Innovative safety solutions

Innovative safety solutions - EN

ALIS Tech Ltd.
www.alis-tech.com

CONTENT

We Are First Class In Safety.
Be Part Of It.

case of study

Established In 2018

ALIS Tech Message

ALIS system is a tailored-made solution that improves safety and increases the efficiency of operations. ALIS solutions are based on the latest wireless technologies defining the direction of Industry 4.0.

2018

ALIS Tech s.r.o.
Main focus on LED floor marking division. Development of collision avoidance solutions.

2020

ALIS Alliance Establishment
First successful projects for LED floor markings and anti-collision systems in 11 European countries.

2022

+600 Projects & +200 Customers
More than 600 projects for LED floor markings and anti-collision systems were implemented in 20 countries.

2024

Aledo Holding
Member of Aledo Holding group.

ALIS Tech & Aledo Czechia | Slovakia | Germany

70 %

70 % of forklift-related accidents can be prevented

$135

forklift accidents cost **$135** million per year

34,900

34, 900 serious injuries occur annually

LED technology

LED Floor Markings

Floor marking with the LED technology offers 3 possible types of projection of signs or various symbols on the floor: lighting (24/7), flashing or pulsating. In order to achieve the maximum elimination of operational blindness, LED marking can be activated for pre-defined movement (pedestrians and handling or crane equipment).

TYPES OF USE OF LED FLOOR MARKING

LED PROJECTION INTEGRATION	FINAL USAGE
Parabolic Mirror	traffic control multi-lane intersections
EOT & bridge cranes	marking the danger zone around the suspended load and indication of the crane‘s position and route of movement
Walkways marking	dynamically controlled pedestrian walkway projection
Industrial door	increasing interaction and ensuring safety in traffic blind spots
Entrance to operation	autonomously controlled projection of an important message at the entrance to the hall/carriageway

Industrial LED projector

The LED light marking system is based on an industrial LED projector with an active or passive type of cooling. The projectors are dustproof with IP protection 65. Light marking is suitable for all types of industries, from automotive, to food or heavy, metallurgical industry.

360 LED PJ Model

LED Your Safety Shine

Industrial LED Projector With IP Cover 65

LED floor markings avoids operational blindness via the smart activation of illuminated safety signs. The predefined actions such as the motion of a forklift truck, crane, pedestrian, or opening of the industrial door, trigger the LED projection that interactively changes the safety marking guidelines for MHE and pedestrians at the workplace.

- wireless communication with forklift trucks, pedestrians, el. devices;
- inteligently controlled intersection solution;
- illumination of moving objects;
- blinking / fading modes of illumination.

IP cover	IP 65
Average lifetime of LED chip	up to 50 000 hours
Compatible optics	13° - 47°
Cooling system type	Active / Passive

CONTENT

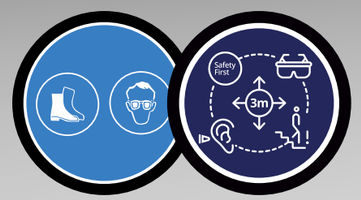
Forklift Signs
yellow forklift signs

Warning Signs
yellow warning signs

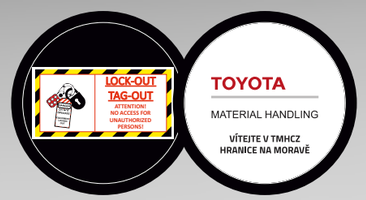
STOP Signs
red danger signs

Multi Signs
combination of 2 and more safety signs

PPE Signs
blue Personal Protective Equipment



Custom Design
company logo and tailored signs



OPTIONAL GOBO CUSTOM DESIGN

Busy Intersections

Intelligent parabolic mirror with signaling of the direction of travel of the object at the intersection

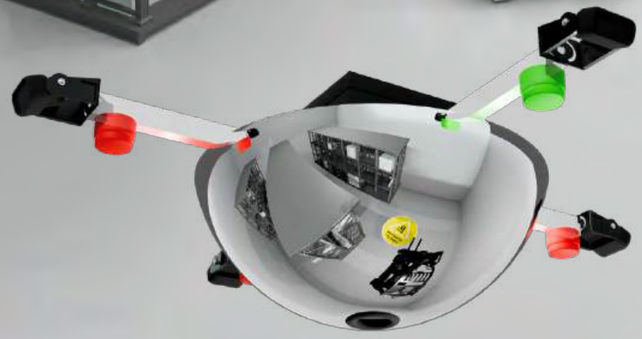
The LED projection embedded in an industrial parabolic mirror eliminates the disadvantages of the passive nature of the element and interactively warns pedestrians of approaching objects at the intersection. The projection offers 3 lighting modes: flashing/pulsating/solid.

- Industrial LED projector integrated into the parabolic mirror (360° point of view).
- Possible extension with light control by RGB beacons for up to 4 directions.
- LED projection triggered by the sensors. Detection of pedestrians/vehicles/both.

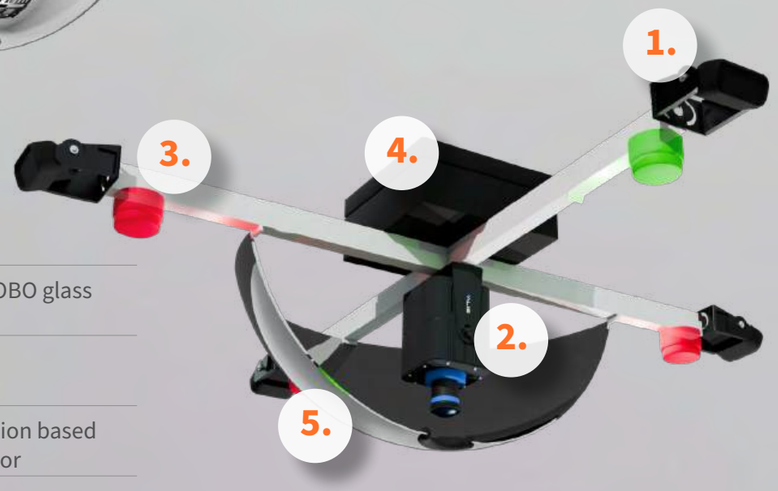
IP cover	IP 65
Types of illumiation	24/7 | pulsating | blinking
Mirror size	Ø 100 [cm] standard
Number of signaling directions	1 - 4 (standard) more directions on request

Traffic control at two- and multi-lane intersections

The smart parabolic mirror system enables dynamic traffic control at intersections. RGB beacons light up the direction of movement of defined objects towards the intersection and, together with the warning LED projection, help material handling equipment drivers navigate safely in traffic.



Components of a smart parabolic mirror



1.	Optical sensor
2.	Industrial LED projector with GOBO glass and replaceable optics
3.	RGB beacon
4.	UWB unit switching LED projection based on a signal from an optical sensor
5.	Modified parabolic mirror made of lightweight polycarbonate

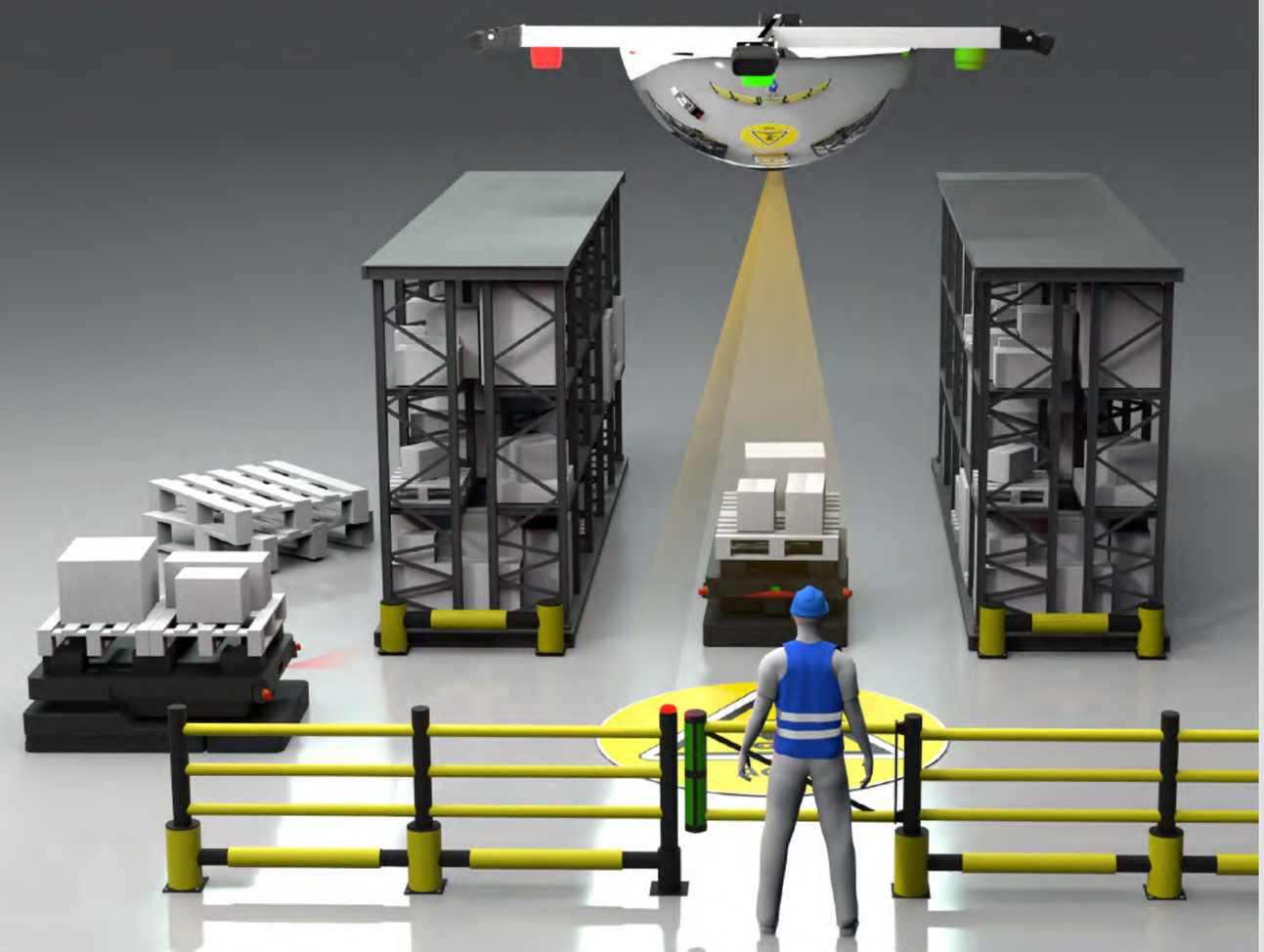
LED floor marking connectivity with artificial intelligence

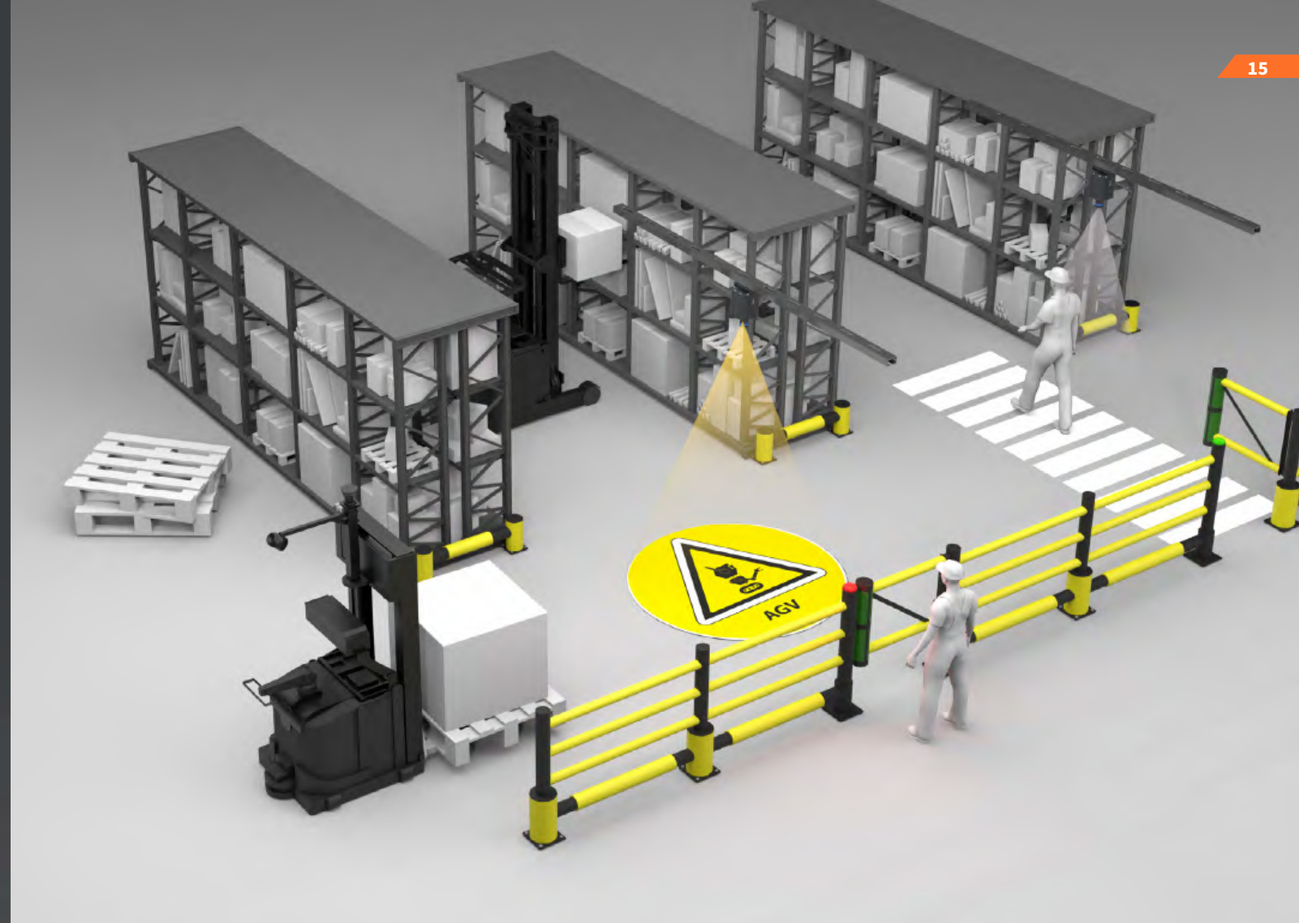
Autonomous traffic control of AGV & AMR machines in operation

Dynamic LED floor marking for traffic control in the working areas of autonomous machines of the AGV and AMR type, supplemented by automatic locking of the pedestrian gate.

By eliminating the free movement of people in the handling area of autonomous machines, their movement is made more efficient and material handling processes are accelerated. The solution offers two possible methods of AGV/AMR detection.

UWB communication	Peer-to-peer communication of AGV tag and UWB reader connected to LED projection.
Sensors	Signal to trigger contact-based detection from an optical sensor.





For a smoother material handling process

Expansion of the smart intersection to include automatic gate locking

The autonomous traffic management system in the robot handling area can be expanded with automatic locking of the pedestrian gate to prevent pedestrians from entering the roadway near the AGV/AMR. The magnetic lock, integrated into the safety barriers, communicates wirelessly through a UWB unit, which, upon detection of a machine in the zone, sends a signal to lock.

Benefits of autonomous traffic management

- ✓ Elimination of frequent pedestrian crossings with AGV/AMR trajectory = increased fleet efficiency.
- ✓ Support synergy in cooperation between autonomous handling equipment and pedestrians.
- ✓ Increased safety in the shared workplace.

Logistics Marking

Visual Virtual Lines & Palet Positions

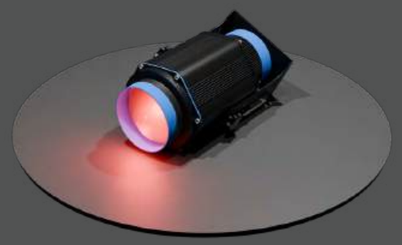
The most advanced optical system enables the projection of highly visible lines that will impress each audit control, even a visit from Top Management.

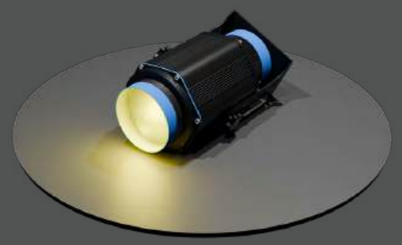
TECHNICAL SPECIFICATION

IP cover	IP 65
Compatible optics	55°, 75°, 90°
Colors	red / white / yellow / blue / green
Power	70W, 90W, 110W
Line length depending on installation height (projector installation height vs line length)	
55°	1:0.92 m
75°	1:1.5 m
90°	1:2 m

A more sophisticated way of marking

- Extended marking lifespan - no more maintenance and re-marking costs.
- Quick and easy navigation - helps employees with navigation in the operation faster and more efficiently, leading to increased productivity and minimised errors.

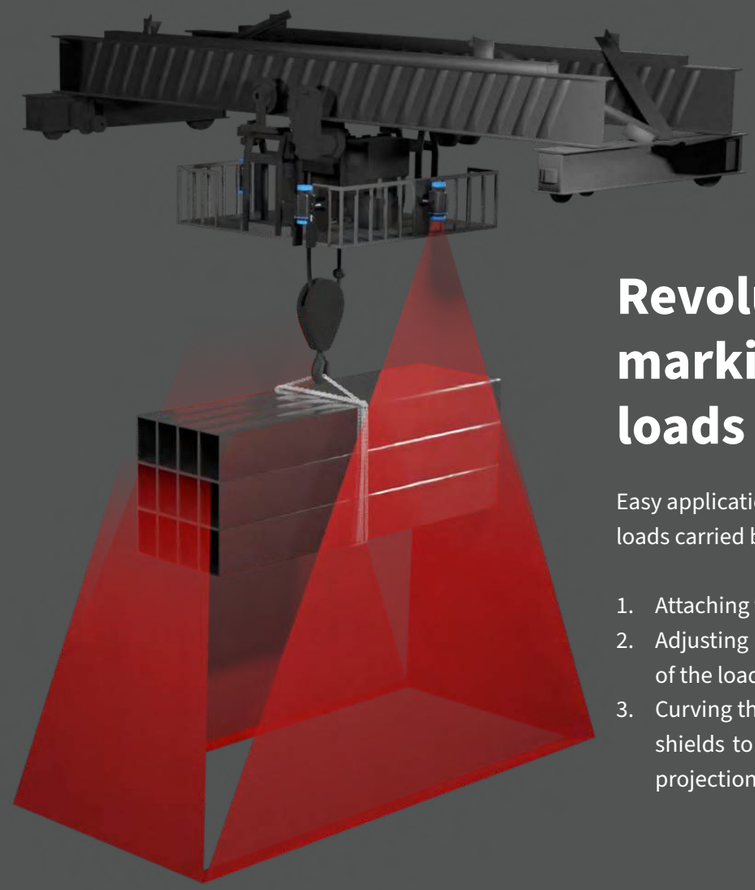




New class projectors

Designed to withstand the toughest conditions

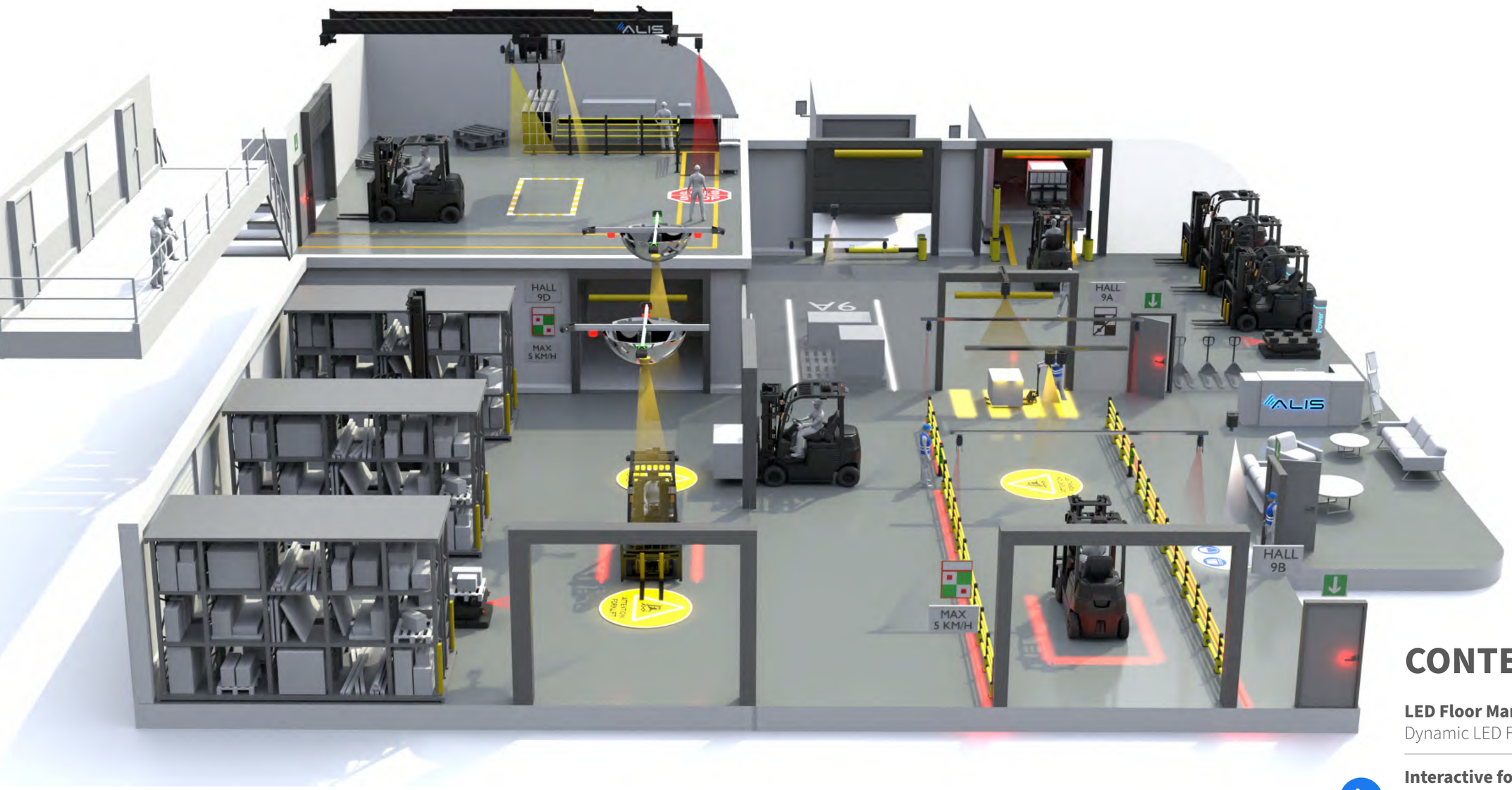
- Thanks to a specially adapted optical system, they maximize the potential of luminous intensity and line length.
- They compete with conventional marking techniques.



Revolution in the marking of oversized loads

Easy application of virtual marking of heavy loads carried by crane:

1. Attaching the projector to the crane.
2. Adjusting the projection angle to the dimensions of the load.
3. Curving the length of the lines using the projector shields to achieve the desired shape of the final projection.



CONTENT

Wireless technology

Collision Avoidance solution

The autonomous anti-collision system prevents work accidents associated with operational blindness, blind spots in operation, movement of forklifts, crane and other handling equipment. The solution eliminates the risk of human error and warn both parties in time of the potential danger of a collision (optically, acoustically, opto-acoustically).

CASE OF STUDIES

USAGE	ANTI-COLLISION SYSTEM FUNCTIONS
forklift vs pedestrian	Autonomous forklift deceleration against a pedestrian, interactive warning of the pedestrian by vibrations of a personal tag.
deceleration of the forklift in circular zones	Autonomous adjustment of the maximum speed of the forklift in critical areas (zones), e.g.: slowing down the forklift to a maximum of 4 km/h.
deceleration according to the direction of a ride	Autonomous adjustment of the maximum forklift speed when entering halls and separate areas, e.g.: maximum forklift speed 6 km/h in the entire production hall (the system is deactivated when exiting).
forklift - LED floor marking	Intelligent control of the LED floor marking according to the presence of a forklift in the proximity.

Two-phase deceleration of handling technique

Direct communication (peer-to-peer) between the tags installed on handling equipment and the tags equipped with pedestrians ensures the protection of forklifts and employees from accidents caused by lack of visibility and inattention in blind spots of operation. Wireless communication triggers predefined actions, which can be: slowing down the forklift, starting or switching the LED floor marking, vibrating the personal tag, light signaling of danger in the forklift driver‘s cabin and others.

AI Collision Avoidance Solution

Wardian

The AI-based wireless camera and monitor solution enable a quick and seamless upgrade of the collision avoidance system for forklift drivers and other material handling equipment. The autonomous system offers a pedestrian detection solution in a variable zone of material handling equipment.

No need to equip the pedestrian with any tag/transmitter.

Using advanced machine learning algorithms, these intelligent cameras continuously analyze visual data, provide real-time alerts and give forklift drivers a better view of the surrounding environment.

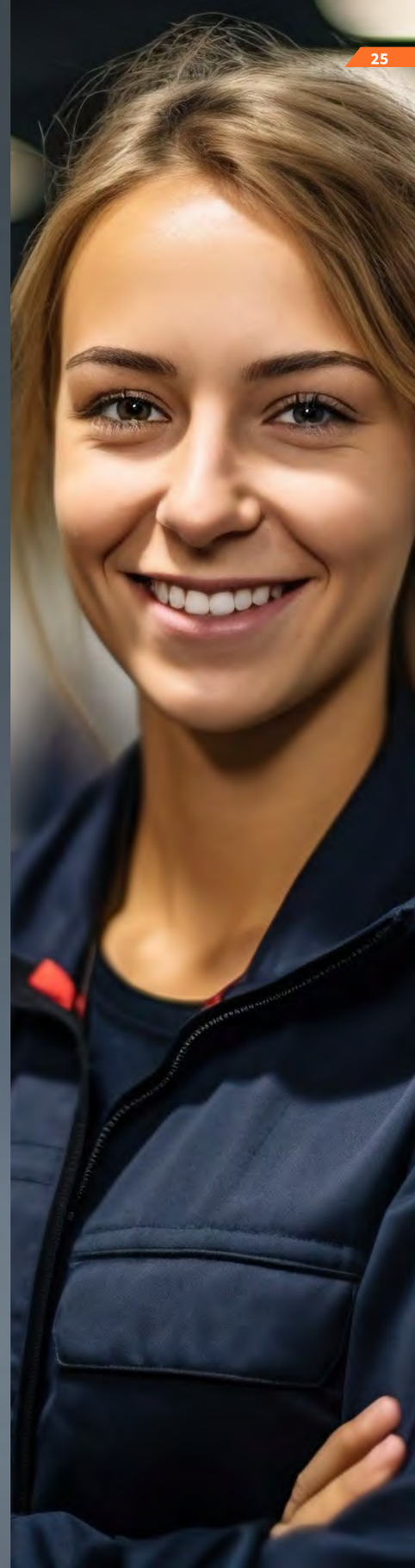
TECHNICAL SPECIFICATION

IP Cover	IP 69 (camera)
Camera resolution	Full HD 1920 x 1080
Detection angle	140° / 52°

AI pedestrian detection

Based on the data received, the forklift autonomously triggers safety protocols that include either slowing down or coming to a complete stop to avoid a potential collision.

This automatic response significantly reduces human error and increases the safety of the working environment.



AI Collision Avoidance

Wardian

The AI pedestrian collision avoidance offers a detection zone of up to 20 metres. The system can be interfaced with audio-visual signalling of detected objects at different stages. This warning function is fully expandable to include speed limits for handling equipment.

The camera itself is manufactured in an industrial - rugged design in a solid die-cast aluminium housing and meets the demanding IP69 protection class standard.

CAMERA WARDIAN

Case color	silver-black
Detection angle	140°, 52°
Resolution	1920 x 1080 px
Operating voltage	10-52 V, DC
Operating temperature	-20 °C up to + 70 °C
IP cover	IP69

MONITOR WARDIAN

Case color	black
Display size	7″/ 10″
Resolution	1024 x 600 px
Video input	4 inputs
Operating temperature	-20 °C up to + 70 °C

Configure zones in the web & mobile app

- 3 detection zones: red - dangerous, orange - warning, green - safe;
- shape of detection zones: triangle, rectangle, semicircle.

New class of Wardian industrial cameras

Dust-, water- and pressure-resistant camera

- The camera is particularly resistant to water and dust and can withstand cleaning with a high-pressure cleaner.
- Both the camera and the display are equipped with sunshades to withstand the toughest conditions.
- The camera itself is housed in an industrial housing made of cast aluminum and meets the demanding IP69 protection class standard.

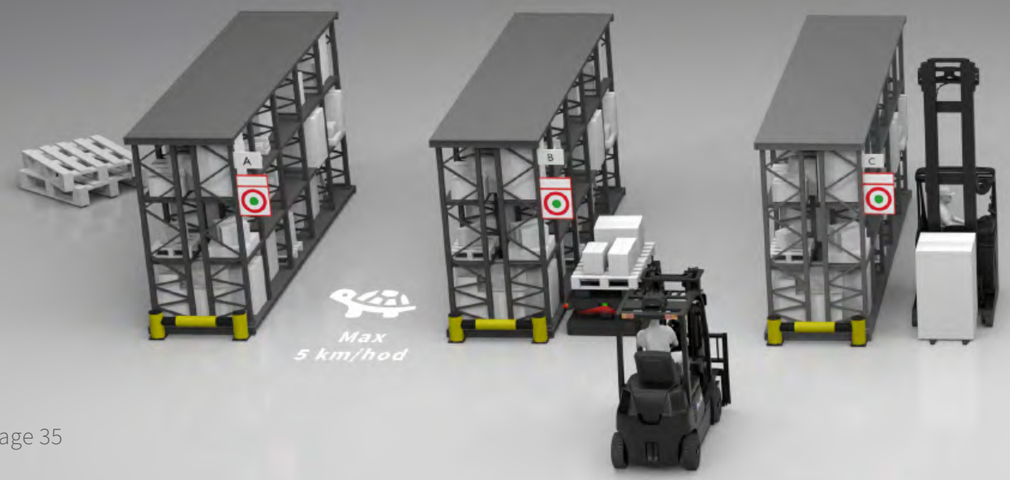
Recording a video

The new 10″ monitors offer an expanded function with video recording with the option of archiving.

Thanks to the archiving of records, it is possible to further create analyses of critical points or use the footage to assess a possible work accident.

Using AI pedestrian & sign detection system

Wardian AI Collision Avoidance



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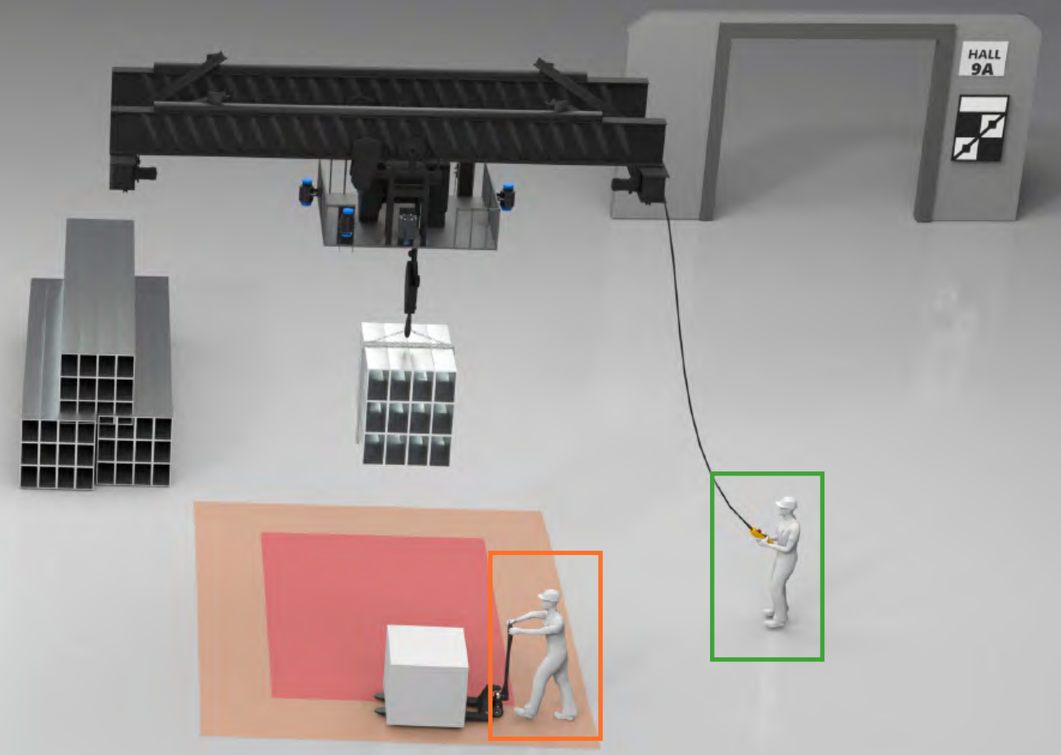
Local speed reduction in critical traffic areas
Speed limits in unclear traffic areas, or e.g. in rack aisles.



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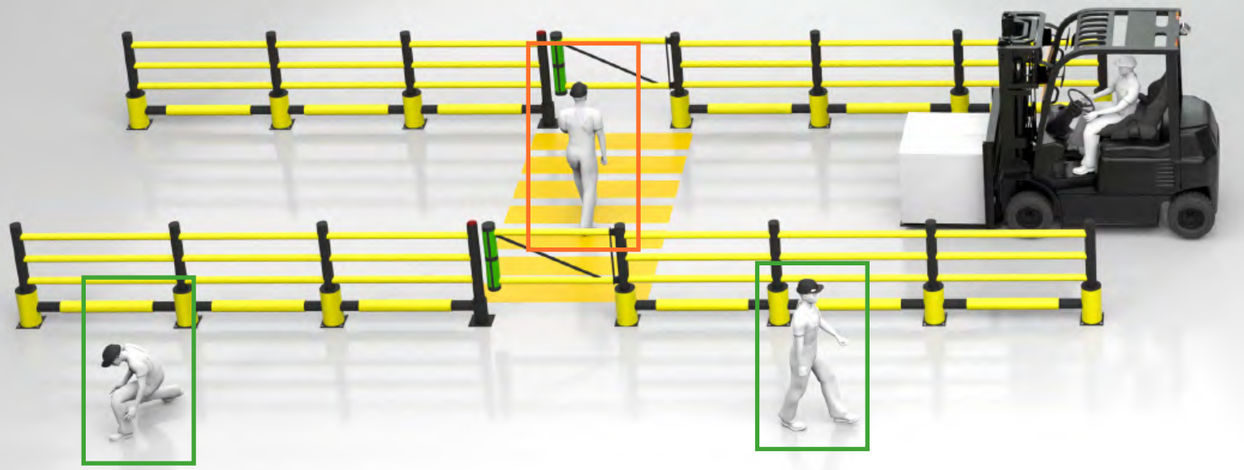
AI collision avoidance for crane technology
Audible danger signal when a pedestrian is detected in the critical zone around the load.



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AI pedestrian detection
Two-phase deceleration based on pedestrian detection in a predefined zone (red/orange).

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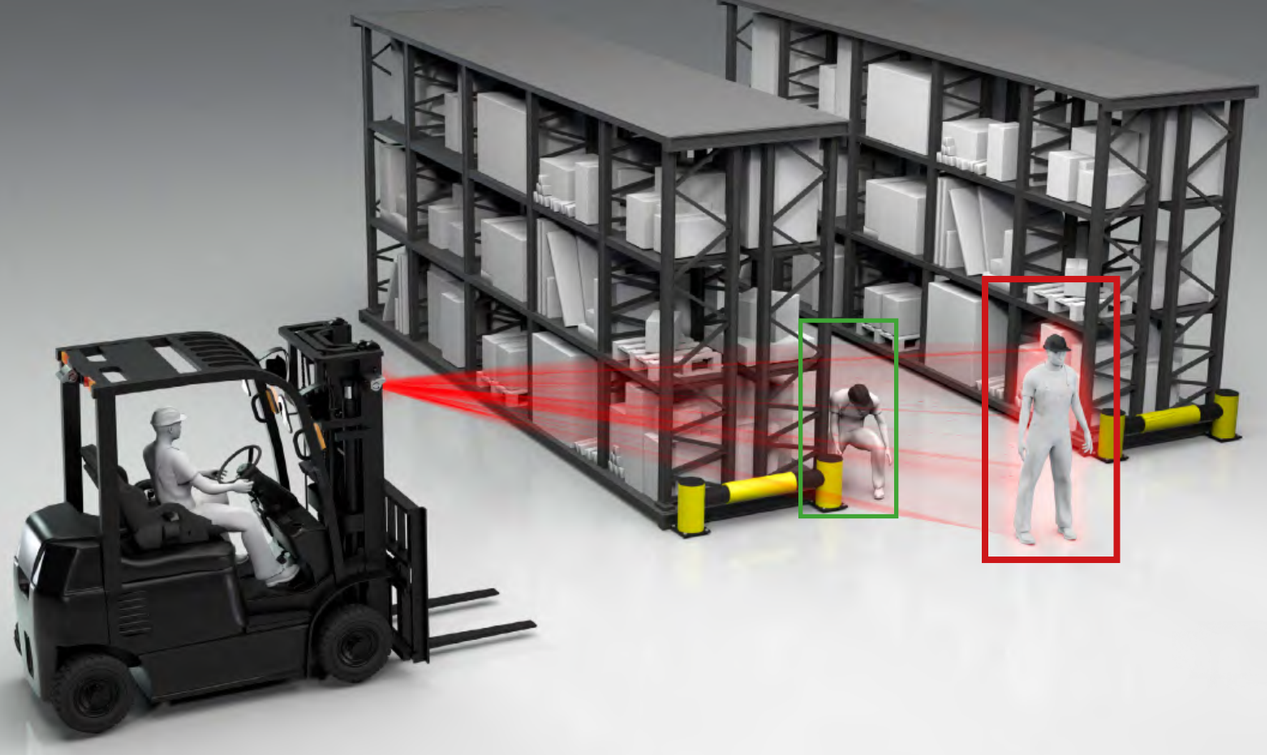
Indoor & outdoor speed limit
Slowing down the machine to the maximum permitted speed in a determined space.



1. Usage of the Wardian AI camera

Pedestrian detection in the operating space of handling equipment

Automatic recognition of a pedestrian in any position (standing/kneeling/lying/moving) in the detection zone of a machine equipped with an AI camera. The detection is linked to an audiovisual warning for the driver in the cabin and to the machine control unit for two-phase deceleration against the pedestrian.

Wardian new class industrial cameras

Easy zone configuration in web & mobile app

The Wardian AI solution is a fully modular system that is subject to a common configuration of the size and shape of detection zones within a single camera.

- ✓ 3 detection zones that are effective for all types of Wardian system use cases: red - dangerous, orange - warning, green - safe;
- ✓ shape of detection zones: triangle, rectangle, semicircle, arbitrary drawing of zones.

AI detection of pedestrians in motion and in a standing/lying/kneeling position

Based on the data received from the environment, the handling equipment autonomously triggers safety protocols that initiate deceleration or a complete stop in order to eliminate a collision. Safety can be extended by audible signaling of danger inside the cabin.

This autonomous response significantly reduces the human factor error rate and increases the safety of the working environment in workplaces shared between pedestrians and handling equipment.


WARDION

2. Usage of the Wardian AI camera

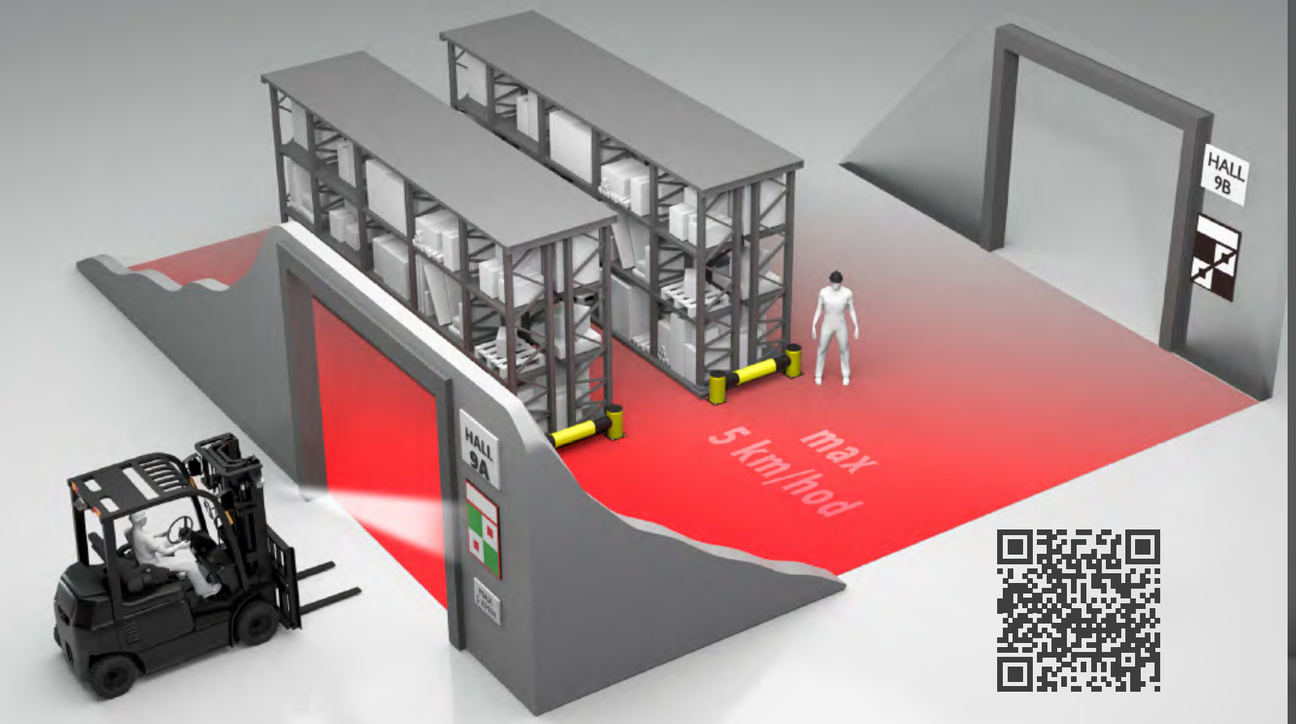
Indoor & outdoor speed limit

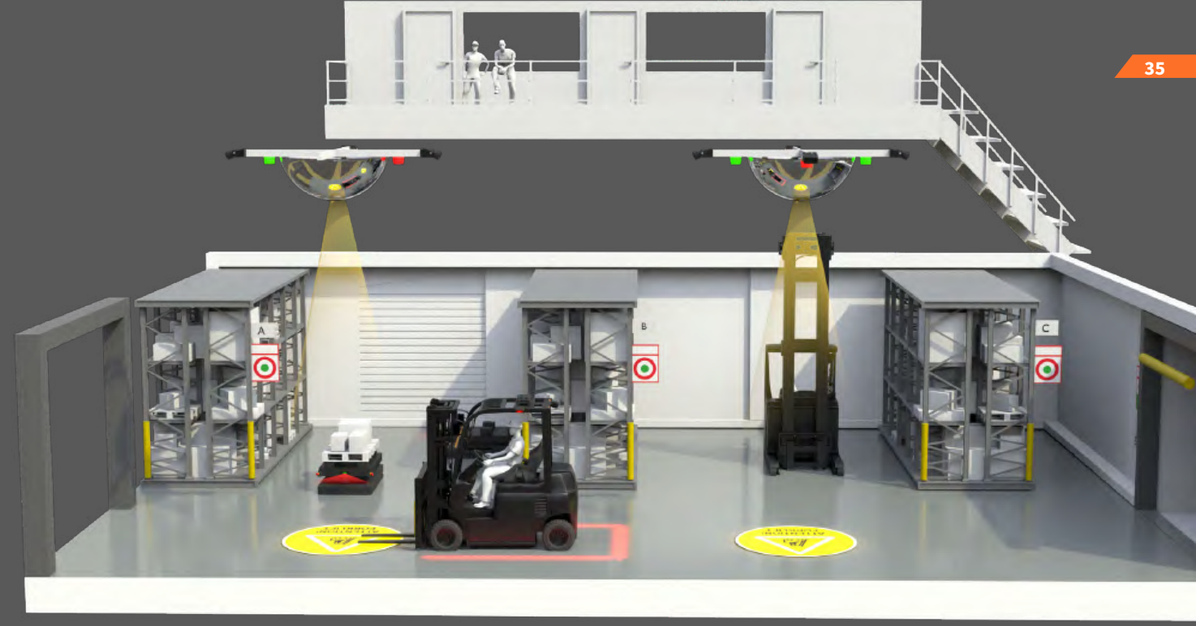
Limiting fleet speed to a predefined value in areas/halls with an increased level of risk. When a unique tag installed in the field of view of the machine‘s camera is detected, the maximum speed is automatically regulated to a pre-declared value defined through machine diagnostics.

AI intelligence for the benefit of workplace safety regulations

The fleet is subject to speed control until the detection of an opposing (black-white) sign of the same type.

The indoor & outdoor speed control solution is always supplied in a package of a Wardian camera and monitor and paired signs of the indoor & outdoor type (min. 1 pair - activation & deactivation sign). The system can be expanded in time by an infinite number of signs as needed.





3. Usage of the Wardian AI camera

Local speed limits in narrow lanes and critical traffic areas

Autonomous, two-phase deceleration of the machine upon detection of a specific sign (so-called passive pedestrian) installed in a critical area. Speed regulation is subject to the same rules as for pedestrian detection. The local speed limitation system offers up to 3 different detection zone modes (identical to pedestrian detection zones): semicircle, trapezoid, triangle. The detection zone for a 52° camera reaches a distance of up to 22 meters, while 140° cameras detect signs up to 12 meters.

The system can be used either as a standalone local deceleration tool or in combination with pedestrian detection (separately for each camera). The solution is delivered in a package of a Wardian camera and monitor with a unique local deceleration type sign (min. 1 sign - activation sign only).

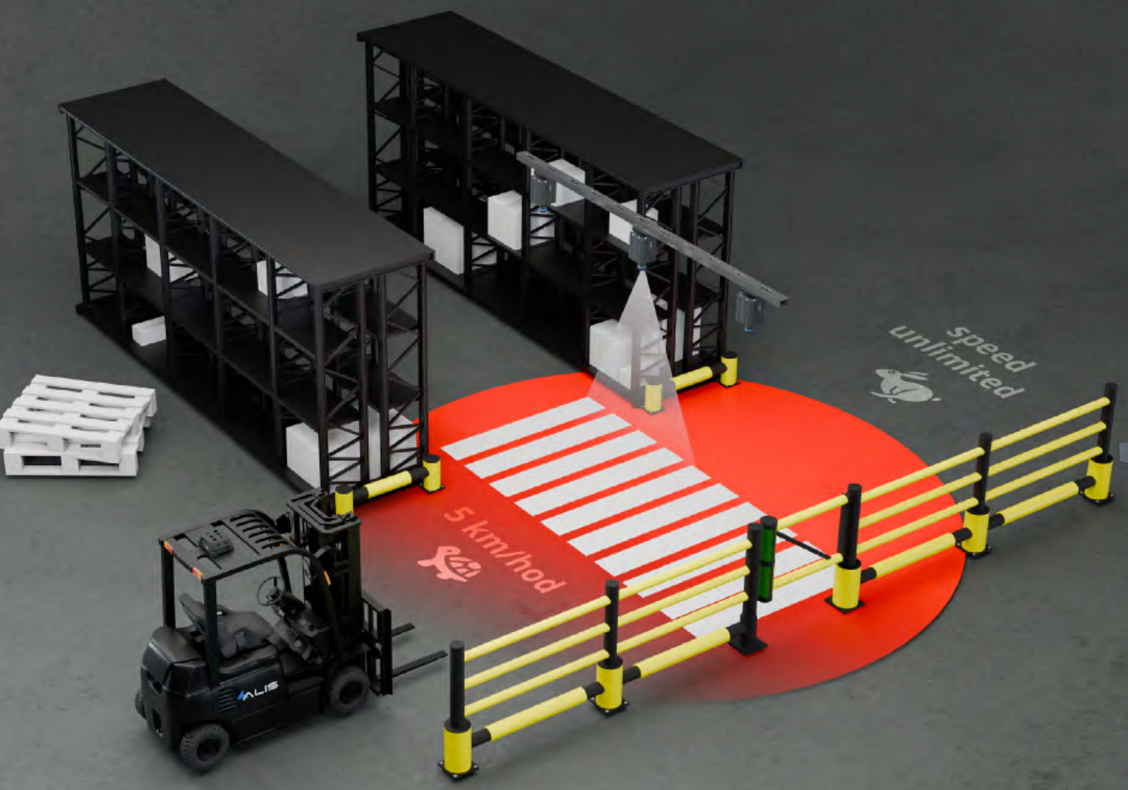
Usage of the UWB Anti-Collision Solution

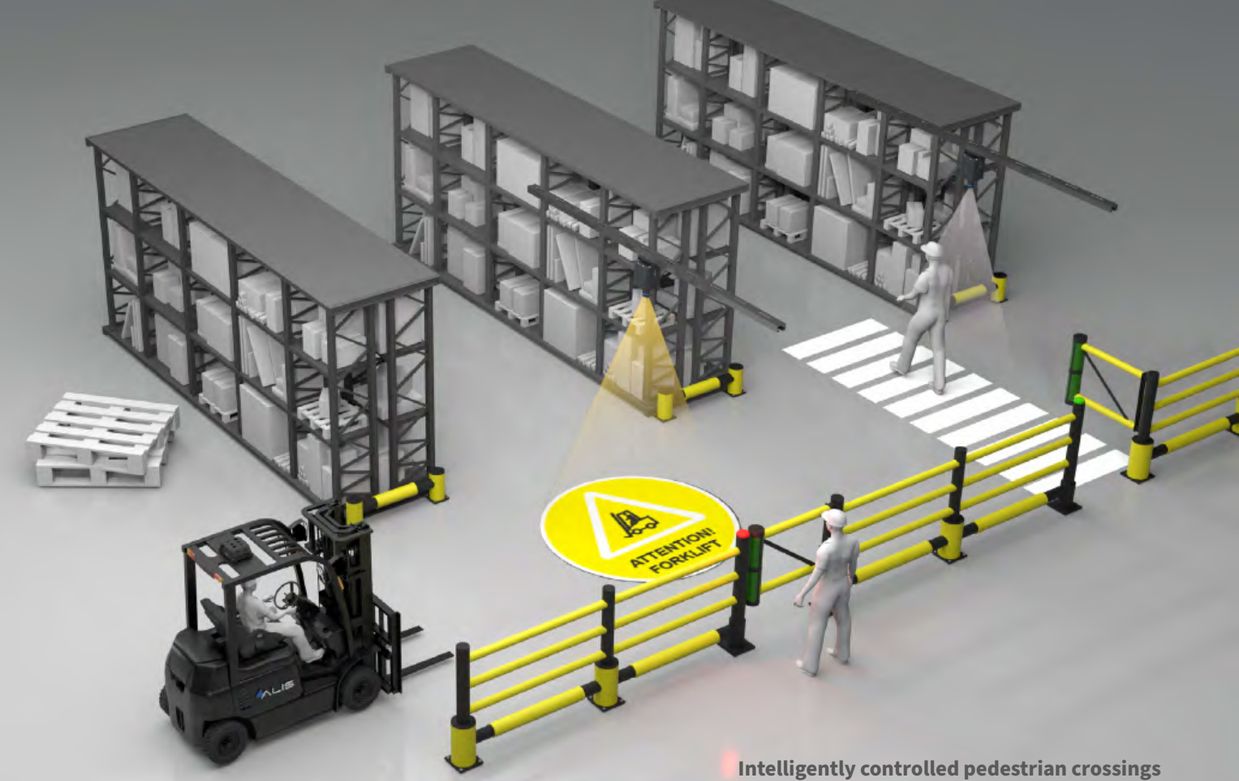
Local speed reduction with autonomously controlled intersection & automatic pedestrian gate locking

Circular (or point) speed limit for handling equipment supplemented with dynamic LED projection of the pedestrian crossing (pedestrian crossing vs. warning symbol). The system can be expanded with automatic gate locking to prevent pedestrians from entering the roadway when handling equipment crosses.

TECHNICAL DESCRIPTION OF THE SOLUTION

Fleet equipment	Forklift tag with UWB technology.
Intersection equipment	UWB reader, LED projection, magnetic gate lock.
Communication type	Peer-to-peer wireless communication between forklift tag and UWB reader.
Functionality	Switching the pedestrian crossing to a warning symbol. Locking the pedestrian gate.
Extension	Circular deceleration of the fleet at the intersection.





Intelligently controlled pedestrian crossings
dynamic LED signage

Web and mobile application

Easy adjustment of system functionality parameters

- Wireless editing of the width of the circular zone for slowing down the handling equipment at a critical point of traffic in the web interface.
- Defining the logic of intelligently controlled intersections and their subsequent optimization within the activation distance from the handling equipment.
- Setting the activation distance of the truck to the LED projection.

Signaling the level of danger in the cabin

RGB immune button

Visual signaling of the level of danger inside the cabin. After pressing the button, the system is deactivated - the speed limitation is interrupted for smooth and safe escape from a critical situation. The button also serves to signal the diagnostics of the system‘s functionality.

RGB signaling	
Green	No danger in the vicinity - forklift travels at unlimited speed.
Orange	The forklift is in the warning zone - the forklift slows down to the first stage.
Red	The forklift is in the critical zone - the forklift slows down to the second phase.
White	System activation is in progress.

Wireless communication of forklifts with electronic elements

Autonomous control of electronic elements around handling equipment

Direct peer-to-peer communication between the forklift tag and electronic elements in the environment, which triggers predefined actions. The tag communicates with a UWB reader, which is connected to, for example, an industrial door, LED projector, or magnetic lock.

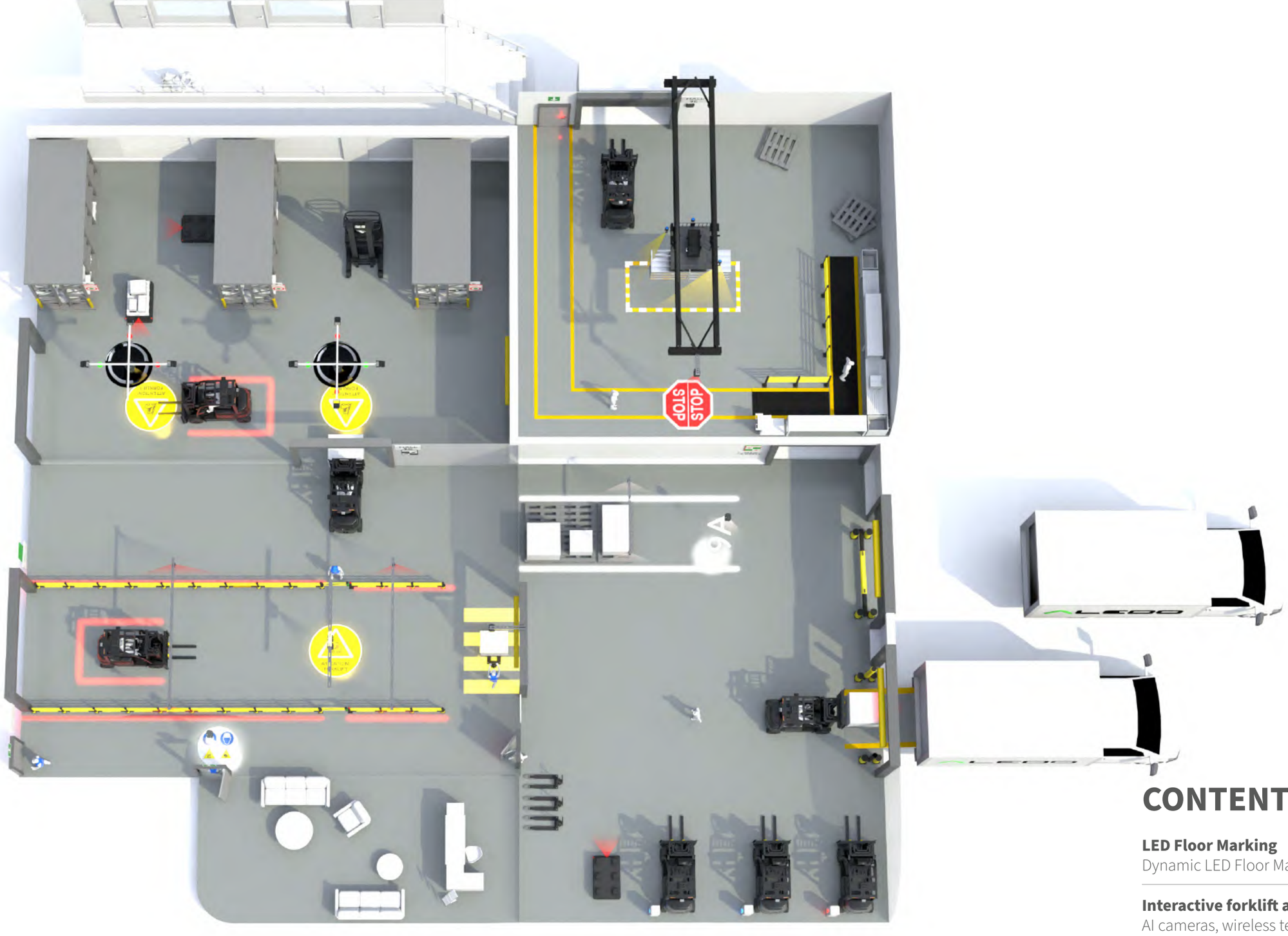
Industrial doors	Autonomous door control, extended by the function of remaining in the „no go“ zone until the door is 100 % open.
LED Floor Marking	Dynamic projection based on the presence of a forklift tag in the critical zone.
Magnetic lock	Locking the magnetic lock based on the presence of a forklift tag.

Pedestrian protection in close proximity of forklifts

Reversing cameras with video recording archiving

Wardian AI cameras can be used as a function of so-called reversing cameras for more comfortable and faster material handling. If necessary, it is possible to activate other safety modules that the camera offers (pedestrian detection, detection of signs in space).

Camera angle	140 °/ 52 °
Monitor size	7 "/ 10 "
Image streaming	1 to 4 inputs (360 ° monitoring)
Function extension	archiving of video recordings, detection of pedestrians and signs in the vicinity



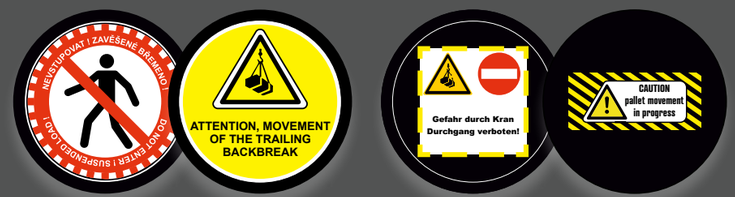
CONTENT

Moving Objects

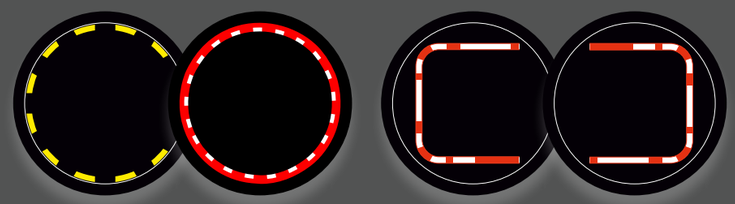
EOT Crane Technology & Transport Systems

- Illumination of hazardous zones around suspended loads.
- Real-time visualization of the crane hook position / suspended load.

Warning symbols and signs
marking the position of the load and the crane hook



Circular and rectangular shapes
boundary of the suspended load



To Reduce The Risk Around Suspended Loads

Crane safety lights increase the level of safety for operators and employees working nearby the area of suspended loads.

AI anti-collision system for lifting equipment

AI detection of pedestrians in the manipulation space of crane technology

Industrial cameras installed on the crane arm continuously monitor the space under the suspended load, where they autonomously trigger safety protocols to slow down or stop the crane when a pedestrian is detected in the zone, or trigger an audio-visual signal (e.g. siren).

Forms of safety protocols	Audio-visual signaling Crane deceleration / stop
Detection distance	up to 20 meters (52° camera)
Number of detection zones	3 (red / orange / green)
Detection shapes	Trapezoid / rectangle / semicircle / free drawing (shape editing by dragging corner points)
Extension	LED light projection around the load, audio-visual signal, siren activation.

761 accidents per year caused by falling loads

Up to 90 % of accidents related to handling crane equipment are caused by human error.

CONTENT

Industrial door protection

Connectivity between fleet and corporate assets

Wireless communication between the fleet and company assets for smooth and safe passage through industrial doors.

The fleet equipped with a UWB unit wirelessly sends a command to the industrial door readers to activate their opening. The handling equipment is continuously slowed down, in extreme cases even stopped, based on the position / percentage of door opening.

Until 100% opening, the machines are slowed down or held at zero speed depending on the safe distance from the door. At the moment of full opening, the speed adjustment system is deactivated.

Technology	Ultra Wide Band (UWB) & Mechanical Sensor - Limit Switch.
Functionality of the forklift tag	Autonomous gate control (wireless peer-to-peer communication with UWB reader).
Functionality UWB door readers	Two-phase deceleration of the forklift up to 0 km/h until the industrial door is fully opened.
Possible expansion	LED light sign „Attention forklift“ / alternative projection

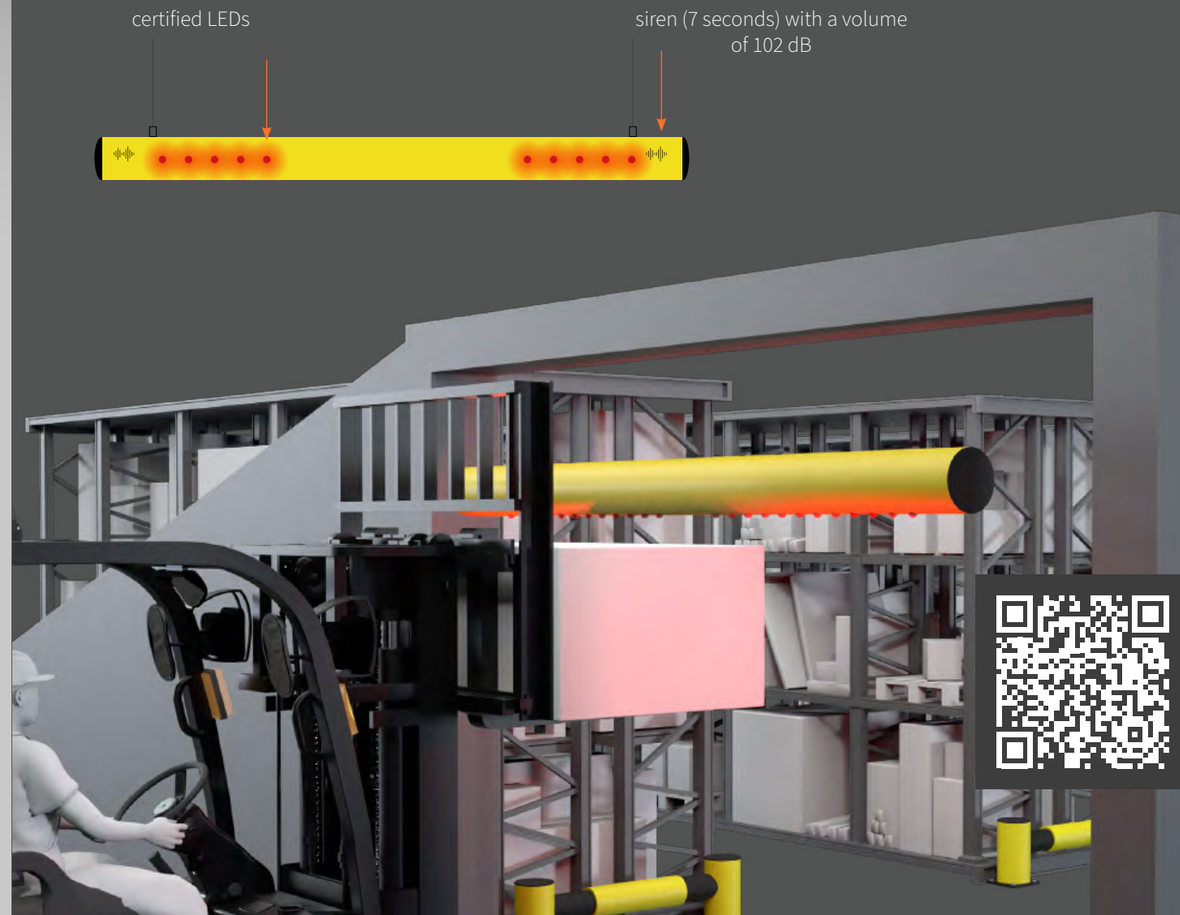
Excessively lifted load

Interactive safety protection of lowered profiles

Dimensions	1 800 x 140 [mm]
Power supply type standard	12 V DC - 230V AC / baterry
False impact detection	Smart sensor against false impacts (e.g. draft).
IP cover	IP 20 (standard) | IP 44 (on request)
Material	HDPE high-density polyethylene

Ensuring safe passage through lowered profiles without accidents caused by excessively lifted loads. The system is equipped with an intelligent touch sensor that triggers a high-frequency sound alarm and flashes LED signaling diodes in the event of a collision or shock.

Ideal for protecting pipes, lowered profiles or conveyors and as a protection for industrial doors. The signaling barrier is made of durable HDPE (High-Density Polyethylene) material.



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