Eliminating blind spots: Transforming terminal safety with 360° vision systems

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TOC Europe 2025 - Safety Village

The Safety Challenge in terminals

Key Problem:

Blind spots reduce safety and efficiency

- Terminal operations = High traffic + Heavy equipment
- Accidents due to **blind spots** are frequent and dangerous
- Mirrors and single-view cameras offer **incomplete visibility**
- Operators often rely on guesswork in dynamic environments

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The blind spot reality

Visual of a forklift surrounded by shaded blind spot zones

Case examples of near-miss or incident scenarios

Operator's field of view limitations despite mirrors

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Reimagining operator awareness

360° camera systems

- **Real-time panoramic visibility around the equipment**
- **Seamless integration into the operator’s interface**
- **Enhanced situational awareness**
- **Safer decisions**

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Intro Combo*

Reversing Camera
7” HD Screen

+ Optional Forward Camera
+ Reverse Warning Radar Kit

Flex Combo

7” HD Split Screen

+ 3 Optional Cameras
+ Reverse Warning Radar Kit

Extend Combo

10” HD Split View Screen
+3 Optional Cameras

+ Reverse Warning Radar Kit
+ Digital Video Recorder - DVR

360 PDS Combo

10” HD Split View Display

4 AI Cameras [people/machines]

Digital Video Recorder [DVR]

+ 3 Reverse Warning Sensors
+ Add parallel system

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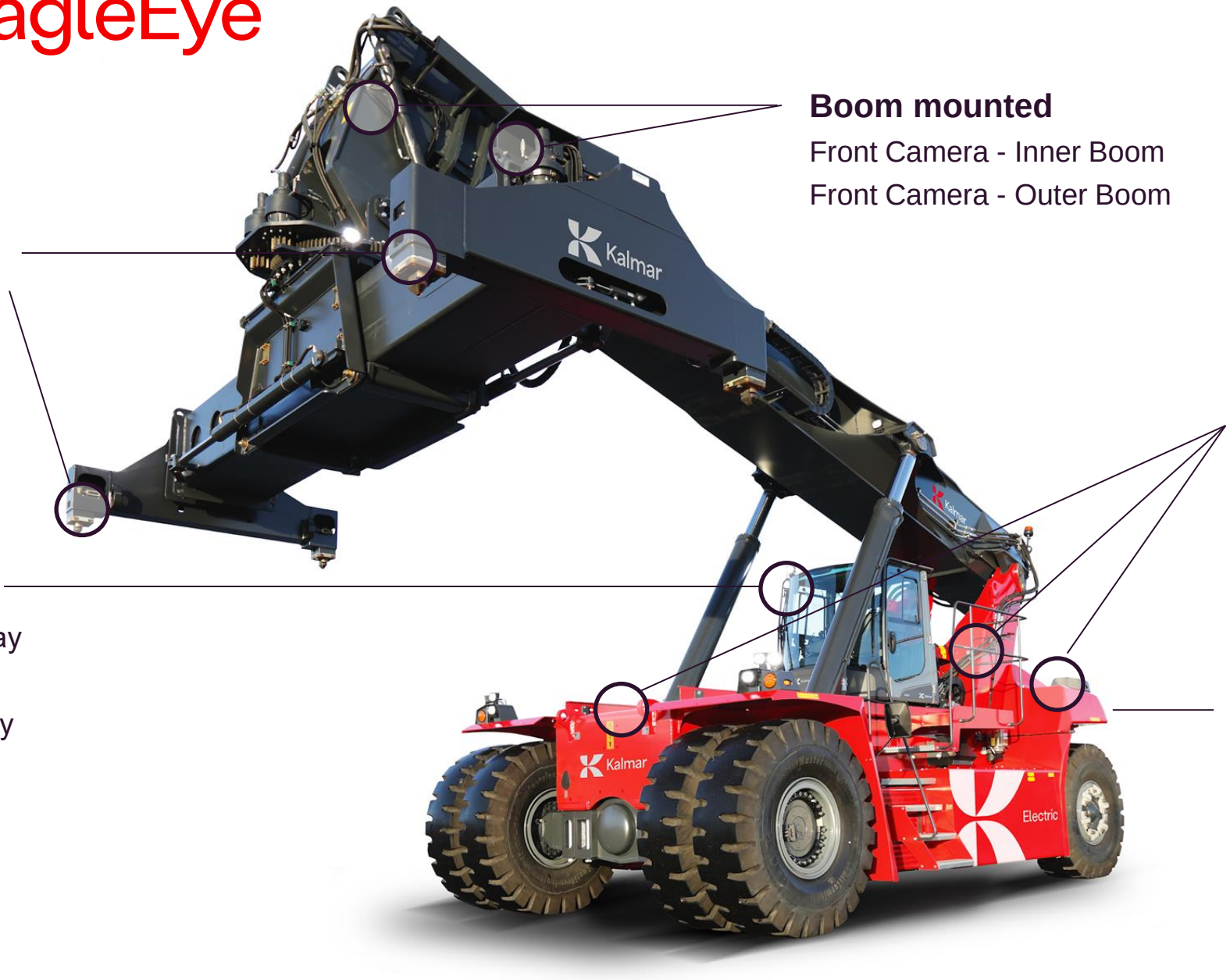

Boom mounted

Front Camera - Inner Boom

Front Camera - Outer Boom

Spreader mounted

Twist Lock Cameras

360° Camera mounting

360°Rear Camera

2x 360° Side Camera

360° Front Camera

Inside Cabin

7″ Single view display

7″ Split view display

10″ Split view display

360° 10″ display

Rear mounted

Reverse Camera

Radar Sensors for object detection

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Benefits to terminal operations

- Reduced collision risk with people and object
- Employee satisfaction
  - Improved operator confidence and performance
- Productivity
  - Quicker, more precise movements in tight spaces
  - Fewer operational disruptions
- Reduced cost
  - Fewer collisions gives reduced cost and better compliance with regulations

Safety compliance & industry trends

- Alignment with EN 1175:2020 and other safety standards
- Industry-wide push for digital transformation
- Safety systems are becoming the norm, not the exception
- Terminals prioritizing tech-driven safety enhancements

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EN 1175:2020 Safety standard

The safety standard EN 1175:2020, which sets the electrical and electronic component standards for industrial trucks, has been updated to improve the safety of these machines while in operation, this update is valid from April 2023. All Kalmar counter balanced machines, including reachstackers, empty container handlers and forklifts have been updated to meet this new standard to ensure that working with a Kalmar machine is as safe as it can be.

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Beyond cameras –
A connected safety future

- GPS tracking of equipment & people
- Real-time alerts for proximity warnings
- Data-driven safety management

New safety Site Concept under development

Safety fitted as option

Operator Presence Detection System. Maintains the highest levels of safety for both the driver and pedestrians, as all our equipment is fitted with an alarm or visual indicator that comes on automatically if:

- The driver does not fasten their seat belt while in operation.
- The driver leaves their seat without engaging the parking brake.

In addition, if the driver leaves their seat while the machine is operational, the transmission is automatically shifted to neutral and load-handling functions are disabled.

Protection against falling objects. Cabin roof windows on all our equipment are fitted with high strength materials which can withstand heavy blows, helping to protect your drivers from falling objects.

Reverse Camera System. Knowing what is going on behind you is critical when reversing your Kalmar Reachstacker, which is why they are all fitted with a high resolution [1080p] cabin display screen and reversing camera providing excellent rearward visibility.

Speed Limiter outside transport mode. Makes sure your Kalmar Reachstacker is always operating at a safe speed when it isn't carrying a load, helping to reduce the risk of accidents and promoting safe operating practices.

Steps with anti-slip protection. To reduce the risk of your driver slipping or falling on our equipment, all entering and exiting points are fitted with non-slip surfaces giving them extra grip, so your drivers stay safe.

3-point Contact System. Makes sure your drivers are safe when entering or exiting our equipment. All machines are fitted with steps and handles to ensure they can always maintain three points of contact with the vehicle, helping to keep them safe and preventing incidental injuries.

Event controlled information. Provided through the Overload Protection System to warn the driver through the equipment's Control System if their load exceeds the specified safety limits.

Control Breaker System for load handling.
All of our equipment is fitted with a Control Breaker System, which automatically shuts down the load handling system should a fault occur, until the fault has been corrected. Keeping your driver, equipment and load safe.

Alcolock.
To ensure that your driver is at their best when operating your equipment you can install an Alcolock system. This system makes sure that the driver meets alcohol blood level standards before being able to start the machine, much like a breathalyser.

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Summary for operators and decision makers

- 360° vision systems to mitigate blind spot accidents
- Real-time visual data enhances awareness
- Smart tech = safer + more efficient terminals
- A connected approach is the future of terminal safety

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Let’s make blind spots a thing of the past!

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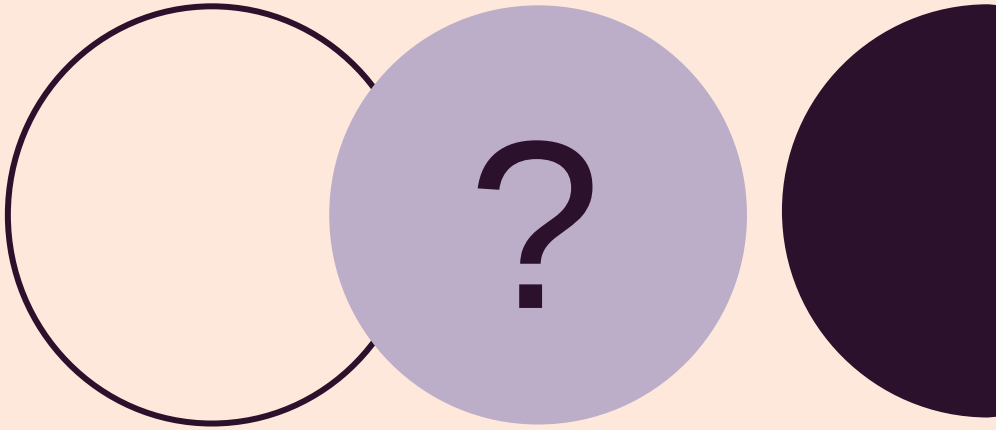
Any questions?



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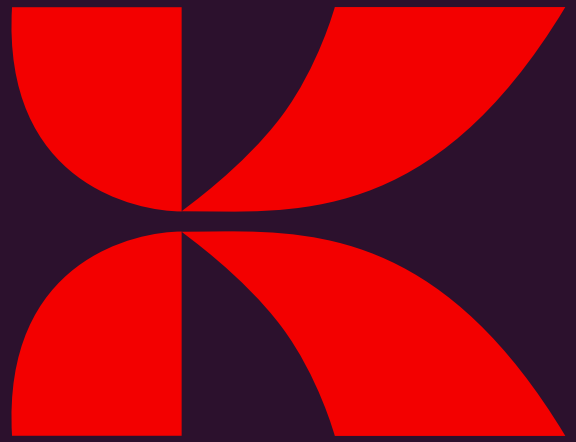

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Making every move count.