MoTec®

Heavy-Duty Camera Solutions

AMETEK®



Camera Monitor Systems

FOR LOGISTICS, HARBOUR AND INDUSTRIAL APPLICATIONS

Motec Heavy-duty camera solutions

Motec specializes in the development and production of camera-based driver assistance systems for utility vehicles and mobile machinery.

Motec protects lives by making mobile machinery and their surroundings safer. Its cameras make operaters' work easier by reducing stress and uncomfortable physical movements. And, it helps companies become more successful by accelerating processes and avoiding damage.

Motec has over 30 years of experience in the construction and manufacture of robust, reliable mobile cameras, including the associated electronics.

Its product range includes reversing cameras, industrial cameras, displays, advanced video controllers, DVRs, customer-specific wiring looms, and wireless video transmission solutions.

Motec's customers ar leading OEMs of utility vehicles and mobile machinery for industries working in tough environments.

At its development center for utility vehicle assistance systems (MENAS) Motec develops, tests and validates software algorithms for customized driver assistance systems. Its suite of algorithms incorporates solutions for real-time image processing, aerial view projection, sensor fusion, stereo view, image processing and driver assistance systems.

Motec is a unit of AMETEK Inc. a leading global manu-facturer of electronic instruments and electro-mechanical products.

MOTEC CAMERA MONITOR SYSTEMS FOR THE LOGISTICS AREA

Motec camera monitor systems support the operator of large and complex vehicles to move them safely and more efficiently, regardless of the vehicle's size. With the assistance of extremely robust heavy-duty cameras, the operator can detect people and objects within the machine's danger zone before it is too late. This way, Motec systems save lives, make working conditions easier, and save costs.

Technical service – guaranteed fast support
Top quality means also top service. When faced with difficult technical challenges or questions that need answers, Motec can assist. Its sales and engineering departments work hand in hand. Customers benefit from efficient communication with no red tape. Motec engineers understand customers processes, know what they need and can find a solution quickly.

Hotline
Phone +49 6433 9145-9888
motec.service@ametek.com





ROBUST MODULAR HARDWARE AND INTELLIGENT SOFTWARE

- High housing protection rating
- Shock and vibration resistant
- Large temperature range
- Modular components
- Digital technology for superior image quality
- Development, validation and integration of algorithms
- Real-time image processing
- 270°/360° top-view projection
- Sensor fusion (ultrasonic/radar)
- Stereo cameras (object recognition)
- Operator assistance systems (active collision warning)

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Forklifts

REAR VIEW MONITORING – SAFE AND ERGONOMIC

A camera at the rear – optionally with an angle of 115° or 180° – is automatically activated as soon as the truck is shifted into reverse. This way, people and objects behind the forklift truck are detected in time and accidents are avoided. This makes it also easier to judge distances to stored goods and racking so that material damage is less frequent.

Ergonomic advantage: the driver sees the rear area without having to turn around, which protects the driver's back and neck.

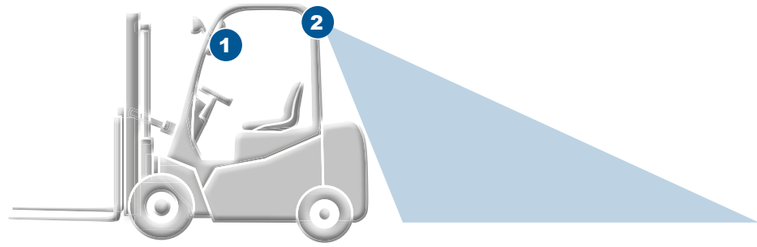






Various mounting positions for back room monitoring





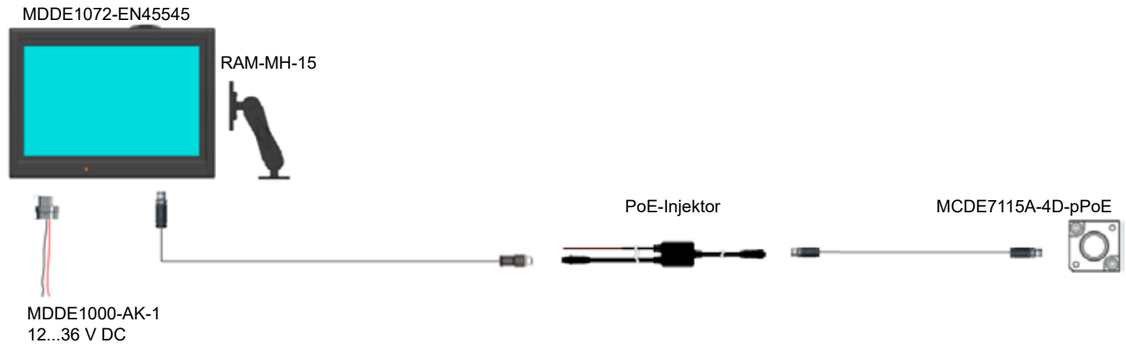
EXAMPLE

MDDE1072
Digital 7" monitor

1

MCDE7000A
Ethernet camera

2



Forklifts

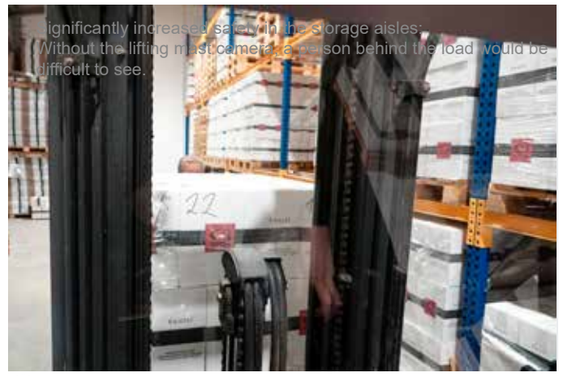
VISIBILITY OF CARRIAGE WAY

Large volume loads, e.g. in the beverage industry, block the driver's view to the front of the vehicle. A camera on the mast allows the operator to look ahead of the forklift truck into the storage aisle. This way, the driver can observe people in the lift truck's path and can detect objects and obstacles in front of his vehicle well ahead of time.

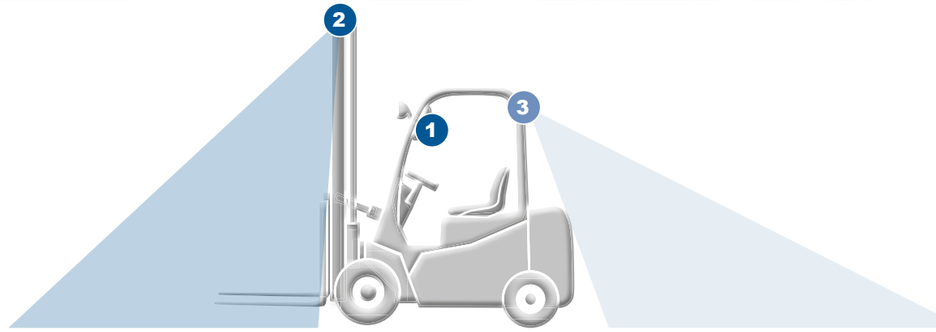
The system can be extended by a camera that is automatically activated when reversing the vehicle.







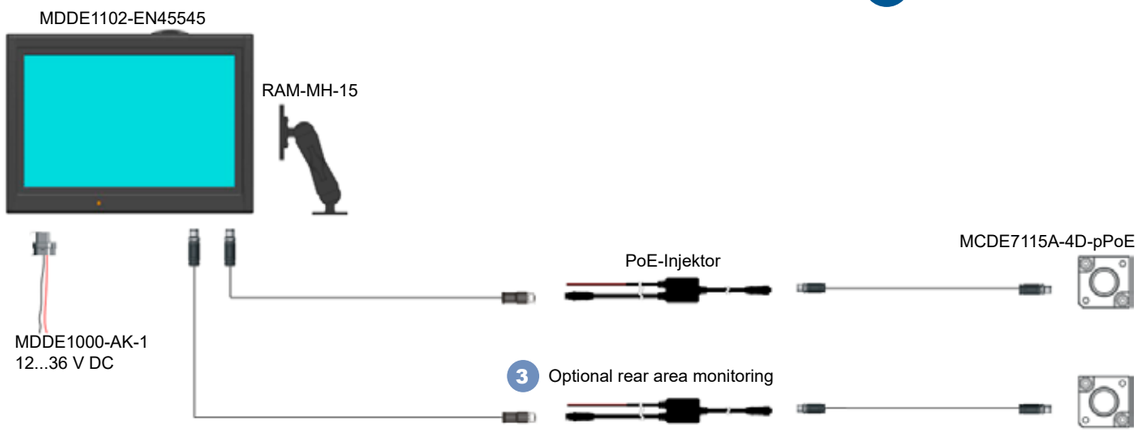




EXAMPLE

1 MDDE1102
Digitale 10" monitor

2 MCDE7000A
Ethernet camera



Reach stacker

TWISTLOCK AND REAR VIEW MONITORING

The mobility of reach stackers is limited without camera technology. Motec cameras help the driver to see the rear area as well as the path ahead of him. The cameras help to assess distances and recognise persons or obstacles in the danger area well in time.

Additional cameras on the spreader support the driver and ensure the safe handling of containers by monitoring the position of the twistlocks. Consequently, it effectively prevents accidents and saves costs through fast operating procedures.

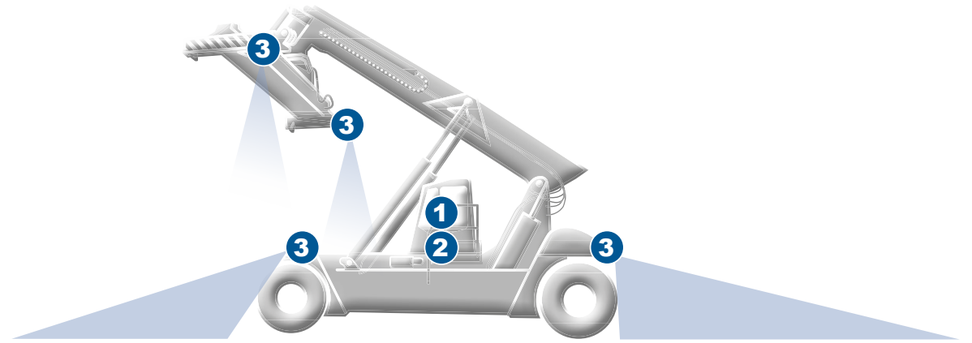




The cameras are mounted in such a way as to provide an optimum view onto the twistlocks.







MDDE1122
Digital 12" monitor

1

MDDE1122-EN45545

MDDE1000-AK-1
12...36 V DC

MVRD5200
Digital radio

2

RAM-MH-15

Receiver

Repeater

Transmitter

Ethernet switch

Switch M12 Ethernet
NITE-XS6-1100

MCDE7000A
Ethernet camera

3

MCDE7xxxA-4D-pPoE

back area

Twistlock

Twistlock

Road

Stationary and semi-stationary applications

EXAMPLE OF MACHINE TOOLS

In order to monitor production processes, cameras are mounted to the gripper and transport container. The cameras help you to verify the correct positioning of the workpiece or semi-finished product, or to display the filling level of the transport boxes.

This allows workflows and production planning to be optimised.

Alternatively, the system can be extended by a digital wireless system. In addition, it is possible to integrate an Ethernet camera.



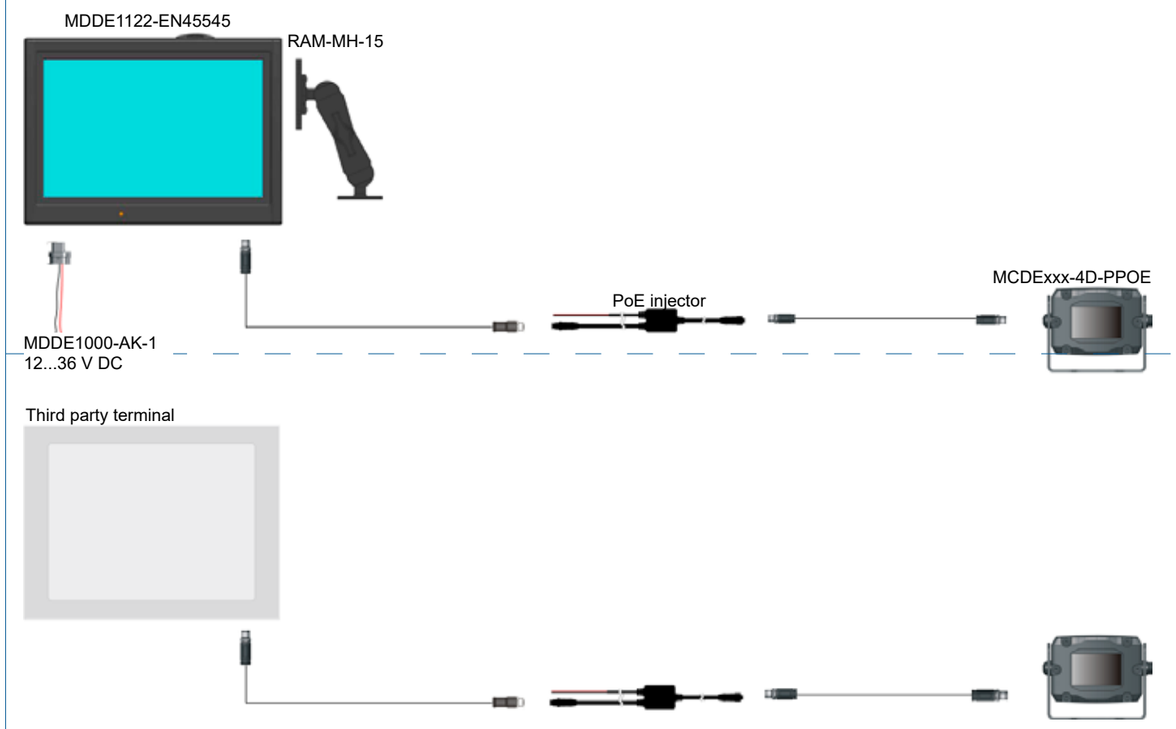


Camera-monitored workplace during line production.



MDDE1122
Digitale 12" monitor

MCDE3000
Ethernet camera



TVI AI Person Detection System

SAFETY FROM EVERY PERSPECTIVE

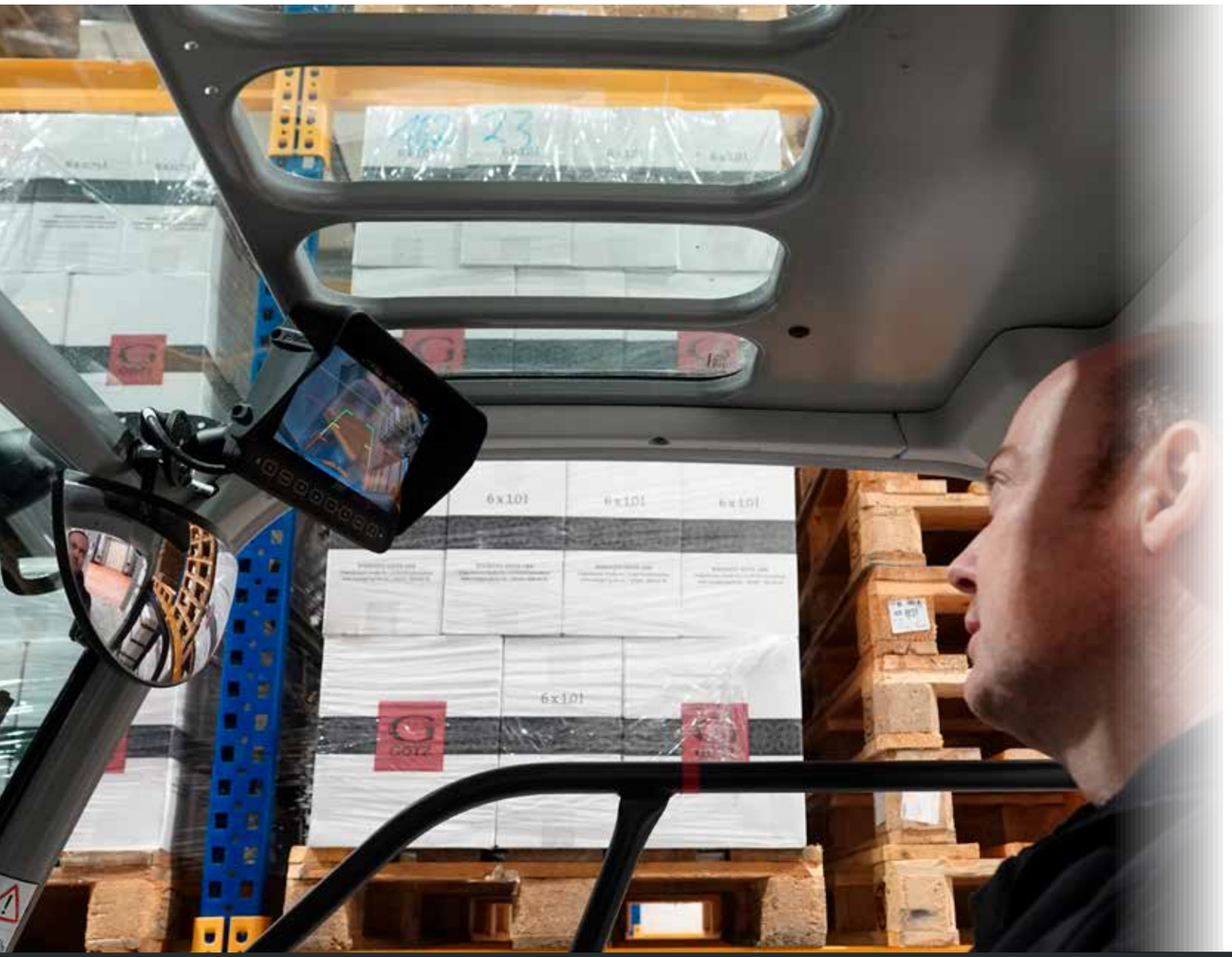
The TVI person detection system by Motec offers an innovative solution to enhance vehicle and personnel safety. Specially trained AI software recognizes persons in the defined warning zone and alerts the operator, providing vastly improved safety. Alarm signals are effectively filtered to prevent false alarms that could result in stress and desensitization of the driver. Only relevant warning signals reach the driver, eliminating unnecessary alerts.

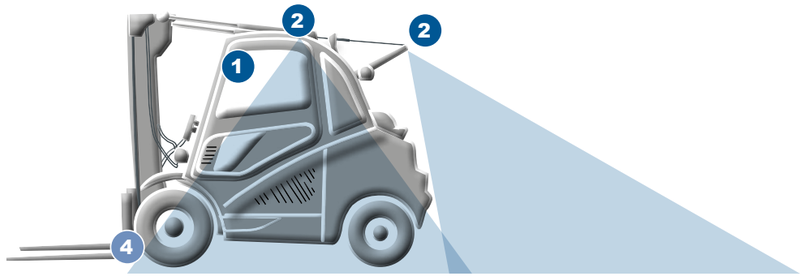
The result: Improved reaction time, enhanced vehicle and personnel safety, reduced risk of accidents and reduced costs.





TVI AI system:
People or objects are detected in different zones.





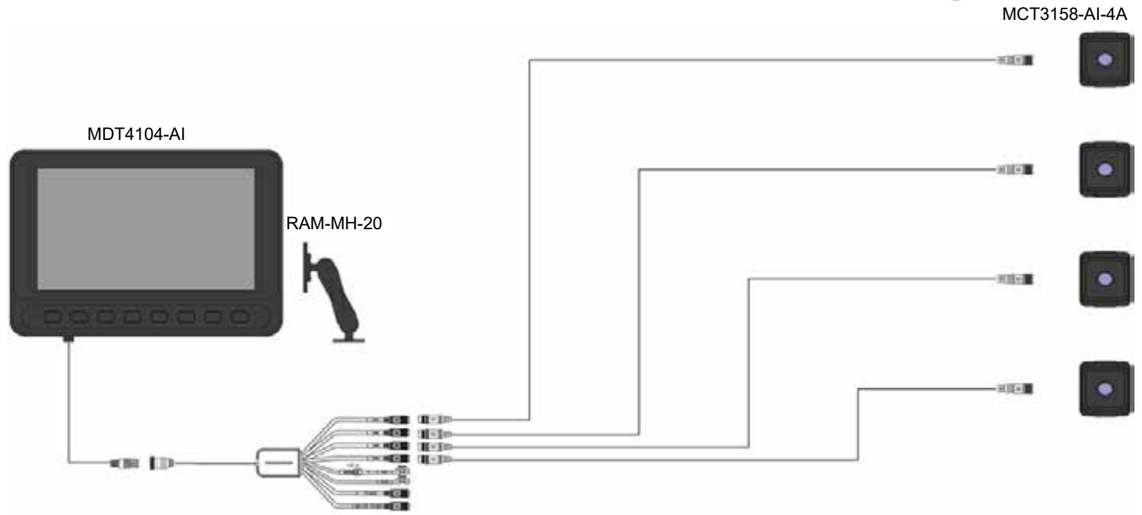
EXAMPLE

MDT4104-AI
TVI KI 10" monitor

1

MCT3158-AI
TVI AI cameras

2



3D Bird's Eye View System TVI

SAFTEY FROM EVERY ANGLE

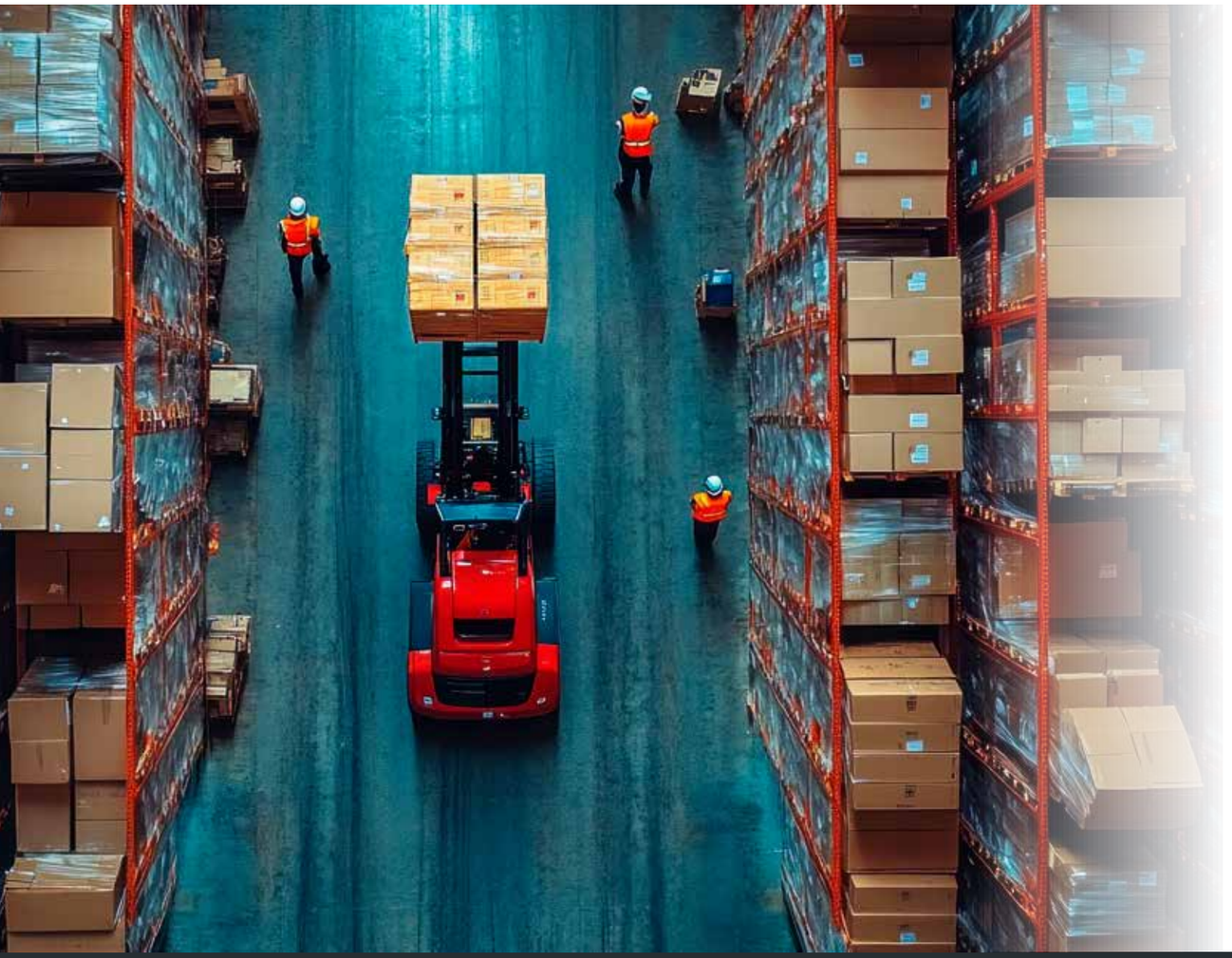


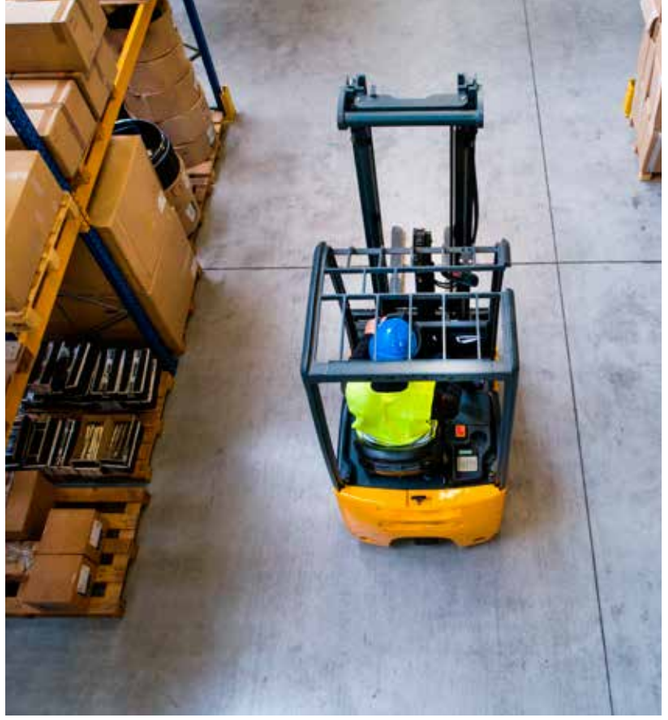
At Motec, we pride ourselves on providing cutting-edge solutions for enhancing vehicle safety and awareness. Our Heavy-Duty 3D Top View System TVI is designed to revolutionize the way you navigate your surroundings, offering unparalleled visibility and peace of mind on the road. Motec‘s

Heavy-Duty 3D Top View System TVI meets all the requirements of heavy-duty and commercial vehicles used in logistics, but also many other applications such as agriculture, construction, municipal applications, on-road transportation etc.

The robust design guarantees a long service life in harsh conditions. Thanks to its flexibility, it can be used for a wide range of vehicles and the associated visibility problems.

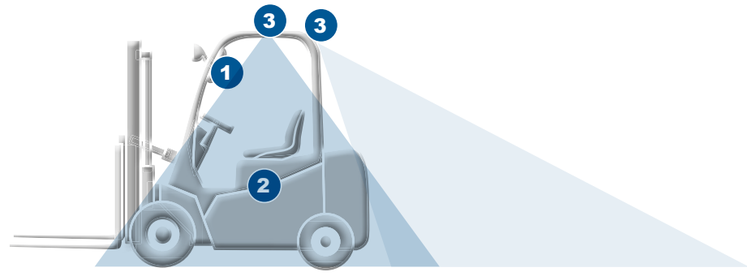
Motec‘s Heavy-Duty 3D Top View System TVI protects lives, help people and save money.





Intelligent combined view tailored to your vehicle's application (29 view modes)



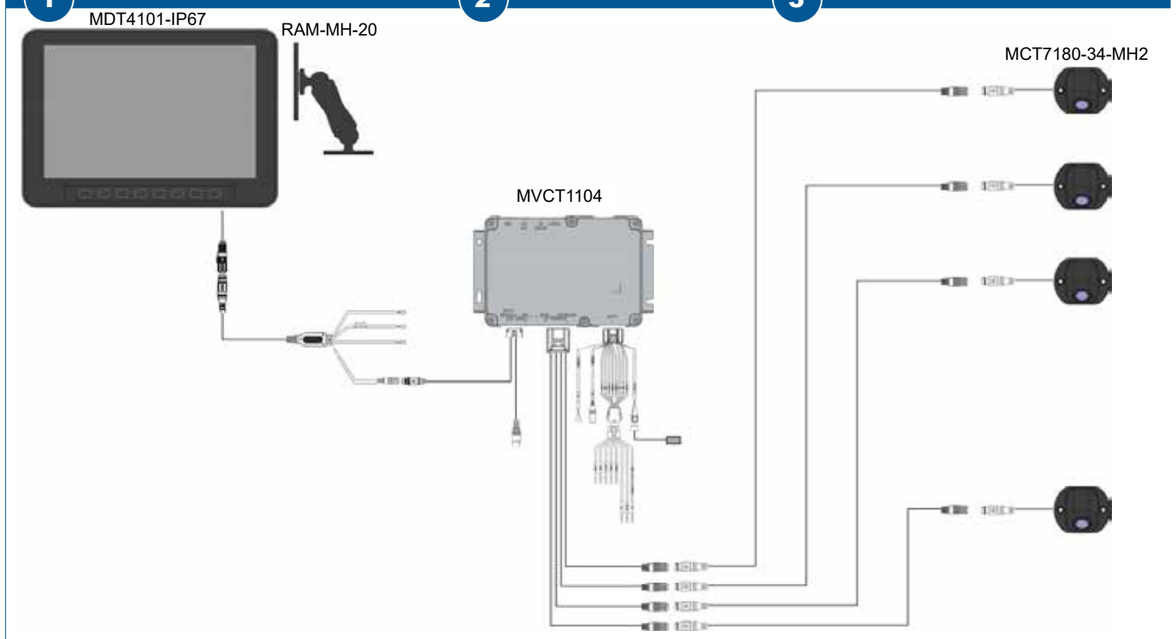


EXAMPLE

1 MDT4101-IP67
TVI 10" monitor

2 MVCT1104
TVI video controller

3 MCT7180-34-MH2
TVI camera



Reach trucks

FORK-MOUNTED CAMERA

The loading and unloading of extremely long and deep loads in the warehouse requires precision and the driver’s careful attention. A fork-mounted camera makes it possible to monitor both forks.

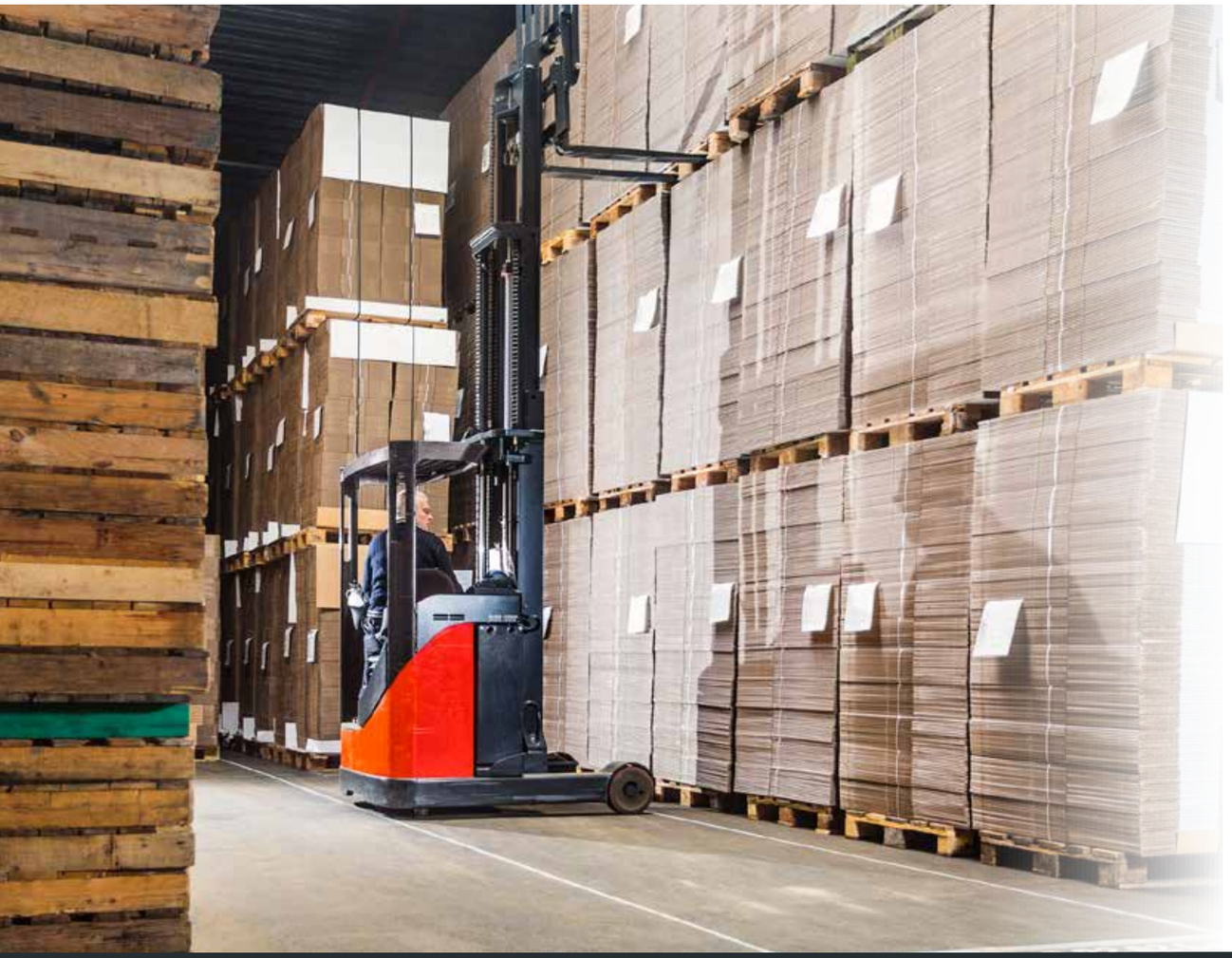
In order to avoid the installation of cables inside the mast, a wireless system can be installed. Digital signals provide the image transmission from camera to monitor across short or long distances. Several unit pairs operated in parallel allow high flexibility for the adaptation to a variety of forklift and visualisation problems.





The fork camera on the reach truck allows the view onto both forks.





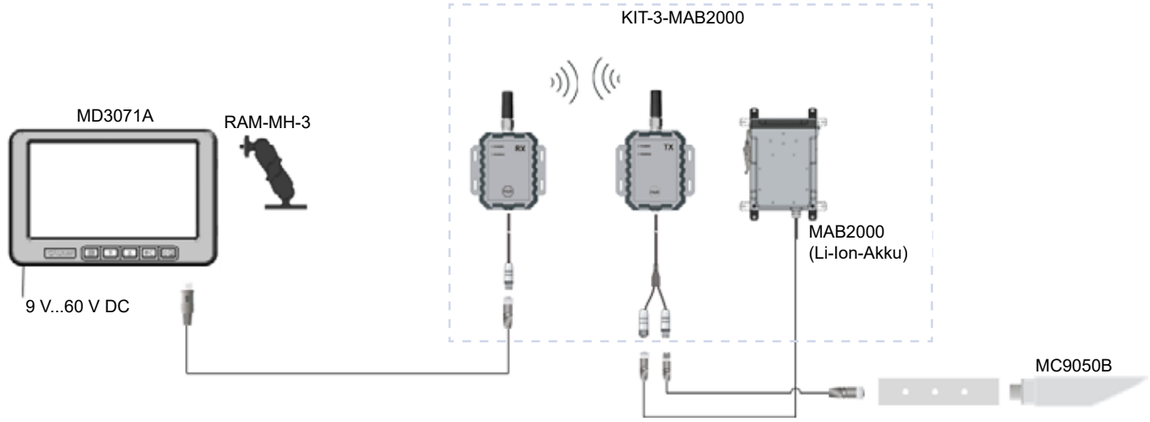


EXAMPLE

1 MD3071A
Heavy-duty 7" monitor

2 KIT-3-MAB2000
Digital wireless system

3 MC9050
Fork-mounted camera



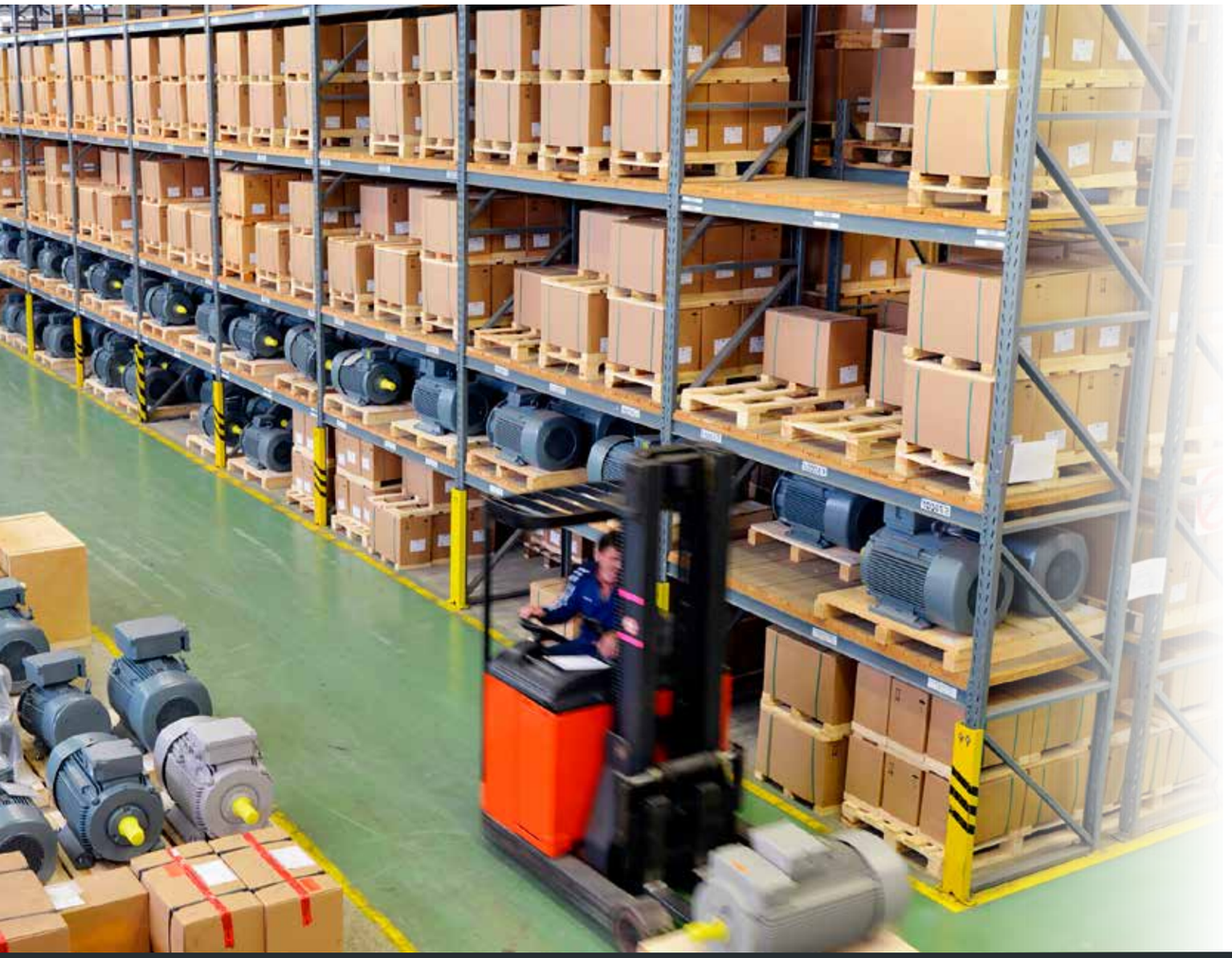
Reach trucks

FORK SHANK CAMERA

Compared to the add-on fork-mounted camera, the rugged and compact MC9150B is mounted to the back of the fork. This provides the best protection for the camera against shocks and impacts. The 3 mm pinhole lens is also protected to prevent damages caused by pallet cages or pallets due to a pinhole opening.

The 50° angle of view provides an unobstructed view onto both forks facilitating the loading and unloading of goods.



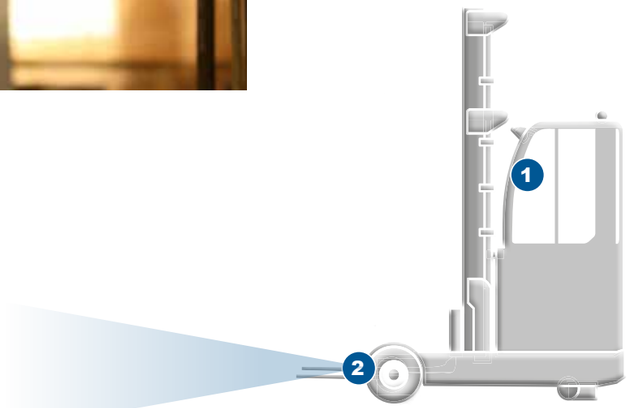






Increased safety when used at high lifting heights and in poorly visible positions, thanks to Motec camera systems.

Protected installation position of the fork shank camera.

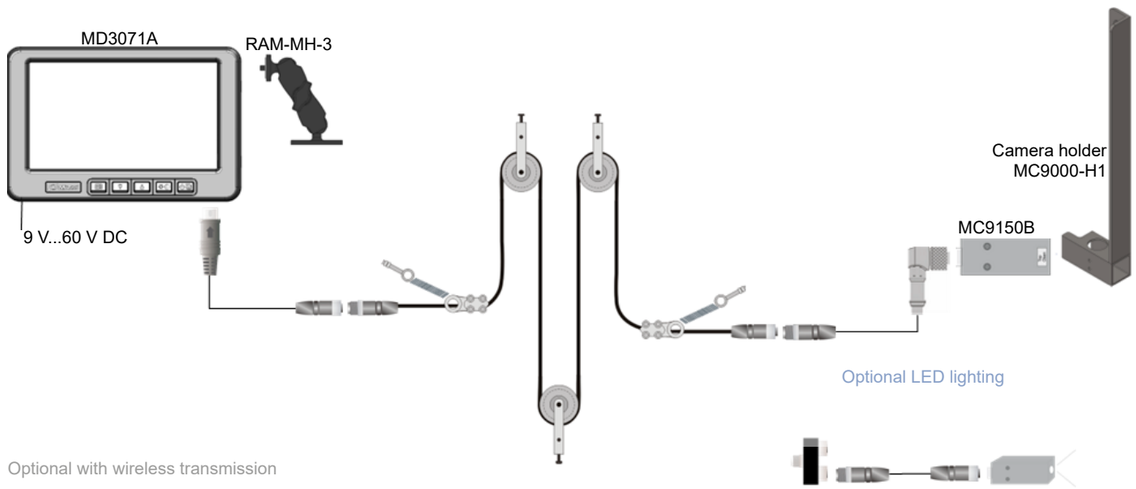


EXAMPLE

1 **MD3071A**
Heavy-duty 7" monitor

MK554
Mast cable

2 **MC9150B**
Fork shank camera



Reach trucks

DUO CAMERA SYSTEM

2 cameras, fixed to the inside mast, also allow the view to the outer right- and left-hand side of the pallet. Both camera images are displayed simultaneously on the monitor (split-screen mode).

The operator can visualise both forks and can see the area below and to the side of the forks or load.

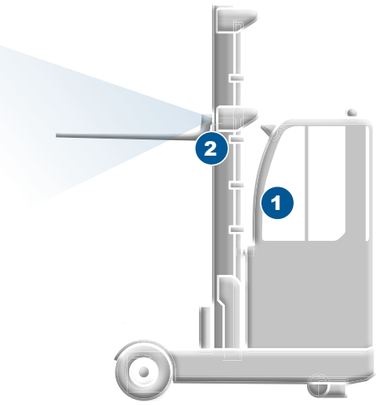






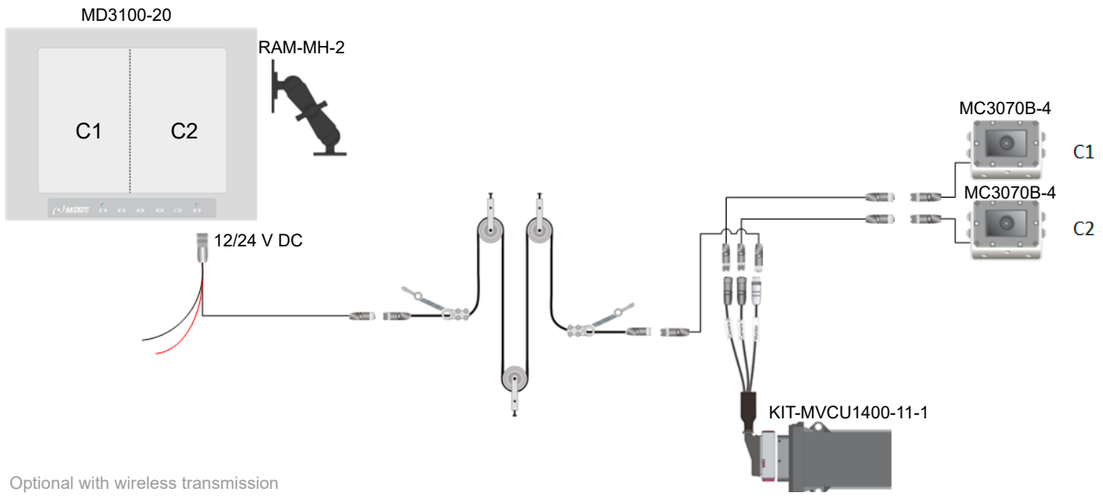
Cameras allow simultaneous viewing of the outer left- and right-hand side of the pallet.





EXAMPLE

1			2
MD3100 **Heavy-duty 10,2" monitor**	**MK554** **Mast cable**	**KIT-MVCU1400** **Video control unit**	**MC3000B** **Heavy-duty camera**



Optional with wireless transmission

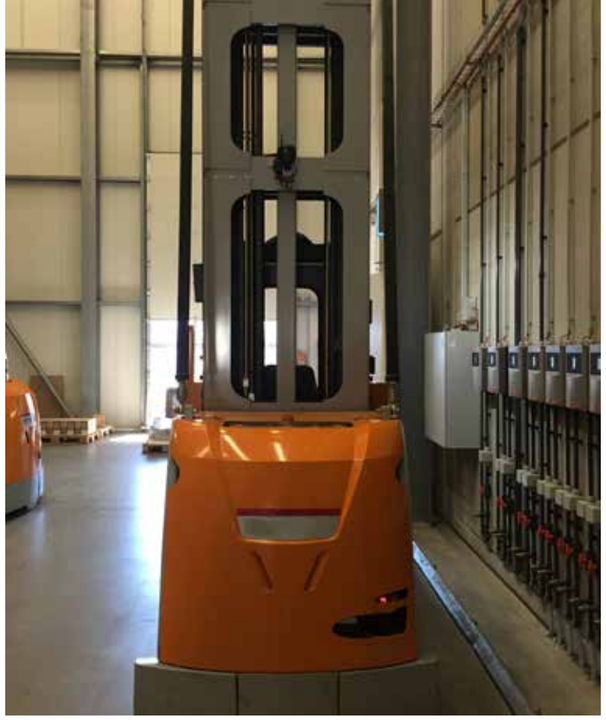
High rack stackers

REAR VIEW MONITORING

High rack stackers use a camera that is attached to the rear mast. The camera is activated automatically as soon as the driver engages the reverse gear. This way, people and objects behind the forklift truck are detected in time and accidents are avoided. This makes it also easier to judge distances to stored goods and racking so that material damage is less frequent.

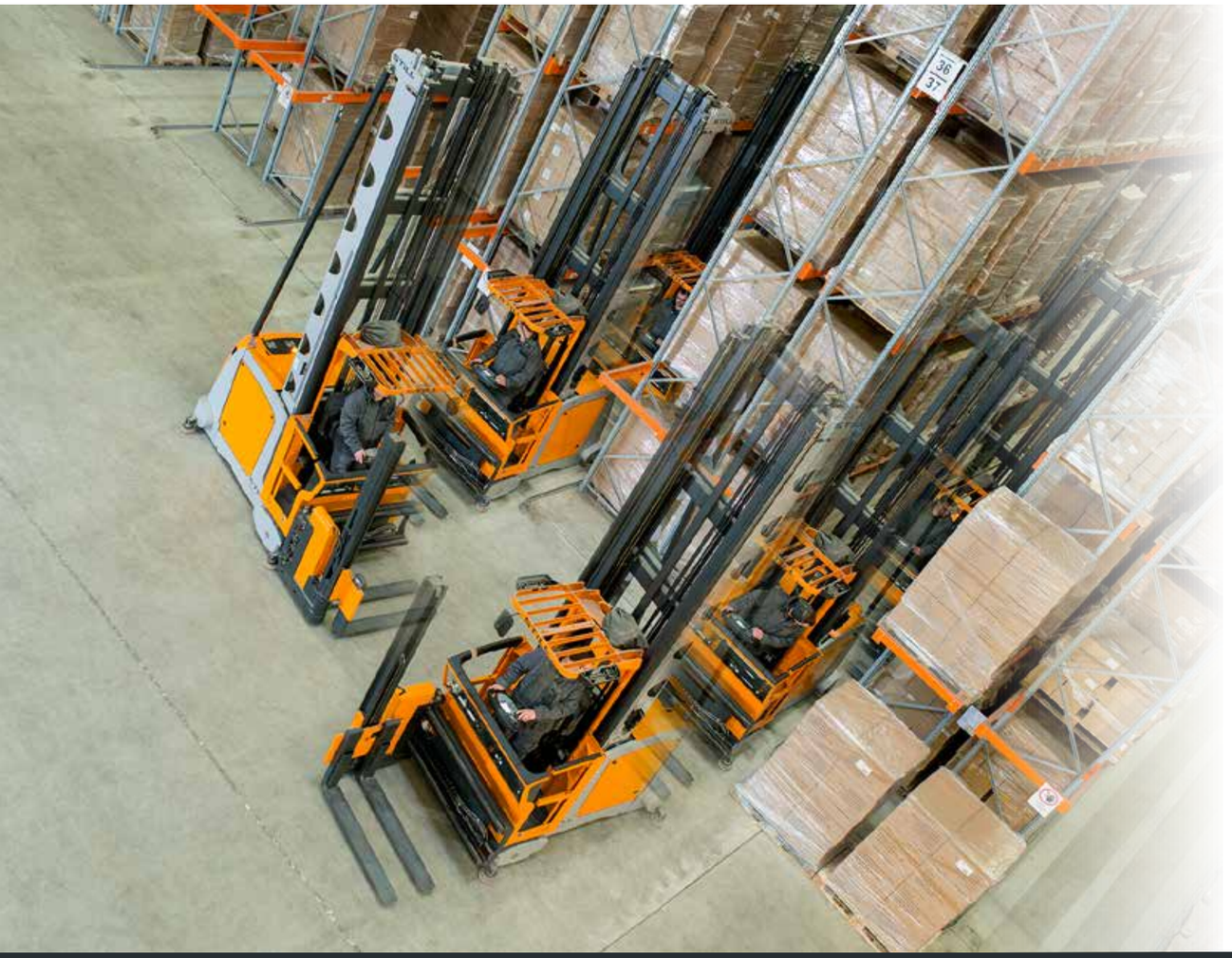
Ergonomic advantage: the driver sees the rear area without having to turn around, which protects the driver's back and neck.

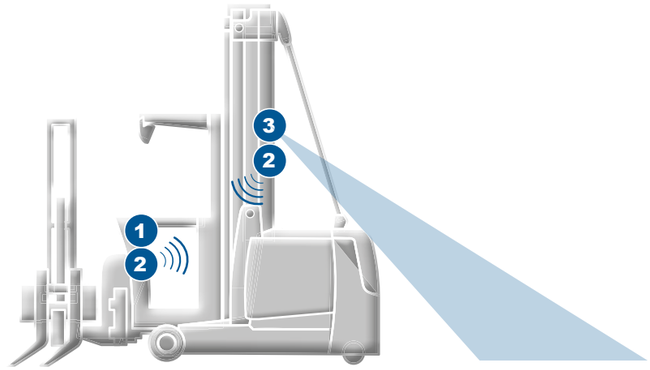




Camera mounted to the rear mast.





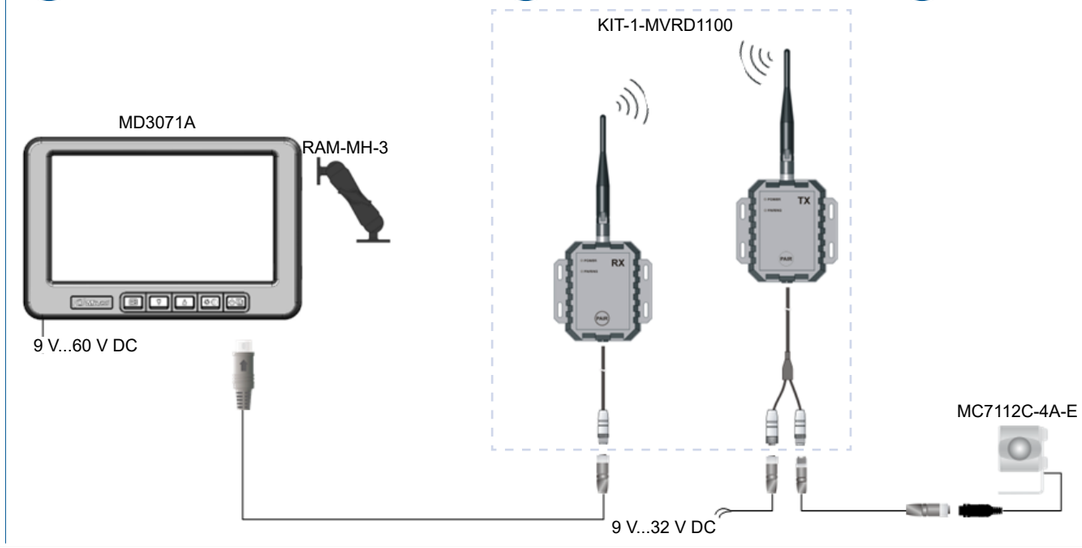


EXAMPLE

1 MD3071A
Heavy-duty 7" monitor

2 KIT-1-MVRD1100
Digital wireless system

3 MC7000C
Heavy-duty camera



Forklifts

CARRIAGE MOUNTED CAMERA

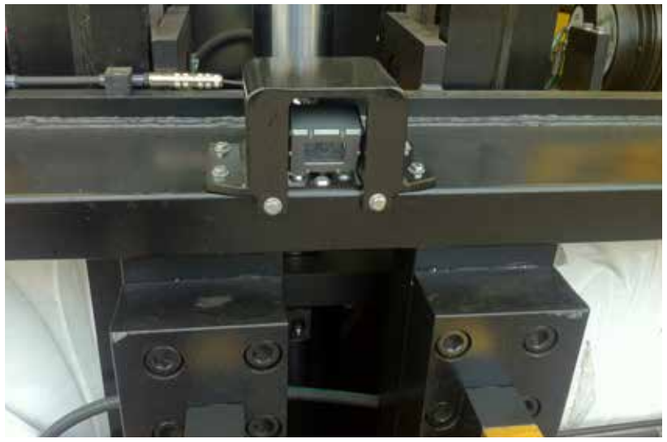
The fork carrier camera provides the operator with an optimal view onto the forks and the area in front/underneath his vehicle. This allows a safe access into a variety of load carriers. In addition, the camera provides an indirect view of the area in front of the truck.

The system can be extended by a camera that is automatically activated when reversing the vehicle.

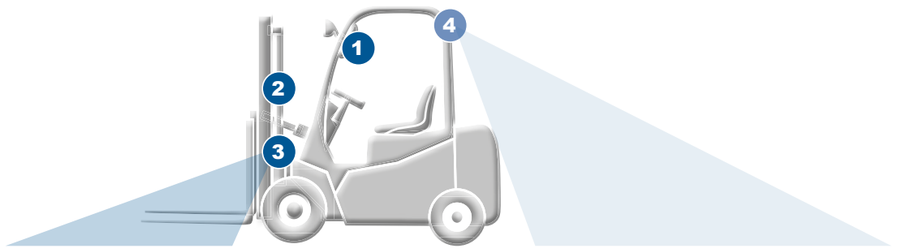




A carriage mounted camera is lifted simultaneously with the load.

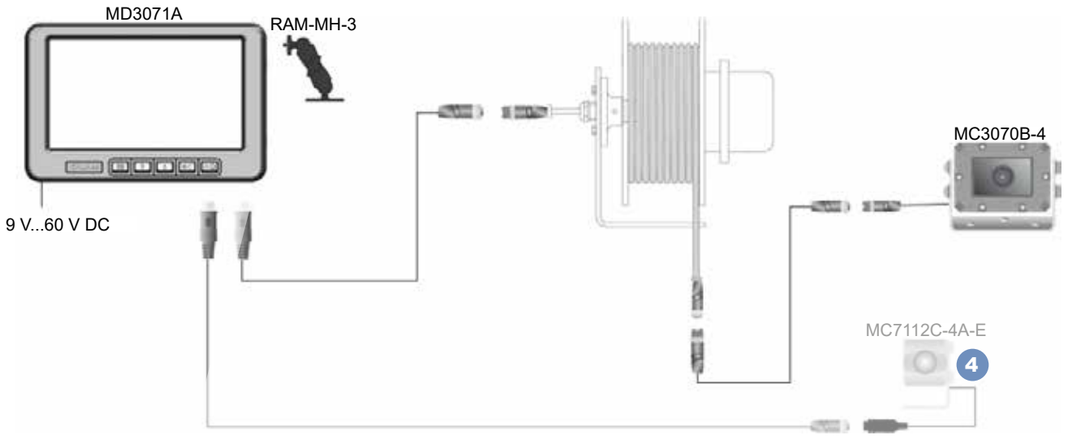






EXAMPLE

1	2	3
MD3071A **Heavy-duty 7" monitor**	**FLT** **Cable drum**	**MC3000B** **Heavy-duty camera**



Optional with wireless transmission

Optional rear area monitoring

Forklifts

TRUCK LOADING WITH IMAGE RECORDING

A camera mounted on the mast allows you to look underneath the lift truck forks, directly onto the load or loading edge.

In addition, a WLAN-capable digital recorder with a recording capacity of up to 5 days can be connected. A live view and recording of the images are possible simultaneously. Recording takes place at the push of a button and can be event- or time-controlled.

The system can be extended by an automatically activated rear view camera to detect other vehicles or persons in the danger area.

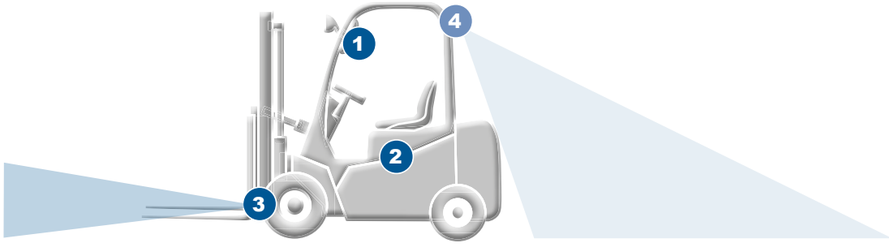




Camera-assisted truck loading.





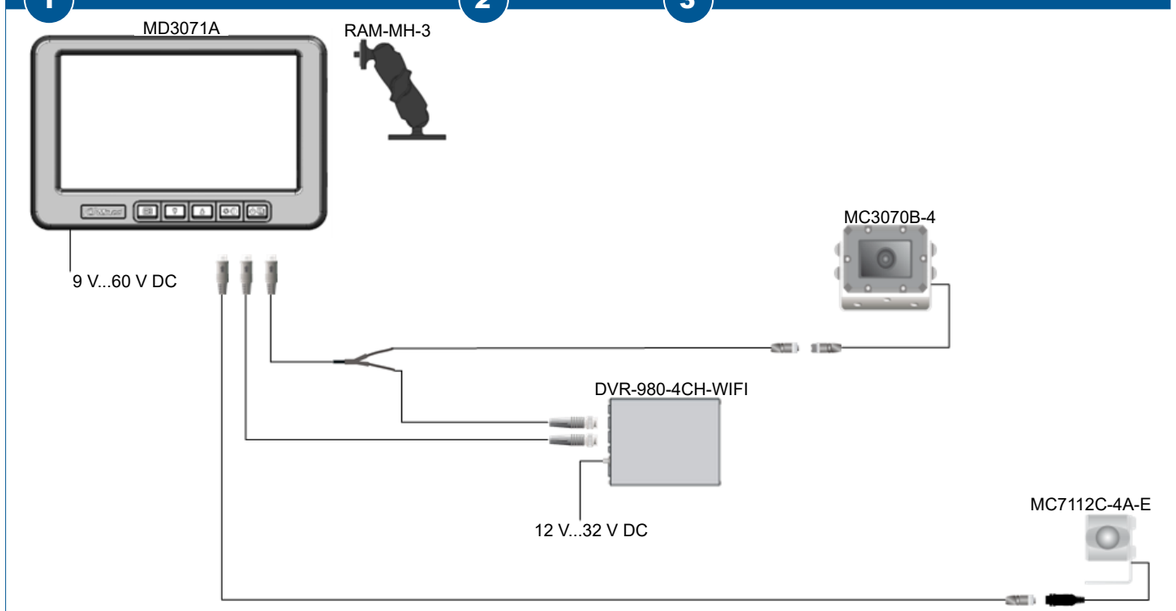


EXAMPLE

1 MD3071A
Heavy-duty 7" monitor

2 Digital recorder

3 MC3000B
Heavy-duty camera



Attachments

VISUAL AIDS FOR ROTATORS, PAPER ROLL CLAMPS

Bulky loads, e.g. rolls used in the paper industry or rotators in, obscure the view forward. Special system solutions effectively support the driver when manoeuvring load in the storage aisle and when positioning an attachment or a truck lift fork.

The safety risk for man and machine is reduced to a minimum and the efficiency is increased.



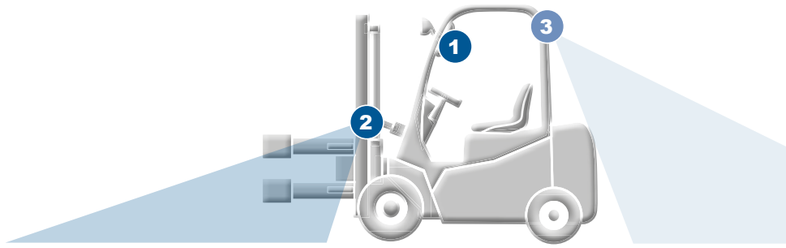




The camera allows visibility ahead of or below the load.





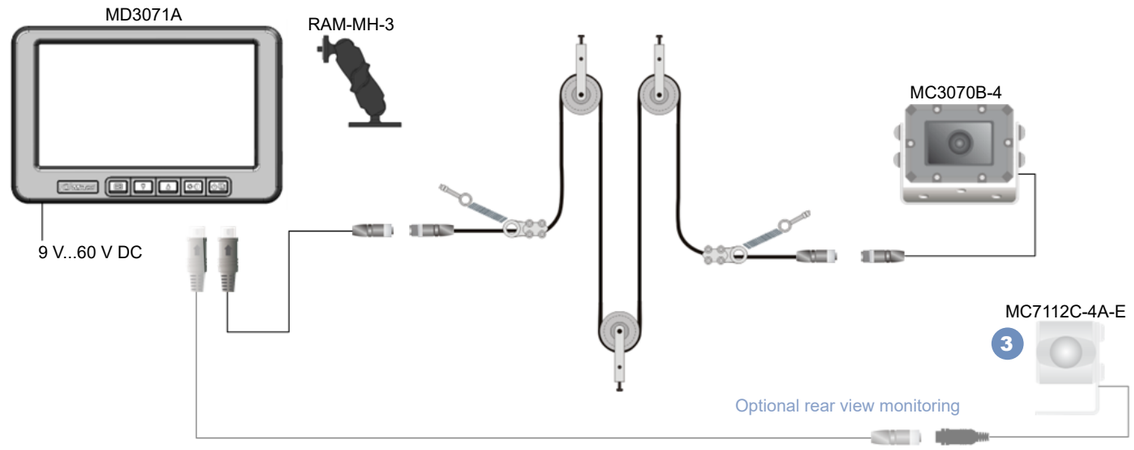


EXAMPLE

1 MD3071A
Heavy-duty 7" monitor

MK554
Mast cable

2 MC3000B
Heavy-duty camera



Optional with wireless transmission

Telescopic fork

HANDLING OF PALLETS

Attached to the inside of the telecopic fork, the camera is well protected and always at the level of the lift truck fork. Due to the 50° angle of view, the driver has a secure view of both the forks and the void entry points of the pallets.

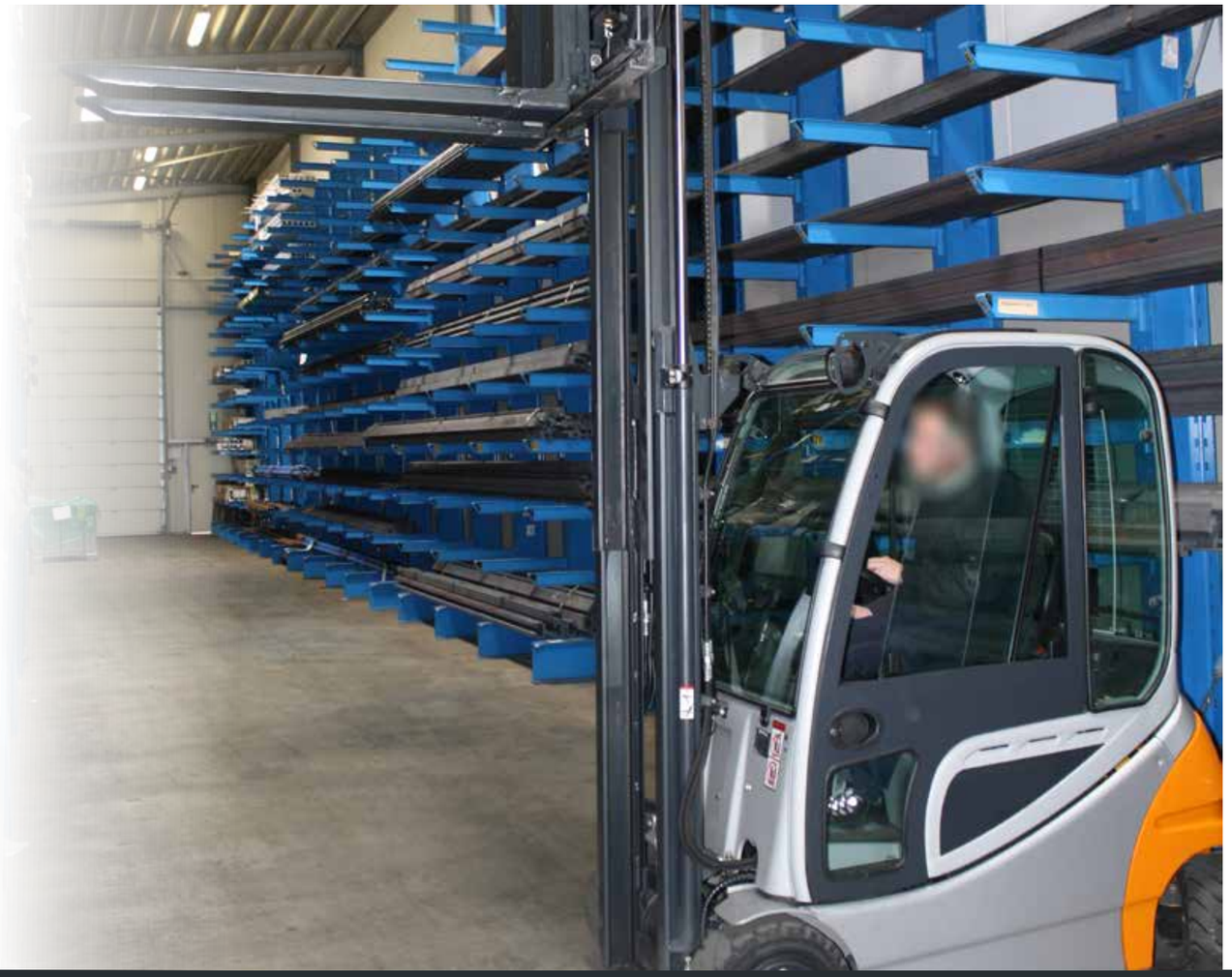
Motec cameras are designed to increase the safety during loading and unloading of goods. Thanks to the LED power light, the safe loading and unloading is assured even under poor light conditions.

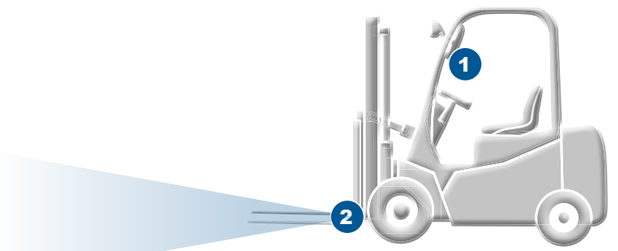




MC9150B on telescopic forks.

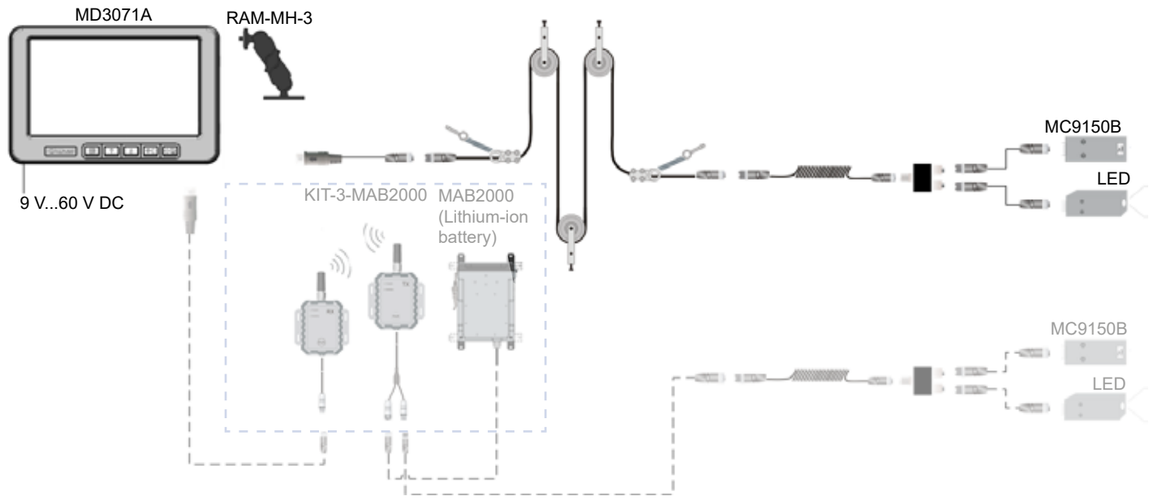






EXAMPLE

MD3071A Heavy-duty 7" monitor	MK554 Mast cable	MC9150B Heavy-duty camera



Optional with wireless transmission

Four way sideloader

MAST OR FORK CARRIER CAMERA SYSTEM

Four way sideloaders are used as conventional counterbalance trucks or especially for the transport of extremely long and deep loads in narrow storage aisles. Here, the material handling requires the utmost precision and attention from the lift truck operator.

A fork carrier or mast camera facilitates the loading and unloading of goods, providing a direct view onto the load or the forks.

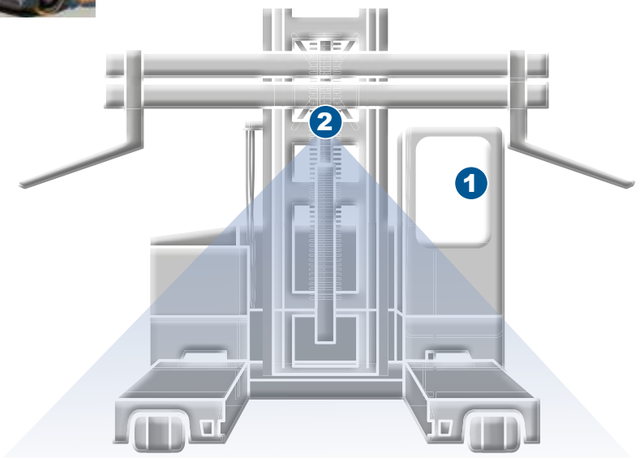




Motec mast or fork carrier camera – always level with the load.







EXAMPLE

1			2
MD3073 **Heavy-duty 7" monitor**		**MK554** **Mast cable**	**MC3000B** **Heavy-duty camera**



Side loader

LATERAL AND REAR VIEW MONITORING FOR MORE SAFETY

When used under heavy-duty conditions, side loaders enable safe and fast transport of long, bulky loads, even in narrow aisles or passages.

Rear and side cameras open the driver's view in all directions and increase safety while on the move. People and obstacles around the side loader are recognised well in time.

An optional fork carrier camera facilitates the loading and unloading of goods, providing a direct view of the load or the forks.

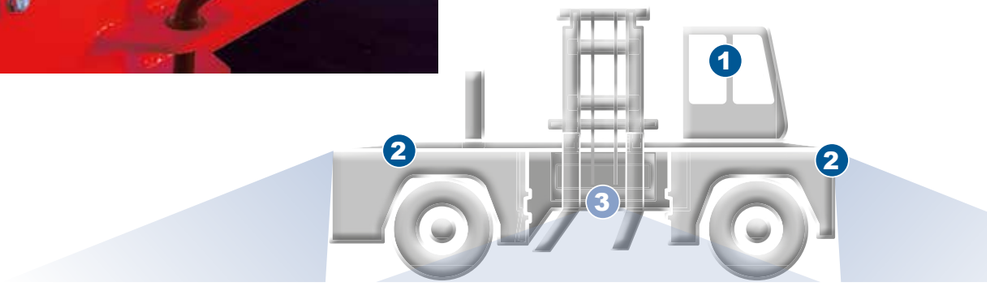






Reversing camera for more safety while on the move.

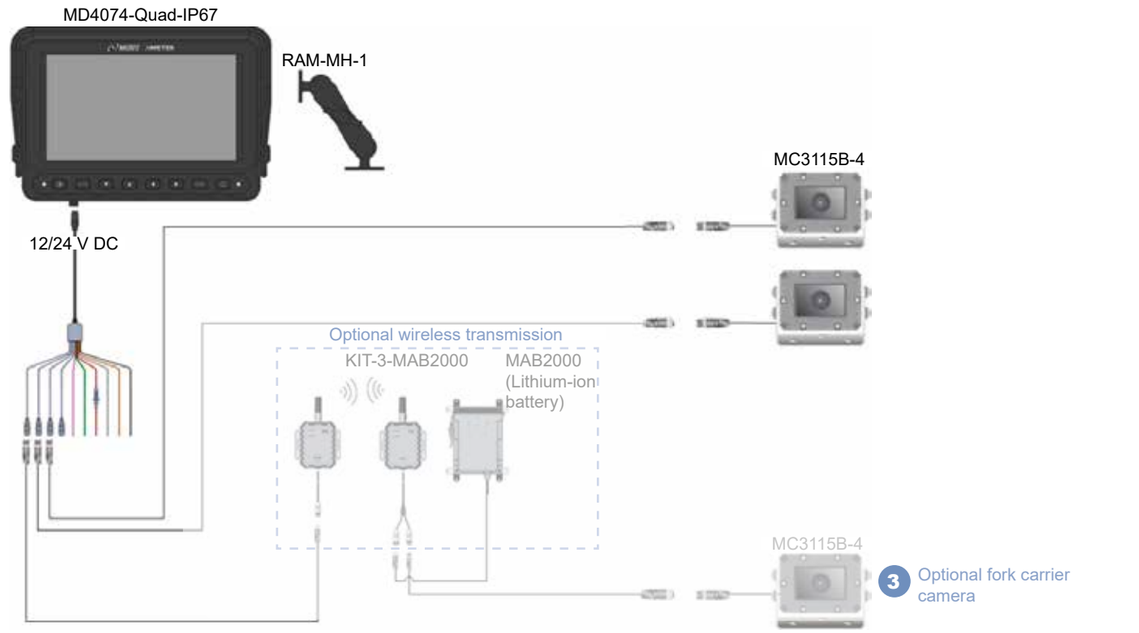




EXAMPLE

1 MD4074-Quad-IP67
Heavy-duty monitor

2 MC3000B
Heavy-duty camera



Telescopic loader

WIRELESS SOLUTION

Cameras on the retrieval of the telescopic handler enable the driver to view the unloading area. They facilitate the handling of pallets and material or the attachments and work platforms.

Due to various lifting heights and a wide range of payloads, wireless data transmission should be preferably used.

The system can be extended by a camera that is automatically activated when reversing the vehicle.

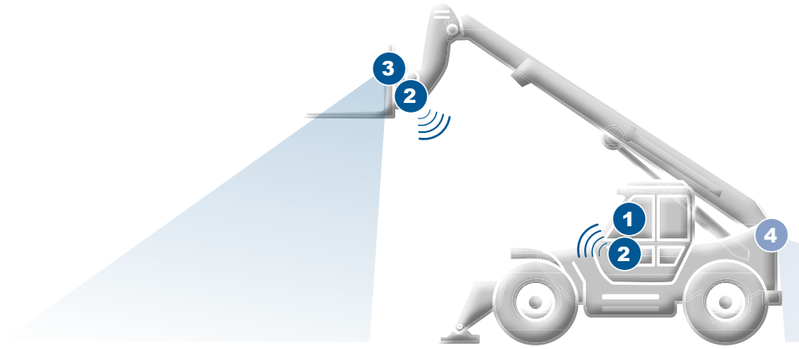




Telehandler with add-on device.







EXAMPLE

1 MD3071A
Heavy-duty 7" monitor

2 KIT-3-MAB2000
Digital wireless system

3 MC7000C
Heavy-duty camera

