equipped with a universal interface which permits easy and quick retrofitting of old devices or new vehicles also ex factory.

Awarded solutions

The tbm DriverAssistanceSystems have received multiple prizes and awards from an independent technical jury.

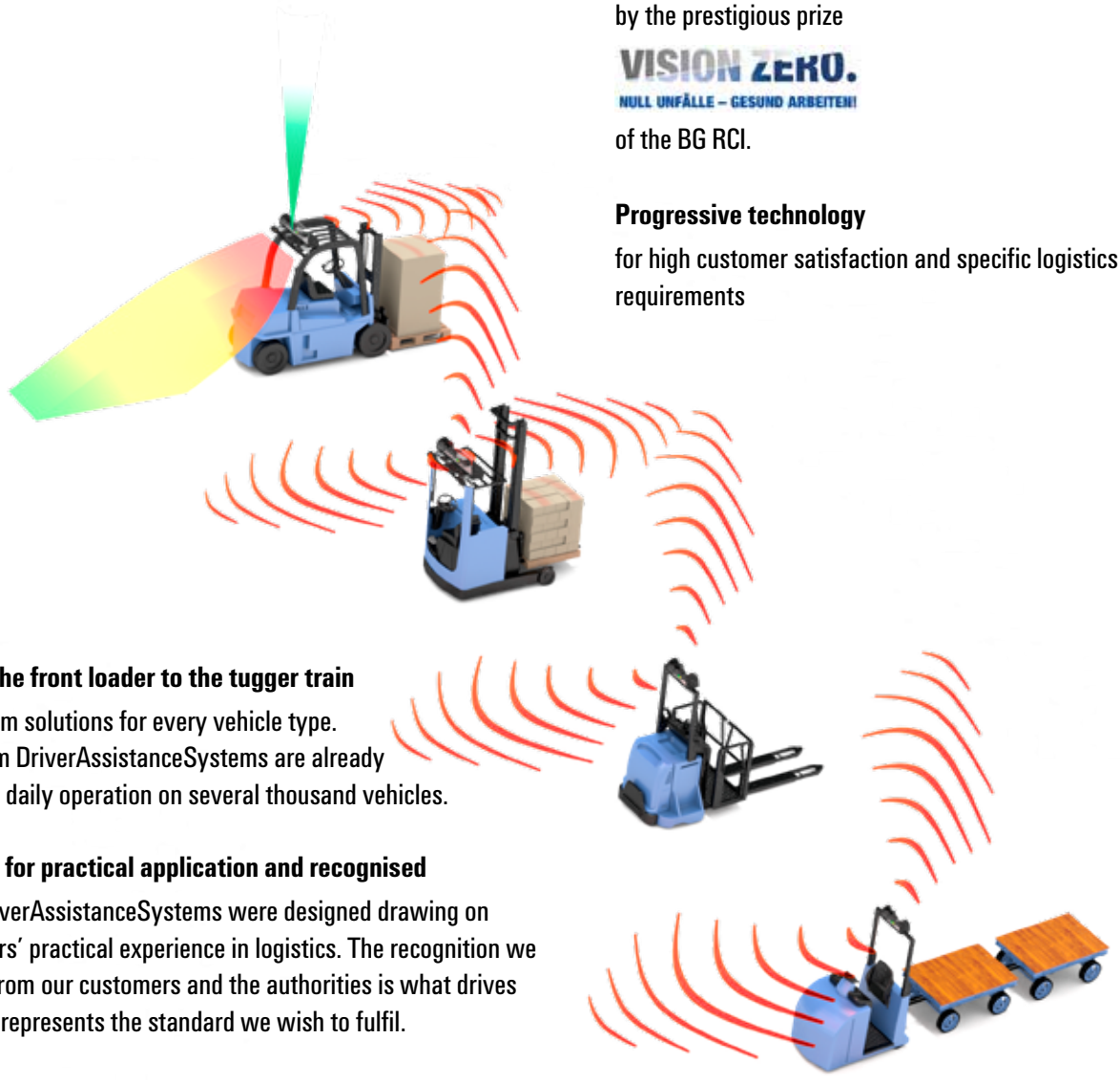
The solutions have also been honoured by the prestigious prize

VISION ZERO.
NULL UNFÄLLE – GESUND ARBEITEN!

of the BG RCI.

Progressive technology

for high customer satisfaction and specific logistics requirements



From the front loader to the tugger train

Optimum solutions for every vehicle type.
The tbm DriverAssistanceSystems are already used in daily operation on several thousand vehicles.

Suited for practical application and recognised

Our DriverAssistanceSystems were designed drawing on 30 years' practical experience in logistics. The recognition we enjoy from our customers and the authorities is what drives us and represents the standard we wish to fulfil.

NoColl Collision Protection

The NoColl Collision Protection System is a multifunctional DriverAssistanceSystem that influences the vehicle behaviour on traffic routes, in wide aisles, passageways and at intersections.

The special NoColl sensors mounted on forklift trucks and at traffic routes communicate with each other and supply the vehicle electronics with additional intelligence. As a result, vehicles are automatically

- decelerated when approaching hazard points
- decelerated in specific areas
- stopped at specific points or limited in lifting height

Technology

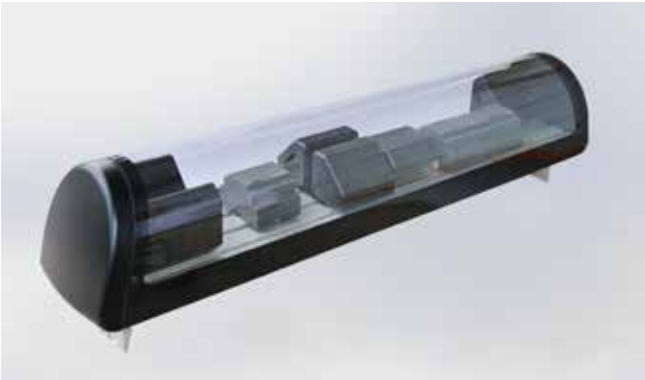
Based on encoded infrared technology, bidirectional communication controls the vehicles at local hazard points and on traffic routes at light speed. The NoColl sensors are transmitters and receivers at the same time triggering a defined function on the vehicle depending on the hazard area.

The NoColl sensors mounted on the vehicle communicate with the vehicle itself and with other vehicles via an interface adapted to the vehicle manufacturers' requirements. This provides the vehicle and the NoColl sensors with additional intelligence. As a result, vehicle functions are initiated depending on the driving direction, the lifting height or also the speed.

Special features

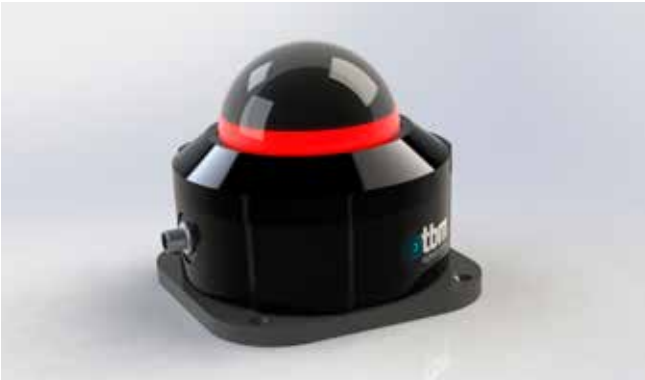
- The NoColl sensors trigger different functions at different hazard points and positions thus ensuring an intelligent and safe traffic flow.
- The NoColl sensors provided on traffic routes and on vehicles achieve optimal throughput times while ensuring safety at the same time.
- They are able to detect the hazard zone in the spoiler or as NoColl dome more accurately and faster than any driver and will respond independently. Vehicle performance is thus maintained at an optimal level.

Vehicle equipment



NoColl Spoiler for complex tasks

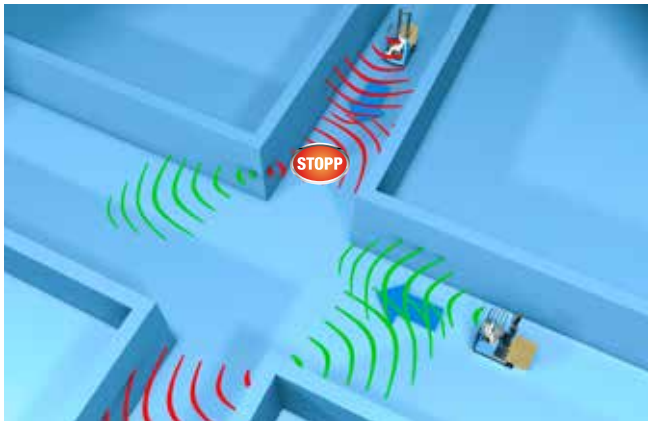
- Easy and fast plug & play installation
- Integrated software-controlled NoColl control logic
- Can be configured to the requirements of the customer and the conditions of the specific area
- Versatile equipment packages



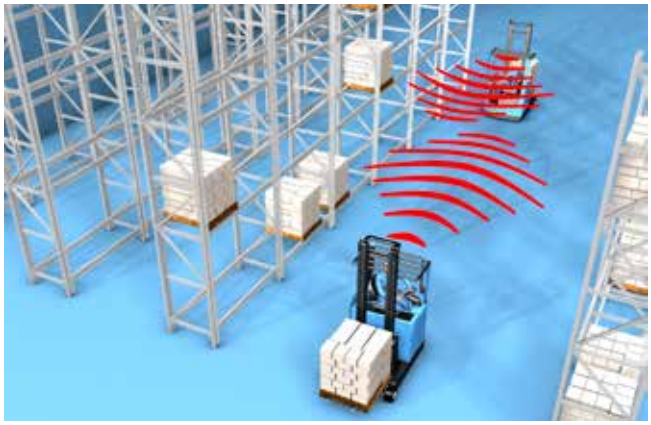
NoColl Dome for easy tasks

- Intelligent NoColl sensor with integrated control logic
- Memory function for route, area and/or InDoor-OutDoor wiring
- Self-monitored with status display
- Compact design
- Triggering of stationary active warnings

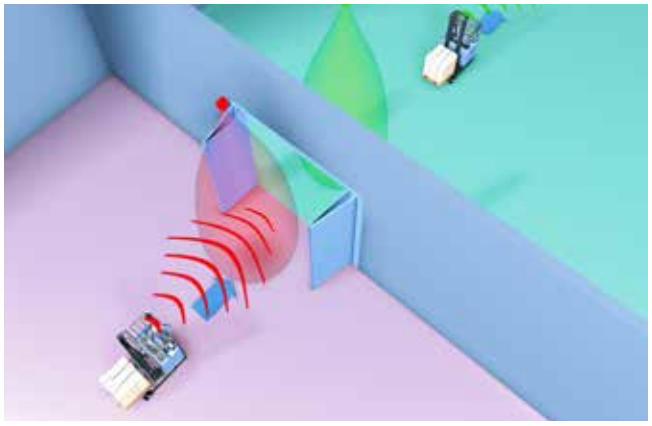
Examples of use of NoColl



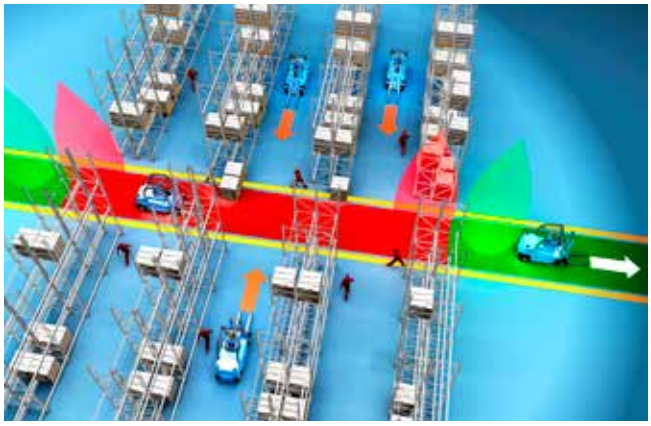
Speed reduction at intersections
Safe and collision-free traffic control



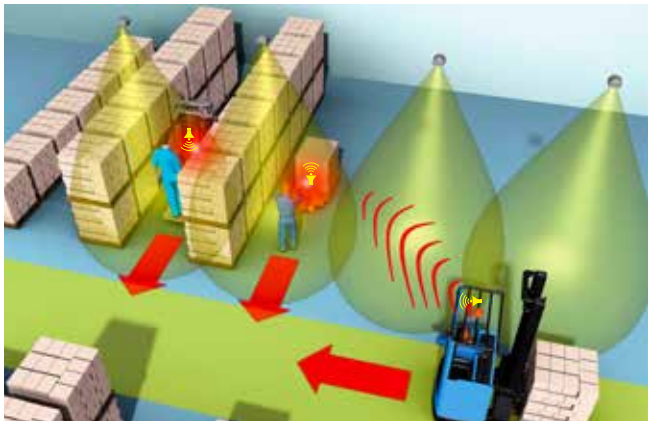
Automatic speed reduction for traffic encounters in wide aisles
Permits 25% more warehouse capacity



Reliable speed switching in passageways and at gates
Optimum vehicle performance in any area



Speed limits on certain traffic routes
Safe and effective traffic flow

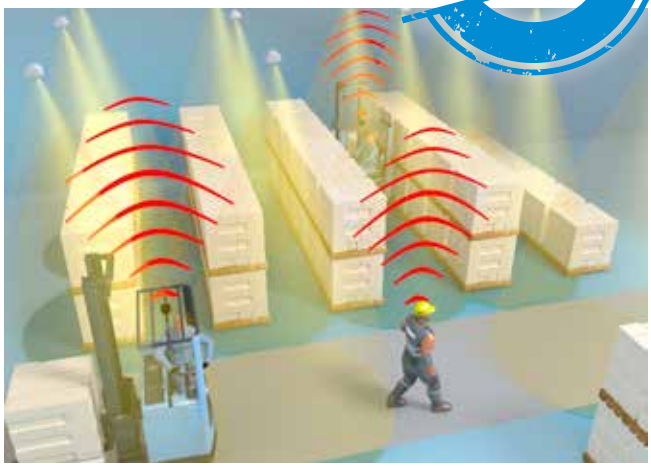


Active warning at workplaces along traffic routes
Safe workplaces at traffic routes

Lifting height control at gates and passageways
Reduced maintenance costs

IntraSafety Logistics Management

IntraSafety connects the internal traffic routes of the company, turning individual hazard points into safe logistics areas. IntraSafety makes internal logistics intelligent, transparent and real-time controllable. IntraSafety is the logistical further development of the tried-and-tested NoColl technology.



Network-capable matrix sensors

- Register and locate vehicles and their positions
- Control vehicle speeds
- Improve the material flow
- Optimise the logistics process

IntraSafety is the intelligent logistics management system for a forward-looking Industry 4.0.
Self-monitored – Bus controlled – with functional real-time vehicle control.

Technology

Encoded IR technology ensures super-fast, bidirectional data exchange among special IntraSafety sensors placed at hazard points, on traffic routes and on vehicles. The connected and position-defined IS sensors deliver accurate data to a central MatrixController. This MatrixController has the capability of controlling each individual IS sensor to trigger a defined vehicle function.

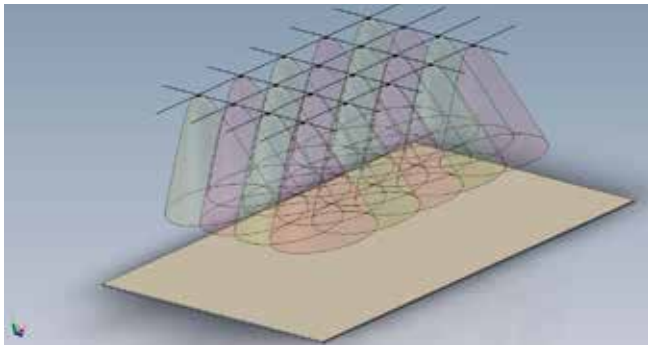
The special IS sensors are self-monitored and, should any of the sensors fail, will indicate this and automatically initiate safety functions of the neighbouring IS sensors.

Special features

- IntraSafety sensors secure individual hazard points **and** make the logistics process more flexible and transparent
- IntraSafety sensors control vehicle speeds depending on the area and position **and** register vehicle movements
- IntraSafety sensors locate vehicles **and** know where which vehicle is
- IntraSafety sensors are interconnected **and** optimise the logistics process

INTRASAFETY

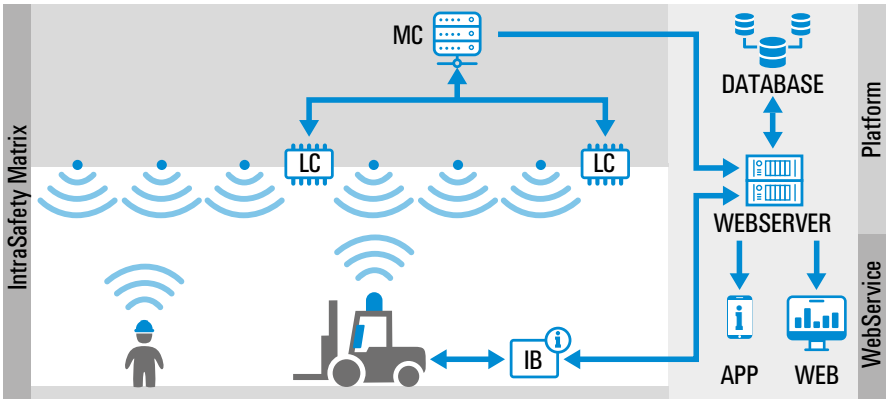
- is the successful result of a 2-year research project funded by the BMBF (German Federal Ministry for Education and Research)
- is the manufacturer-independent information and communication system (ICT) for increasing the safety and efficiency of industrial trucks
- can be adapted to customer-specific requirements by the tbm software



IntraSafety data management

The network of IntraSafety sensors (combined in one or more line centres) ends at a Matrix centre that evaluates the data and influences the vehicle movements in real time. The Matrix centre detects acute hazardous situations and initiates the corresponding vehicle functions.

All results are stored on an IntraSafety platform and can be retrieved by app via the IntraSafety web server and be evaluated for process optimisation.

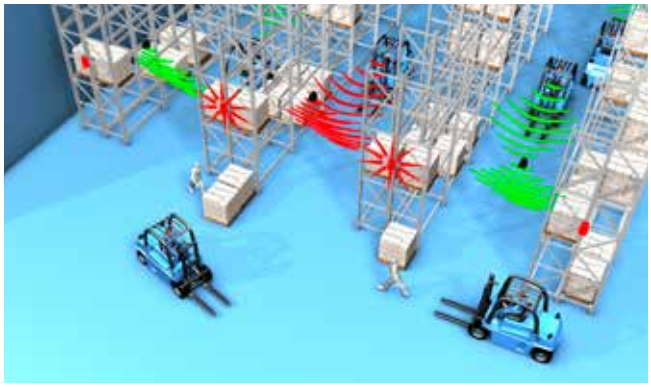


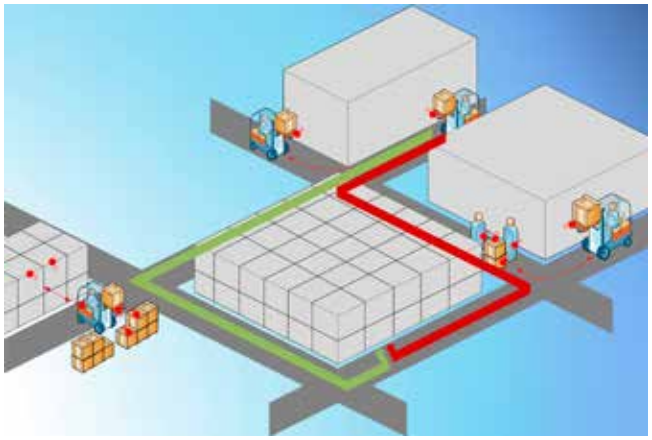
A special InfoBox on the vehicle gathers additional events and also transmits these via WLAN directly to the IntraSafety platform for corresponding evaluations.

Interactive hazard and logistics management

Work safety and transport route optimisation on traffic routes and at hazard points

- **Speed reduction**
  at local hazard points and defined traffic routes
- **Lift restriction**
  in passageways
- **Collision protection**
  for encounters in wide aisles





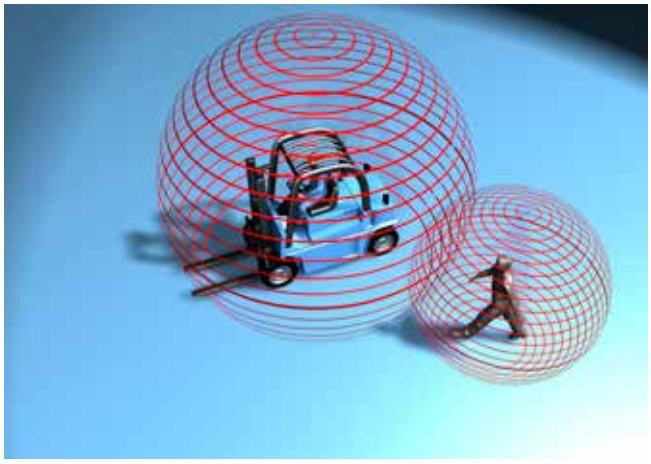
Transparent and optimised logistics

- **Process optimisation** by recording movement profiles
- **Route optimisation** through evaluation of the history RAM
- **Active logistics control** in real time by vehicle identification and superfast feedback
- **Event-controlled logistics** through permanent data collection and WLAN data transmission
- **Logistics management via app** using the IntraSafety web server and the SAP interface for the purposes of material flow management

All-round protection RFID-AURA-207

The RFID-AURA-207 detects pedestrians in the vicinity of the forklift truck if these carry a small active RFID transponder. It warns the driver optically and/or acoustically so that the driver knows: “Caution – Pedestrian in my vicinity in danger”.

This allows him to respond in time, or the vehicle is decelerated automatically.



The RFID-AURA-207 is the perfect 360° all-round protection for forklift trucks.

Technology and function

The RFID-AURA-207 is a radio system that has been tried and tested in the industry. Within the area of the aura, the RFID-AURA transponder sends its transponder ID to the aura electronics which will then warn the driver or directly influence the vehicle.

Pedestrian transponder

Driver transponder

Card transponder

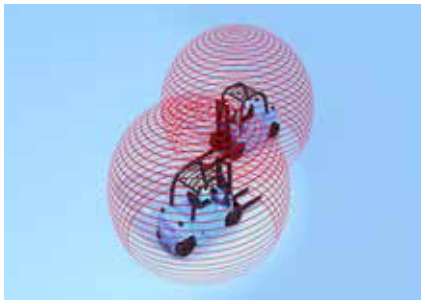
Special features

The RFID-AURA transponder is battery-operated and has a service life of more than a year before the battery needs to be replaced.

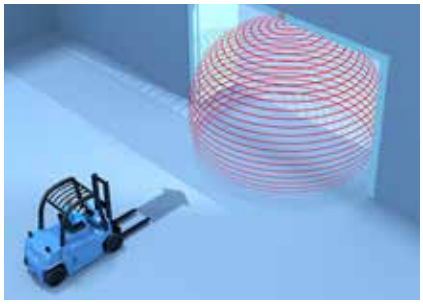
Pedestrians and drivers are equipped with different transponders. The driver transponder can be set to ‘inactive’ by pressing a key for the travel with the forklift truck. It is activated automatically when the driver leaves ‘his’ aura.

At periodic intervals, the RFID-AURA-207 automatically adapts to the present environmental influences.

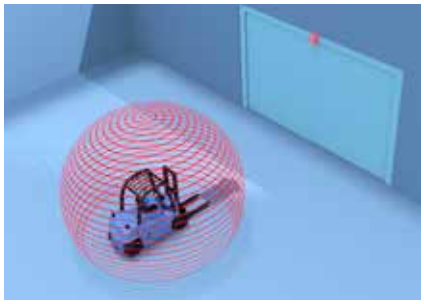
Special applications of the RFID-AURA-207



Collision protection



Passageways



InDoor-/OutDoor switching

Rear area monitoring RAM-107

The rear area monitoring RAM-107 protects pedestrians and warehouse equipment during reverse manoeuvring of a forklift truck. The integrated CCD reverse travel camera additionally provides the driver with unobstructed view into the reverse travel area.

Three freely configurable detection zones safely and reliably monitor the reverse travel.

The rear area monitoring RAM-107 prevents the most frequently occurring accident hazard.

Technology

State-of-the art and robust 3D sensor technology records an object using a patented time-of-flight procedure (time-of-flight measurement) with image evaluation of 1,024 pixels per second. The responsive and high-contrast technology detects objects of 30 x 30 x 30 cm already at a distance of 5 m.

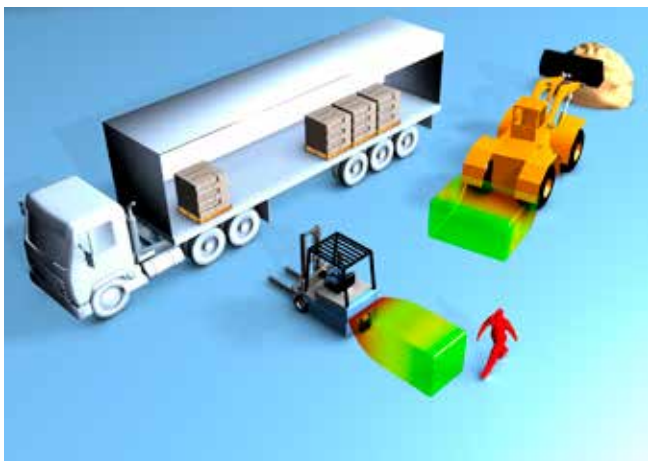
A 5“ monitor installed in the driver‘s cab serves as optical, acoustic display and reverse travel monitor at the same time.

The acoustic distance warning to the driver is implemented by an increasingly faster sound signal.

Special features

- Speed-dependent monitoring zones ensure smooth travel in narrow areas
- An integrated CCD camera provides the driver with an unobstructed view into the reverse travel area
- The precise distance measurement permits a constantly increasing acoustic distance indication.
- High-level safety features such as e.g. self-monitoring and window monitoring exceed the normal requirements for DriverAssistanceSystems
- The rear area monitoring will also detect steep drops preventing falls during reverse travel

Rear area warning device RRW-107



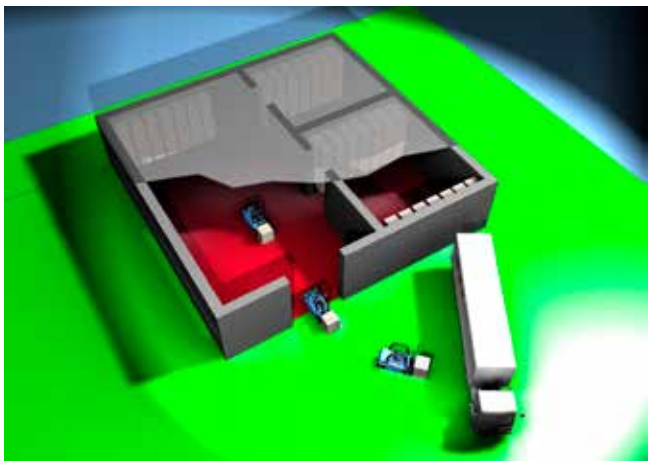
The rear area warning device RRW-107plus is based on 15 years of tried-and-tested ultrasound technology and is still used today for especially wide vehicles (wheel loaders) or for vehicles that do not fulfil the requirements of the modern rear area monitoring RAM-107.

Today, the rear area warning device RRW-107 is being replaced by the rear area monitoring RAM-107, which impresses with accurate recording, fast response times, high comfort, state-of-the-art technology and speed-dependent monitoring.

NoColl Dome as InDoor-/OutDoor Sensor

The NoColl Dome switches the InDoor-/OutDoor speed unambiguously and reliably when driving into and out of a building. It switches the speed at defined points specified by the company. As a result, it is not subject to any weather influences, skylights, etc. and counts among the fault-free sensors.

The NoColl Dome as InDoor-/OutDoor sensor is the optimum solution for speed switching.



Technology

The NoColl Dome is based on the tried-and-tested and intelligent NoColl technology. Thanks to a special memory function, it is a fault-free InDoor-/OutDoor sensor.

When driving through a NoColl sensor at a gate passage, the NoColl Dome switches the speed limitation permanently "On". Upon the next encounter with a NoColl sensor at the entry/exit, the speed limitation will be switched back to "Off". Accurate, safe and reliable.

Special features

The NoColl-Dome is wired as InDoor-/OutDoor sensor directly at the entry/exit.

In the OutDoor area, it is thus not subject to any interference due to weather or vehicles.

In the InDoor area, it is not subject to influences of skylights, roof slopes or the like. The InDoor-/OutDoor NoColl Dome is independent of ceiling heights.

Alternative tbm ceiling sensors

InDoor-/OutDoor sensor IOG-107Ro

- Ceiling detection by radar technology
- Not manipulation-proof
- No sensors at the gate

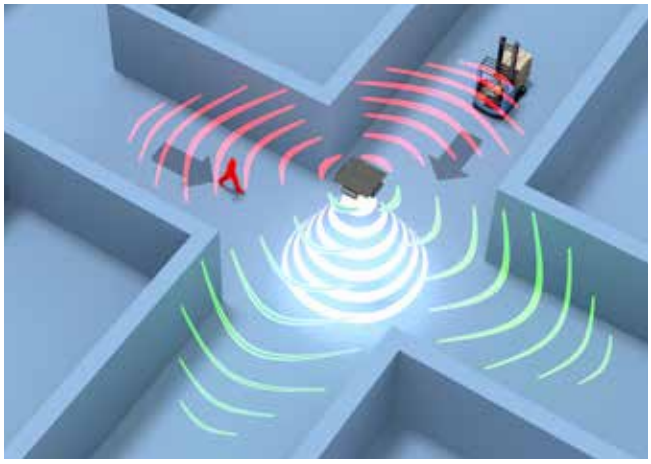
InDoor-/OutDoor sensor IOG-207V3

- Ceiling detection by encoded IR technology
- Manipulation-proof
- No sensors at the gate

Hazardous Situation Indicator GSA-107

The Hazardous Situation Indicator GSA-107 is a stationary device that actively warns pedestrians and vehicles of situation-specific hazards at intersections, passageways and narrow points. Depending on the hazard situation, the hazardous area is illuminated by a strong, brightly lit power LED spot. Clearly distinguishable flashing signs make the hazard visible and prevent it before it occurs.

The Hazardous Situation Indicator GSA-107 is the effective active warning for pedestrians and vehicles. Situation-specific, noticeable and without the need for equipping vehicles or pedestrians with sensors.



Technology

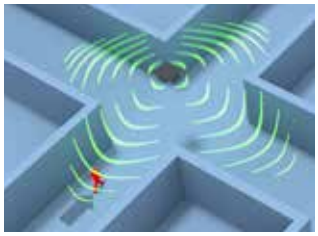
Controlled by sensors, the Hazardous Situation Indicator can distinguish between pedestrians and vehicles and detects the direction of travel or movement. Based on this, the GSA-107 generates clearly distinguishable warning signals for pedestrians and vehicles by a very special power LED spot. The hazard point is illuminated brightly and noticeably by an approx. 1 m^2 large blue spot on the floor, which corresponds to approx. 4-5 conventional blue spots. Different active warnings indicate the respective hazard level.

Optionally, the Hazardous Situation Indicator can be extended by additional NoColl sensors to decelerate the vehicles in the specific situation if a hazard is present.

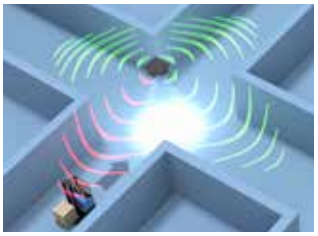
Special features

The Hazardous Situation Indicator GSA107 is the active alternative to passive all-round mirrors. The Hazardous Situation Indicator is the perfect active warning at local hazard points. Absolutely effective thanks to situation-dependent hazard indicator.

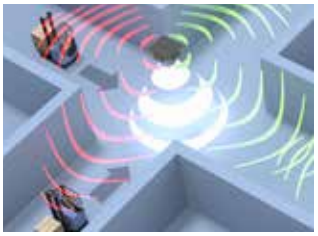
4 hazard situations – 4 warnings



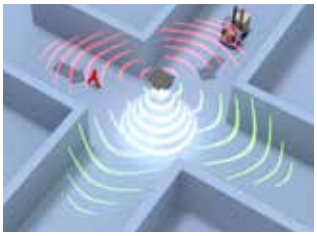
One or more people:
No warning



One vehicle:
LED spot is permanently lit



Multiple vehicles:
LED spot flashes slowly



Vehicle and person:
LED spot flashes quickly

tbm awards

for Rear Area Monitoring RAM-107

for NoColl Collision Protection

for IntraSafety Logistics Management

for fulfilling a vision

for the tbm product range

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