

THE
INNOVATIVE PROTECTIVE SHIELD

RADIO-BASED ASSISTANCE SYSTEM FOR PEDESTRIAN WARNING
AND COLLISION AVOIDANCE

- + Reliable detection of pedestrians in the danger zone of vehicles
- + Reliable warning of collisions between vehicles
- + Freely configurable protection in areas with restricted visibility
- + Manufacturer-independent and ideal for mixed fleets
- + Compatible with all kinds of industrial vehicles



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HAZARDOUS SITUATIONS IN THE WAREHOUSE

AREAS WITH RESTRICTED VISIBILITY

Tight corners, busy intersections and also entrance and exit points are particular sources of danger, since this is where pedestrians and vehicles come together. These areas require targeted monitoring in order to prevent collisions.

HIGH VOLUMES OF TRAFFIC

There is a serious risk of collisions in areas with high volumes of traffic. This is particularly acute when two vehicles approach each other as their relative speed needs to be taken into account. Taking additional protective measures increases operational safety.

SPEEDING

The faster a vehicle is travelling, the greater the risk of an accident. Drivers tend to feel overconfident on routes that they travel every day so in these scenarios speed regulations improve safety.

INFRASTRUCTURE

Collisions with racking, other industrial vehicles or equipment can be costly for warehouse operators. Safety and assistance systems can be a back up for the driver when vehicles are reversing or picking up loads.

Preventive accident protection for pedestrians, vehicles and AGVs in the warehouse

Productivity is an important factor in the warehouse. In order to achieve high turnover and short throughput times for goods, fast and stable logistical processes are required. The risk of accidents is always particularly high when pedestrians and (autonomous) industrial vehicles are working in the same area at the same time. Special care must therefore be taken to protect them.

A distinction is generally made between active and passive personal protection. Whereas passive systems mainly include structural measures such as crash barriers, fences and walls, active electronic assistance systems prevent potential dangers, warn the people concerned and automatically intervene in the processes.

In order to achieve maximum possible safety, it is essential for the assistance systems to be able to perceive both pedestrians and other vehicles. Since production and intralogistics are becoming increasingly digital and a great deal of data is generated, the technology must be tolerant of interference signals. The systems must also not be influenced by visual obstacles so that they can register dangers in areas that are not visible.

With ELOshield, ELOKON has developed a mobile, radio-based assistant system for warning pedestrians and avoiding collisions which fulfils all of these requirements.

For protecting pedestrians and increasing safety in the warehouse

when using industrial vehicles

Passive systems

Passive safety systems include structural measures and visual warning markings which serve to prevent damage in general.

Active systems

Active electronic security systems such as ELOshield preventively recognise dangers and intervene automatically.

Radio-based warning system

360 degree protection with flexible zones



Alarm

Visual, acoustic and vibration signal if the safety zones are violated



WARNING ZONE

Speed reduction (e.g. 6 km/h)



PROTECTION ZONE

Speed reduction (e.g. 2.5 km/h)



ELOshield is a mobile, radio-based assistance system. Thanks to its modular structure, it provides comprehensive hazard prevention: from warning pedestrians and avoiding collisions to protecting dangerous areas and controlling speed. This innovative protective shield uses ultra-wideband technology (UWB), which allows signals to be transmitted across barriers, through a building's infrastructure and other objects, ruling out the occurrence of blind spots.

ELOshield allows two different zones to be freely configured: a warning zone and a protection zone. If the zones are breached, the system triggers various events (e.g. an acoustic alarm signal or an automatic speed reduction). Its vehicle modules, which can be installed on industrial trucks, automatic guided vehicles and cobots, regardless of the manufacturer, detect pedestrians at a distance of 15 metres and vehicles at a distance of up to 25 metres.

The assistance system only provides support within the respective system limits. On exiting the danger zone, the speed restriction is automatically cancelled again. The operation of manual vehicles lies with the driver at all times. ELOshield therefore makes a significant contribution to increasing operational safety.

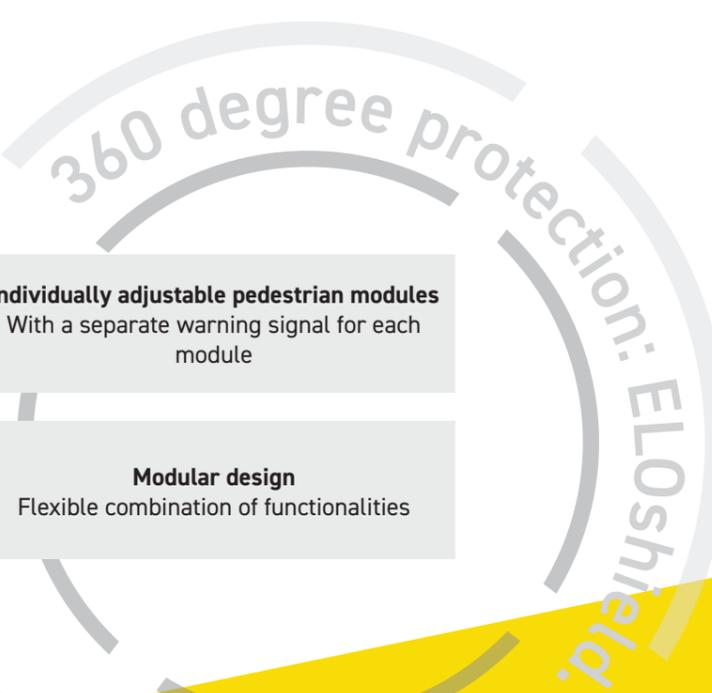
How does ELOshield help?

The right module for every requirement

ELOshield			
GO	DRIVE	ZONE	SPEED
Personal protection Prevents accidents involving pedestrians	Collision protection Prevents collisions between vehicles	Environment warning Stationary monitoring of predefined danger zones	Speed control Automatic speed restriction in predefined zones

The advantages of ELOshield

- Different warning signals**
For each danger zone, freely configurable
- Individually adjustable pedestrian modules**
With a separate warning signal for each module
- Modular design**
Flexible combination of functionalities
- Modular design**
Flexible combination of functionalities



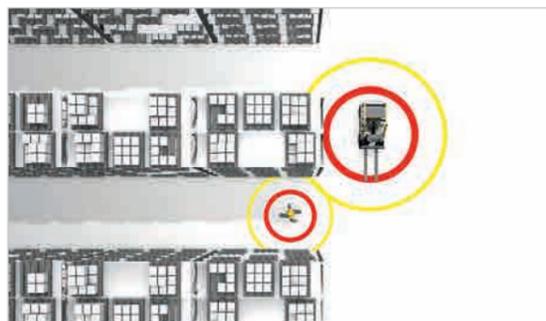
One Solution – Endless Possibilities

THE INNOVATIVE PROTECTIVE SHIELD IN DETAIL

1 ELOshieldGO Personnel detection – truck to pedestrians

It is not possible to completely separate pedestrian personnel and vehicles in the warehouse environment. ELOshield offers radio-based personnel protection to enable humans and machines to work safely in close proximity.

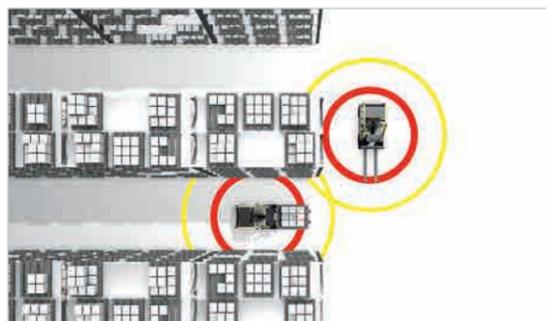
The system helps prevent collisions by issuing a warning signal and slowing down the truck as soon as an employee enters the hazardous zone.



2 ELOshieldDRIVE Collision warning – truck to truck

ELOshield provides reliable anti-collision protection between trucks. Vehicles are equipped with an additional detection module, individually programmed to ensure that the truck's detection range is tailored for its local operating zones.

If trucks are detected in the configurable zones, ELOshield automatically triggers a warning signal or optionally limits the vehicle speed.



ELOshield

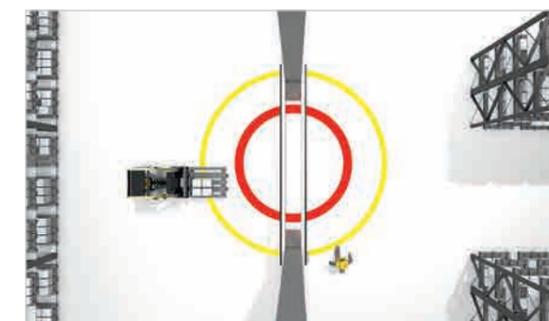
Proximity Detection System

3 ELOshieldZONE Monitoring aisle crossings and vulnerable areas

ELOshield regulates truck traffic in a similar way to traffic lights. Fixed position modules monitor hazardous areas such as aisle intersections and building entrances.

If a truck approaches, ELOshield can trigger a warning signal or – on request – driving speed can be automatically limited.

Thanks to individually adjustable ranges, it is possible for two trucks to enter an intersection at the same time or to restrict the entrance for certain gates.

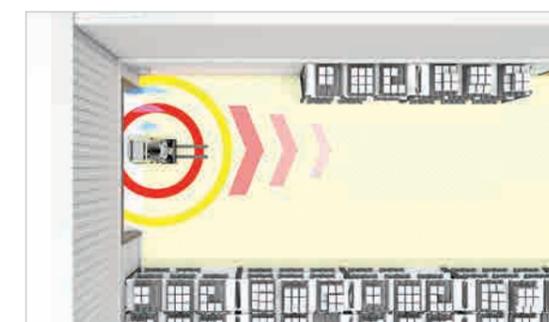


4 ELOshieldSPEED Automatic speed adjustment in high-risk, large areas

Where the risk in warehouses or production is particularly high, for example because mobile robots, AVGs and humans work in close proximity, individual zones can be defined in this version of ELOshield.

Trucks entering the zone are automatically braked to the stipulated speed. Once the truck leaves the defined area, the original speed is automatically resumed.

Special zones, such as picking areas in warehouse or the entire warehouse, can be defined as hazardous areas.



ELOshield special functions

Flexibly tailored to your needs

In the stationary variant, ELOshieldZONE has a number of additional functions which make danger zones even safer, and also ensure that you have maximum productivity at the same time.

Would you like to protect individual areas or passageways separately because not all employees or visitors who are present there are wearing pedestrian modules?

This isn't a problem with ELOshield CROSSWALK. Its stationary unit has a motion detector and an antenna which receives signals from approaching forklifts. Pedestrians are informed about the hazardous situation by a traffic light. The vehicle speed can also be reduced in these areas depending on the situation. Examples of application areas are aisles in production or transit areas between different departments.

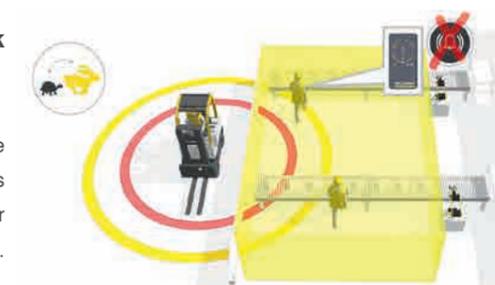


Would you like to be able to ensure that only vehicles intended for this purpose operate in sensitive areas?

You can equip your gateways with ELOshield ACCESS. This module is used for reliable access control, and will only open the gates when an authorized vehicle approaches. This is useful in areas in which pedestrians are present and only a certain group of vehicles is allowed to enter, for example. You can significantly increase productivity in your warehouse with automatic control.

Do you want to avoid unnecessary warnings in break rooms, offices and adjoining safe work areas?

With ELOshield SAFE ZONE, you can use a stationary module to configure certain areas as a safe zone in which vehicles do not detect the pedestrians present there as a danger. If employees are present in the areas, their pedestrian modules automatically detect this and are ignored by the vehicles.



ELOspeed

Indoor/Outdoor Speed Control

The transition between the indoor and outdoor areas of logistics centres and production facilities is usually a safety-critical zone. Outside, the drivers can quickly accelerate their forklifts to the top speed. When they return indoors, they should slow down in good time to safely transport their load to its destination and protect the employees in the working environment. The radar-based ELOspeed system supports this by automatically reducing the speed of the vehicles or enabling the maximum speed once again.

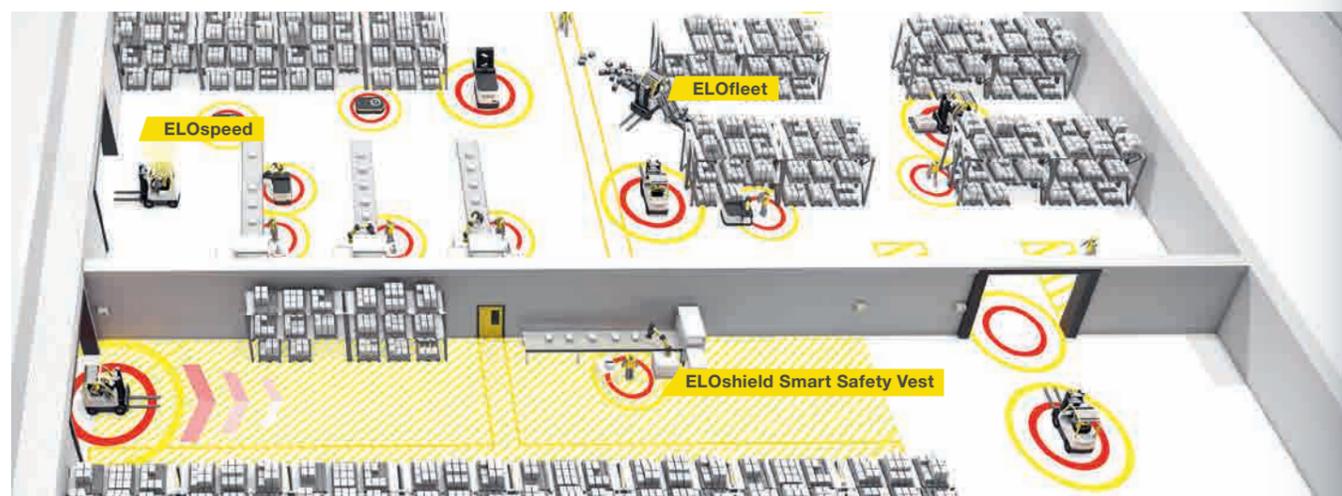
[+ elospeed.elokon.com](http://elospeed.elokon.com)

ELOfleet

Fleet Management

ELOfleet is ELOKON's innovative fleet management system for mixed fleets. The system is used for access control using an NFC card, recording any impact damage and evaluating vehicle and fleet performance data. ELOfleet simply and cost effectively increases operational forklift safety, and the productivity of your vehicle fleet is efficiently improved.

[+ elofleet.elokon.com](http://elofleet.elokon.com)



INTELLIGENT SAFETY CLOTHING

Warehouse employees often cover many kilometres on foot every day. Since they work in close proximity with industrial trucks in a confined space, they must be given protection against accidents. In order to give them sufficient freedom of movement for their daily tasks, they need intelligent safety clothing such as the innovative ELOshield Smart Safety Vest. The smart vest ensures that pedestrians are recognized by the ELOshield mobile assistance system. As soon as an employee enters the danger zone of a vehicle, a visual, acoustic and haptic signal is issued. The ISO-certified vest has high quality workmanship and is very comfortable to wear. The vest acts as a replacement for the ELOshield pedestrian module.

Future-proof intralogistics

Intralogistics is subject to constant change. Short delivery times and high customer demands increase the turnover frequencies. Technical solutions are essential for providing occupational safety.



INCREASED RISK OF ACCIDENTS DUE TO INCREASING AMOUNT OF FORKLIFT TRAFFIC

"E-commerce is booming in many industries and is replacing bricks-and-mortar retail. More and more products are being ordered online these days. In order to keep up with the rapidly expanding order volume, many goods are being stored as piece goods for faster access. This requires a large number of interactions between people and industrial trucks. However, additional dynamics in the warehouse also mean that there is a greater risk of accidents and injuries. This is where companies need to take countermeasures."

LUKAS GIMPL, KEY ACCOUNT MANAGER ELOSHIELD

MORE SAFETY MEANS MORE FINANCIAL OPPORTUNITIES

"Of course, safety and assistance systems are primarily intended to protect pedestrians and vehicles. From an entrepreneurial point of view, however, there are other advantages, particularly financial ones. As well as the aspect of personal protection, the ELOshield environment warning system provides an individual and modular system architecture which ensures that the warehouse and its infrastructure are protected: Cost-intensive damage to racks or gates is avoided in the long term, maintenance costs are massively reduced and ultimately the productivity and processes of the supply chain are maintained."

SOPHIE GAUTHIER, KEY ACCOUNT MANAGER, ELOSHIELD



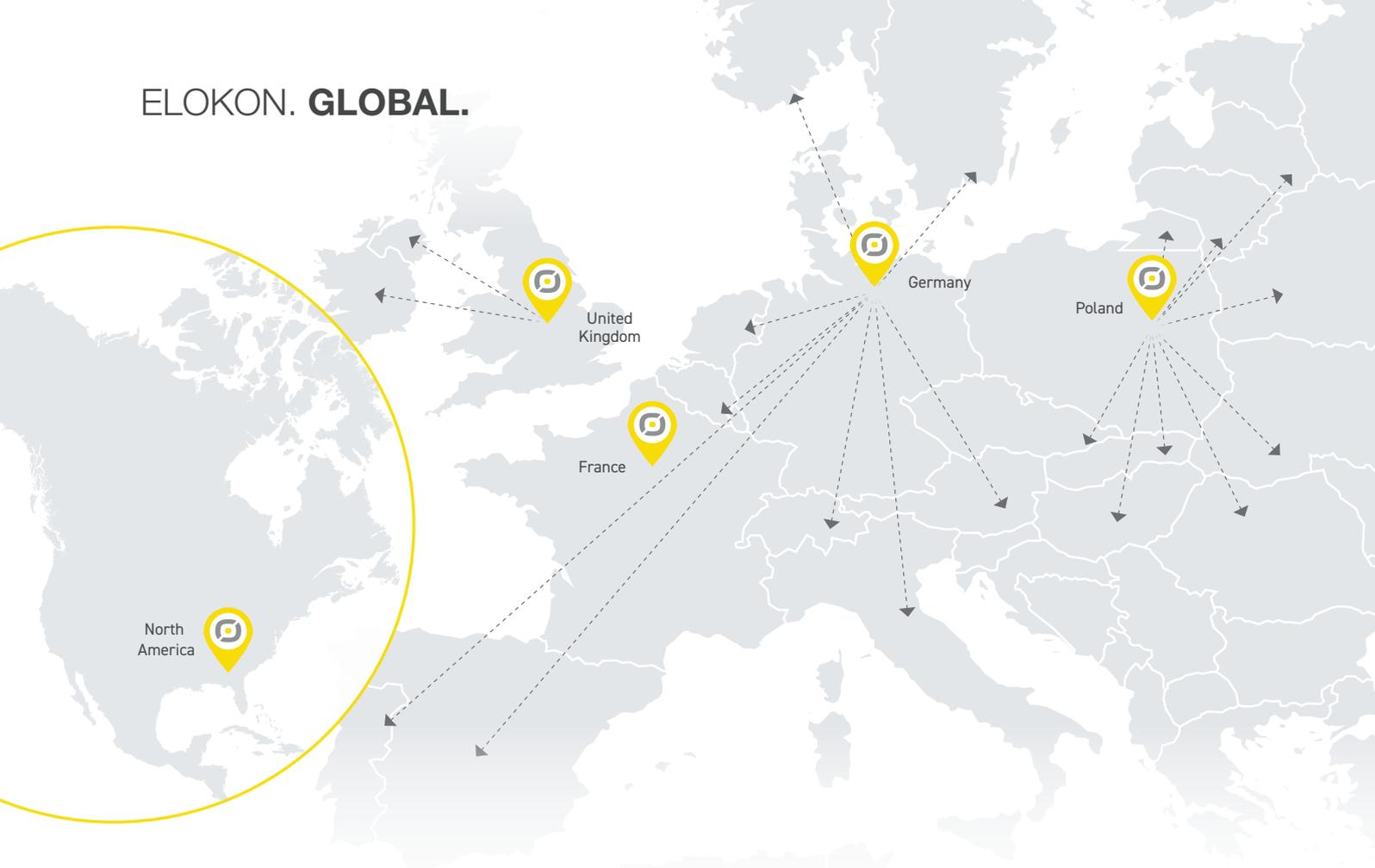
AUTOMATION REQUIRES INTRALOGISTICS

"On the one hand, society is getting older, and on the other hand the range of goods is increasing, the turnover rate is increasing and smaller batch sizes are changing the supply chains. This is why companies are dealing with automation in an increasing number of cases. With our cloud-based ELOKON platform, we provide safe interaction between people, industrial trucks and autonomous transport systems. It makes optimal analysis of safety and productivity in the warehouse possible: From real-time localization with ELOcate to the ELOfleet fleet management system, our solutions are combined there and adapted to customer requirements."

ANDREAS FOLZ, INTERNATIONAL SALES MANAGER



ELOKON. GLOBAL.



4250 ELOKON CUSTOMERS. GLOBAL.

You can evaluate the quality of our services by the quality of our customers. More than 4,250 companies use our products and services to achieve success.

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