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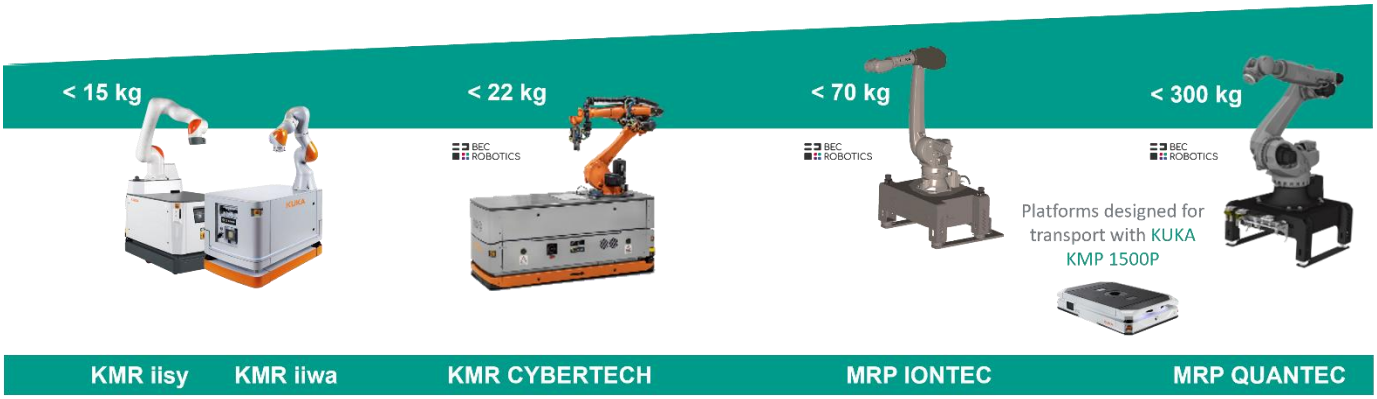
MOBILE ROBOT PLATFORM

Mobile Robotics for Production and Logistics

MRP IONTEC & QUANTEC

Mobile robotic solutions with high payloads

At a time when production processes are becoming increasingly efficient, flexible, and autonomous, mobile automation is becoming increasingly important. While battery-powered mobile manipulators offer location-independent flexibility (eg. KUKA KMR iisy or KMR Cybertech), conventional mobile robot systems are often costly, bulky, and limited in adaptability—restricting their use in many industrial applications. With the MRP IONTEC and MRP QUANTEC mobile robot platforms, BEC Robotics offers a robust and future-proof solution for the flexible automation of industrial processes.



The decoupling of robots and vehicles creates new opportunities for automation – even with high payloads and maximum efficiency. Powerful KUKA industrial robots are flexibly moved by driverless transport systems (AGVs) and can perform tasks with payloads of up to 300 kg without complex calibration!

Mobile Robot Platforms: The fast track to the smart factory with economical robotics solutions.

What is the MRP-System?

Conventional mobile robot systems are often unsuitable for high payloads – both from a technical and an economic point of view. The MRP system represents a new way of thinking in mobile robotics. The focus is on decoupling the robot from the vehicle, whereby the robot is temporarily deployed at a workstation and anchored in position via standardized docking stations, where it is supplied with power and compressed air. Once the task is complete (e.g., pick-and-place with high payloads), the robot is picked up by the AGV and transported to the next station. The vehicle is not permanently tied to a specific robot, but can take on other value-adding tasks after the modular robot has been set down.

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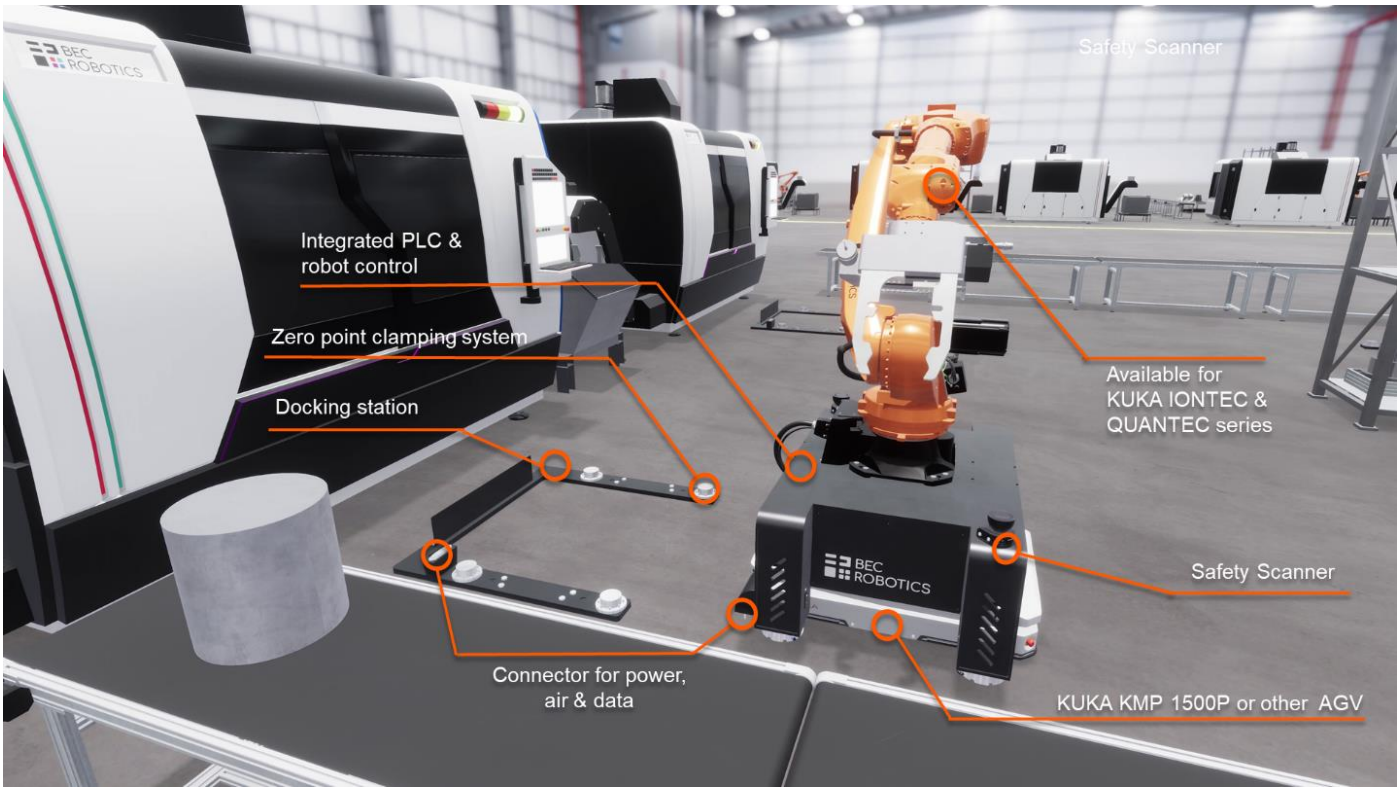

The MRP system architecture enables the use of proven industrial robots such as the KUKA IONTEC or QUANTEC on mobile platforms – without costly, permanently integrated mobile complete systems.

MRP-System features at a glance

Payload: IONTEC series up to 70 kg, QUANTEC series up to 300 kg

Plug & Produce: Short start-up times thanks to precise placement on machines, cells, or workstations

Navigation: Latest vehicle and fleet control

Flexibility: Robots can be used for various applications, automated gripper change on the platform or stationary

Connectivity: Flexible connection to control systems and machines

Modularity: All robots from the KUKA IONTEC and QUANTEC series can be used

Power supply: Via docking stations, no costly batteries installed in the platform

Safety: Robots equipped to industry standards with emergency stop, environment monitoring, and zone control

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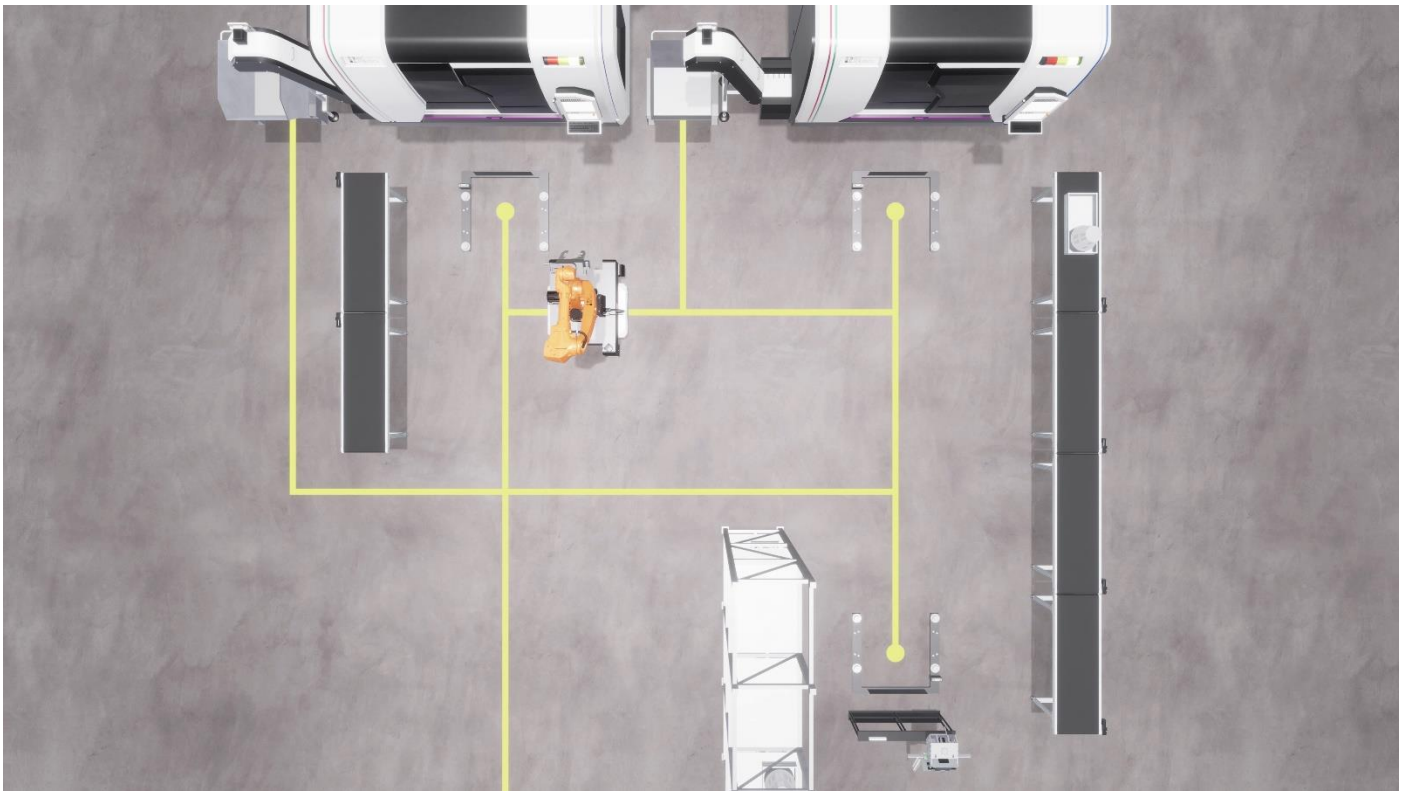
Mobile robots reimagined!

Mobile manipulators with permanently attached vehicles have established themselves in many applications. They still offer advantages in certain scenarios - for example, where a robot is used flexibly at different points and a fixed coupling is not structurally possible. However, when tasks, stations, and processes are strictly defined and long ranges with payloads > 20 kg are required, classic mobile robots reach their limits.

The MRP system takes an alternative approach and offers additional degrees of freedom:

Attribute	Conventional Mobile Manipulator	MRP System by BEC Robotics
System Architecture	AGV and robot form a fixed unit	Robot and AGV are decoupled
Operational Flexibility	Ideal for mobile tasks at various or undefined locations	Predefined workstations with docking stations
Power Supply	Robot and AGV both battery-powered	AGV powered by battery, robot power supply via docking station
Process Speed	Often reduced robot speed, camera-based position calibration	Full robot speed, precise positioning via docking station
Payload & Reach	< 20–25 kg Max. reach: ~1800 mm (robot)	Up to 300 kg Max. reach: ~3100 mm (robot)



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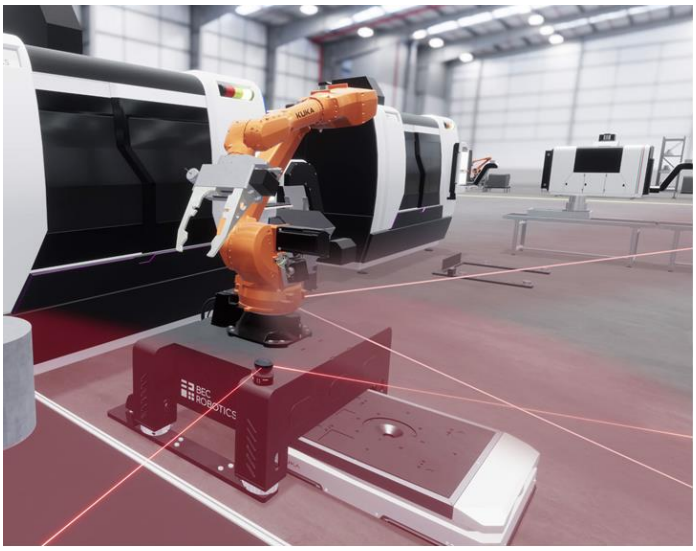
Integrated safety concept

MRP platforms are equipped with certified safety scanners as standard. During transport, the AGV monitors the environment – the robot moves to a parking position. After docking, the system checks the work area via integrated safety zones and only activates the robot when clearance is given. The safety architecture is individually adapted according to risk assessment.



scanning the environment

safety monitoring while robot is operating

Areas of Application

Mobile robot platforms are suitable for a wide variety of industrial scenarios

- Operation of multiple machines by a single mobile robot (instead of one robot per station)
- Operation of buffer warehouses and redistribution of AGV loads
- Palletizing and depalletizing of products with high unit weights
- Handling tasks such as conveyor belt removal and automated container filling
- Easy retrofitting of existing systems

Loading of raw parts

Removal and sorting of finished parts

Storage of assemblies

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Details of the MRP series

MRP IONTEC

Robots from the KUKA IONTEC family – for applications with medium payloads and long reach, for machine tending, assembly, and parts handling with payloads of up to 70 kg.

Robot	Payload	Reach
KR 20 R3100	20 kg	3100 mm
KR 50 R2500	50 kg	2500 mm
KR 70 R2100	70 kg	2100 mm

MRP QUANTEC

Robots from the KUKA QUANTEC series – ideal for high payloads and demanding industrial processes such as machining, palletizing, or the precise handling of heavy components up to 300 kg.

Robot	Payload	Reach
KR 150 R3100	150 kg	3100 mm
KR 210 R3100	210 kg	3100 mm
KR 300 R2700	300 kg	2700 mm

MRP IONTEC
Robot: 6 Axis
Payload: up to 70 kg

MRP QUANTEC
Robot: 6 Axis
Payload: up to 300 kg

Both platforms are designed for transport with the KUKA KMP 1500P in the standard configuration.

Compatible with KUKA KMP 1500

The platforms are designed for integration with the KUKA KMP 1500P as standard.

KUKA KMP 1500P – Standard for MRPs

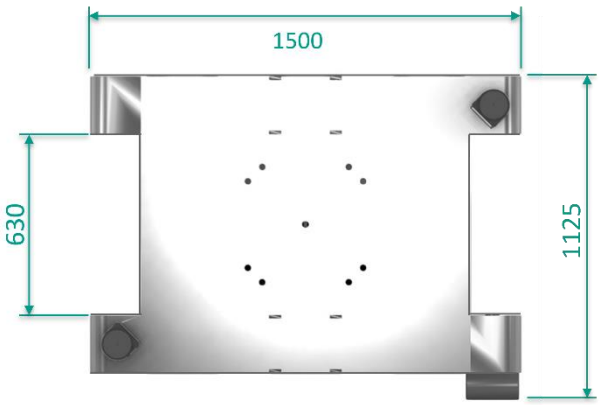
- Load capacity: up to 1500 kg
- SLAM-based navigation
- 360° safety monitoring
- Communication interfaces: OPC UA, REST API, Ethernet
- Max. travel speed: 2 m/s

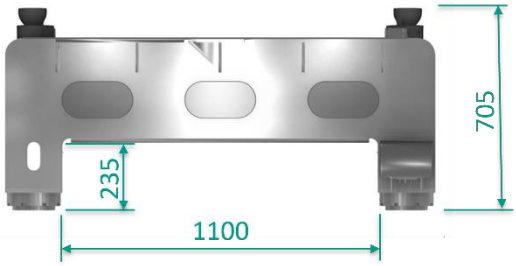
BEC Robotics' MRPs are designed to be integrated into existing AGV and FTS fleets from other manufacturers. For machine loading, assembly, and parts handling – manufacturer-independent and future-proof.

Dimensions

(in mm)

Robot Base





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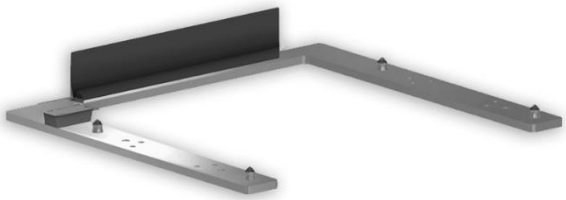
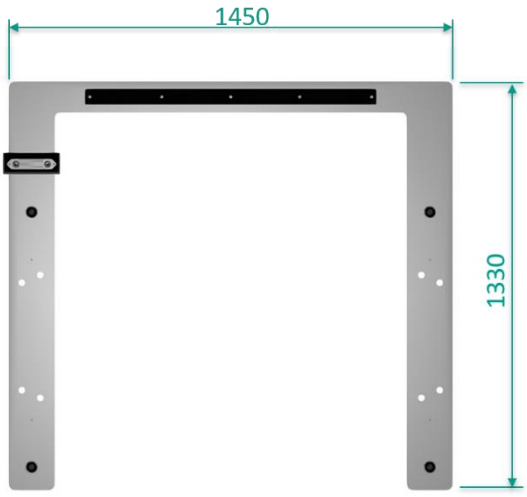
Docking station





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