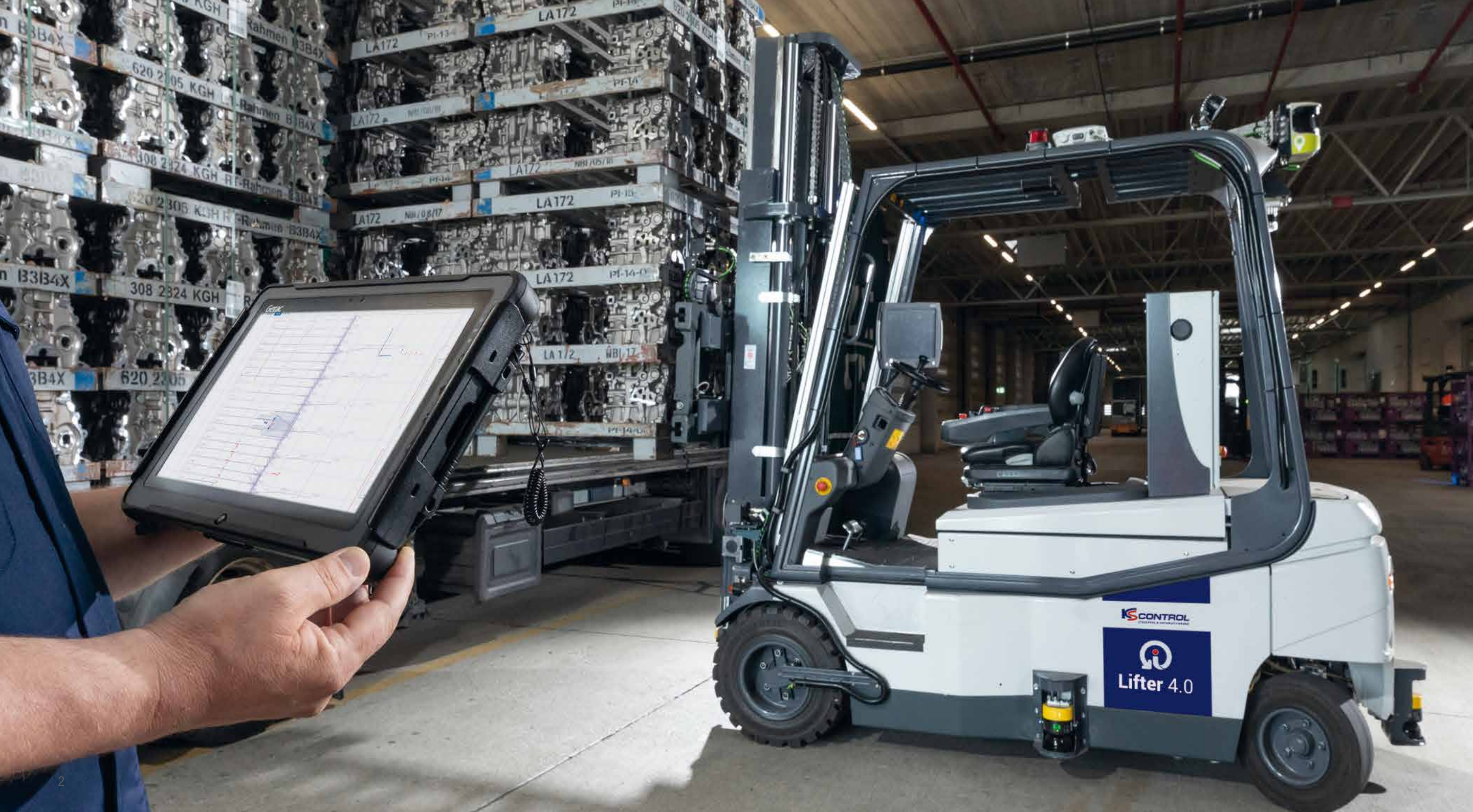




The new dimension in autonomous logistics processes:
Fully networked right from the truck



Everything flows – with our complete solution for automated material transport

As established specialists in automation and control technology, we have been strong and reliable partners of industry for over 20 years. With our efficient complete solution for autonomous material flows in production, we move you into a new dimension.

Transport and warehouse processes are accelerated, existing capacities are optimally utilised and, as a result, production and assembly processes are made more efficient than ever before.

Thanks to our many years of experience, we are the solution partner for process automation, from the unloading of the truck and the in-plant transport with laser- or guideline-controlled shuttles in the production to storage and retrieval as well as the final loading of the truck.

Industry solutions:



Automotive



Beverage and food



Metal and glass industries



Paper and print products



Woodworking and furniture production



Trade and logistics



What distinguishes the KS CONTROL autonomous logistics system from conventional logistics systems!

On the one hand, we automate the loading and unloading of trucks with transport loads of up to 10 metric tons right from the storage place, while on the other we take care of the efficient and cost-saving in-plant transport of goods with our flexibly usable iMCS^{KS} material flow and control software with the integration in the control system of the autonomous laser-controlled iLifter^{KS} as well as the laser- or guideline-controlled iShuttle^{KS}.

Automatic loading and unloading of trucks

The automatic loading and unloading of general cargo avoids personnel bottlenecks and the simultaneous reading of the barcode on the general cargo by a camera ensures the further tracking of the goods without repeated barcode checking.

Warehouse loading and storage place optimisation

The iMCS^{KS} warehouse management and control software in combination with iShuttle^{KS} and iLifter^{KS} with camera recognition of the pallet storage places allows efficient and safe pallet place optimisation in the rack (LIFO/FIFO).

Flexible general cargo retrieval

With laser-controlled path guidance and camera-assisted storage location recognition, the iLifter^{KS} can intermediately store general cargo centrally and flexibly on call near the picking station in row or block storage.

Future-proof with full networking

The iMCS^{KS} material flow and control software was specially developed for modern warehouse logistics and is compatible with standard ERP systems. It can be flexibly updated at any time and adapted to future transport and storage requirements.

In-plant goods flow

The in-plant transport of goods/general cargo is carried out flexibly in accordance with the respective warehouse and production requirements by the independently navigating iShuttle^{KS}.

- Our goals**
- > Automate loading processes
 - > Perfecting load tracking
 - > Avoid errors in the material flow
 - > Optimise personnel deployment

The iMCS^{KS} management and control software coordinates all intralogistics processes, including autonomous vehicles such as iLifter^{KS} and iShuttle^{KS}.

KS CONTROL

iMCS^{KS}
controlled material flow with a system





iLifter^{KS} 10.0 and 6.0

- > Load capacity: 10 t/6 t with 600 mm CGL*
- > Lifting height: max. 6870 mm

iLifter^{KS} 4.0

- > i Load capacity: 4 t with 500 mm CGL*
- > i Lifting height: max. 6113 mm

iLifter^{KS} 2.0

- > Load capacity: 2 t with 500 mm CGL*
- > Lifting height: max. 7000 mm

Navigation method: SLAM**
Safety level: Performance Level d
Safety standard: EN ISO 3691-4
Communication: WLAN, 5G
Duty cycle: 24/7 ***

* CGL: Centre of Gravity of Load
** SLAM: Simultaneous Localization and Mapping
*** Dependent on the battery technology

iLifter^{KS} features

- > Heavy loads up to 10 t
- > 360° laser space navigation
- > State of the art camera technology and LIDAR object recognition
- > 4 safety laser systems for collision avoidance and personal safety
- > Safety control via Safety Wireless Ethernet
- > Networked with iMCS^{KS} and error messaging system
- > Battery management (optionally lithium-ion or lead-acid batteries)
- > Non-contact charging function and efficient battery management
- > 4-wheel dynamic steering system
- > Hydro-pneumatic level compensation
- > Automatic fork-lift tine width adjustment
- > Autonomous and manual operation

Special equipment/options

- > Various attachments for material handling (e.g. multiple tine adjustment device, fork tines, turn-tilt-roll clamps, etc.)
- > 3D cameras
- > Lifting load determination
- > Barcode scanner
- > Automatic charging technology
- > Further special equipment on enquiry

iLifter^{KS} – specialist for individual requirements

State-of-the-art 3D camera technology allows precise placement of loads, including a multi-layer stacking option – whether in the rack or on the truck. Using a 360° laser scanner, the fork-lifters orient themselves to predetermined spatial structures. A navigation algorithm reliably filters out changes in the space due to parked vehicles or deposited material. Routes and storage places can be planned independently by the user and storage places can be redefined.

Unlike conventional AGVs and lifting vehicles, the iLiftersKS are mainly designed for automated operation, but can also be operated manually at any time if necessary.



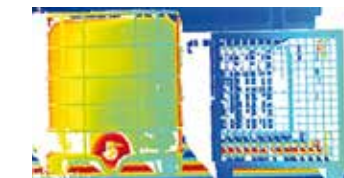
Lateral loading and unloading

After the loading platform has been released, trucks can be loaded and unloaded fully automatically. The iLifter^{KS} automatically fetches the respective load carrier from the storage area or takes it there.



Rear loading and unloading

Loading platforms can be directly driven on and load carriers can be placed exactly, both side by side and in layers on top of each other.



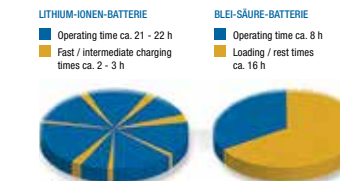
Object recognition and storage place navigation

By means of additional camera-based vehicle navigation, the iLifter^{KS} is capable at any time of reliable identification and material movement. Optimal transport processes are thus ensured.



Container-specific multiple stacking

The iLifter^{KS} ensures the stacking of containers on top of each other, safely and effortlessly. In addition to standard pallets, this also works with special containers in all shapes.



Battery technology

Depending on defined usage conditions, the iLifter^{KS} is supplied with energy by long-life, rapid-charging lithium-ion battery cells or conventional lead-acid batteries. Optional: non-contact charging.



Automatic operation or driver mode

Outside of the defined autonomous working area, the iLifter^{KS} can be controlled manually with simple commands. The area of operation is thus expanded to cover the entire works site.

iShuttle^{KS} – modular multi-talent for heavy loads

Like the iLifter^{KS}, the iShuttle^{KS} uses SLAM navigation. With the help of 270° laser scanning and state-of-the-art vision technology, the autonomous transport system immediately finds its destination. Additional safety components ensure collision avoidance and certified personal protection. In-plant transport tasks in the warehouse and production are therefore infinitely feasible.



Picking



Bringing and removing materials



Serving assembly stations



Storage of production products

Individual load capacity and equipment

The iShuttle^{KS} makes use of a modular building kit to meet the most diverse requirements. Possible configurations are, for example, roller conveyors, platform trolleys, lifting tables, push & pull functions for goods transfer units or belt and chain conveyors. And all that with continuous loads of up to 5 metric tons.



iShuttle^{KS} features

- > Robust, modular building kit principle
- > Optionally 2D laser navigation or guideline-controlled steering
- > 2 safety laser systems for collision avoidance and personal safety
- > Various sizes and configurations
- > Energy supply with state-of-the-art lithium-ion batteries
- > Non-contact charging function and efficient battery management
- > Scalable by integrating several conveying vehicles as a fleet solution
- > Networking with iMCS^{KS}
- > Low investment and operating costs
- > Maintenance friendly design
- > Simple integration in existing systems and infrastructures

iMCS^{KS} – The revolutionary material flow and control software made by KS CONTROL GmbH



ERP/PPS/SAP interface



In-plant material flow



Loading and unloading of trucks



Warehouse management (storage/retrieval)

Controlled material flow with a system

The iMCS^{KS} management and control software coordinates all intralogistics processes, including autonomous vehicles such as iLifter^{KS} and iShuttle^{KS}. A complete solution for the in-plant material flow from a single source. Operationally specific requirements are integrated in the system architecture in order to secure the continuation of established processes. The planned infrastructure is evaluated in advance in real-time by means of simulation.

Goals:

- > Automation of loading and unloading processes
- > Optimisation of load tracking
- > Avoidance of errors in the material flow
- > Reduction of personnel utilisation

Are you ready for a new dimension of intralogistics?

We are – and we look forward to hearing from you!





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