



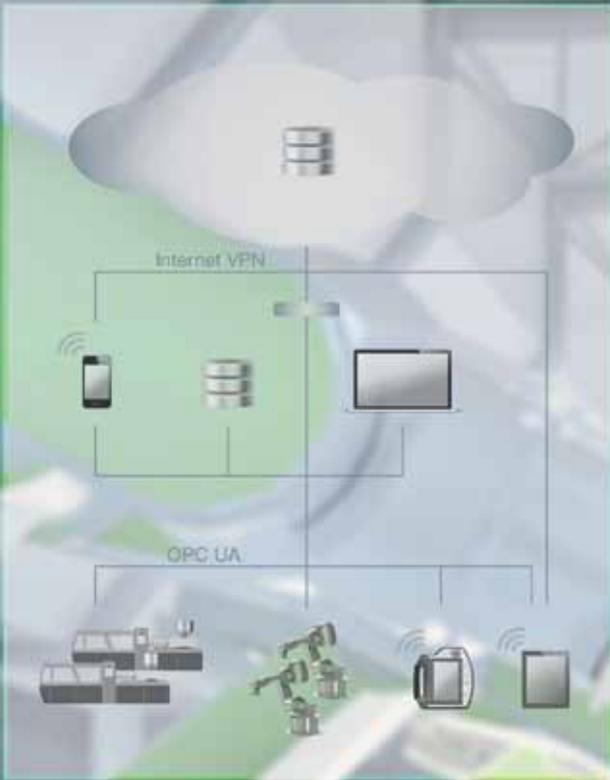
Because speed counts



**KeMotion**  
The automation solution for boosting  
robot and machine productivity

**KEBA**<sup>®</sup>

Automation by innovation.



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# Robotics and automation in the Industry 4.0 era

In the increasingly faster moving and more highly networked world of the Industry 4.0 era, intelligent automation and robotics are growing in importance. Machine and robot manufacturers are confronted with a constantly changing market and must respond with corresponding flexibility and speed.

## Manufacture faster and better

KeMotion makes it possible to achieve maximum productivity and the fastest reaction times – even with reduced batch sizes and shorter product life cycles. Self-optimizing technology functions and an extensive simulation packet ensure the best results at an outstanding price/performance ratio.

## Comprehensively networked

Thanks to high connectivity and the range of interfaces, the KeMotion system can easily be integrated in Industry 4.0 systems. Cloud-based diagnosis and remote services guarantee maximum system availability. Modern and flexible operation is made possible through the simple integration of smart devices.

## Uniqueness through open architecture

The numerous customization options of the KEBA systems permit maximum individualization and differentiation through the integration of the user's own software modules. This guarantees optimized complete solutions as well as clear market positioning and ensures success in competition.

## Reduce costs through ease of use

All user interfaces from KEBA are well designed and offer intuitive operation and the best-possible user experience. Everything works as easily and as quickly as in the consumer sector, where tablets and smart devices influence day-to-day life. Lean engineering becomes reality.

Constantly new and ever-changing market demands require intelligent and flexible automation systems for robots and machines.

The best solution for this is KeMotion from KEBA.

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# The best support in every phase of a project

We know the market requirements for successful automation solutions and speak the same language as our customers. The basis for this is more than 40 years of international experience on the market and profound application know-how. 100 % of development and production of all hardware and software components takes place in house at KEBA. All technologies and services for KeMotion are optimally adapted to one another.

Our experienced experts offer the best-possible support during every phase of the machine life cycle. Maximum customer benefits and highest productivity have top priority here. That is our understanding of long-term and successful cooperation.

## Together

### for a successful automation solution

#### Product development

Shortest development times & best-possible differentiation

KeMotion is based on more than **40 years of market experience** and **profound knowledge** of the industry. It is a **turnkey** and customizable **automation system**.

#### Customer project

Optimized machines & accurate offers

The specialists from KEBA provide support during **project work** and **sales** and prepare profound **feasibility studies**. For optimization, a user-friendly **3D simulation tool** is available.

#### Commissioning & acceptance

Fastest commissioning & changeovers

Intelligent **wizards** and **templates** simplify and speed up the processes. Furthermore, extensive **on-site support** and comprehensive **support from experts** are offered.



### Machine operation

Best machine performance & highest process quality

The **long-lasting systems** from KEBA are known for top **quality** and very high **reliability**. KeMotion's high-end robotics technologies guarantee maximum productivity.

### Service & after sales

Maximum availability

KEBA supports its customers with a **global network of subsidiaries** and offers **24/7 service**. User-friendly **logging and diagnosis tools** help with process optimization.



# KeMotion – The complete solution for robot and machine automation



KeMotion stands for the fast, open and customizable automation of robots and machines in the Industry 4.0 era. Thanks to the scalable hardware in combination with many high-performance technology functions and turnkey software packages, the user can quickly and easily find the optimum solution.

## The all-in-one automation system

PLC, motion, robotics, drive technology, safety technology and HMI are combined in a compact system with KeMotion. This is the ideal basis for implementing all automation tasks on a single common hardware and software platform. KeMotion stands for both turnkey complete solutions as well as individually adaptable systems with a variety of customization possibilities.

## A control for every robot

More than 30 types of robots are preconfigured in the system. Furthermore, customer-specific kinematics can be easily integrated and configured.

Grinding • Metal  
Wafer Handling •

## The user-friendly multi-robot control

Up to 16 robots can be efficiently operated simultaneously with one KeMotion control. A common user interface for operation and programming is available for this purpose. The multi-robot control is ideal for applications with cooperating robots and the control of entire production lines.

## The proven solution for a wide range of applications and processes

Typical application cases for KeMotion range from machine automation to multi-robot applications. For the packaging sector and for handling applications, the special solutions KeMotion Packaging and KeMotion Handling are available with an expanded range of functions.



Active Contactflange  
by FerRobotics



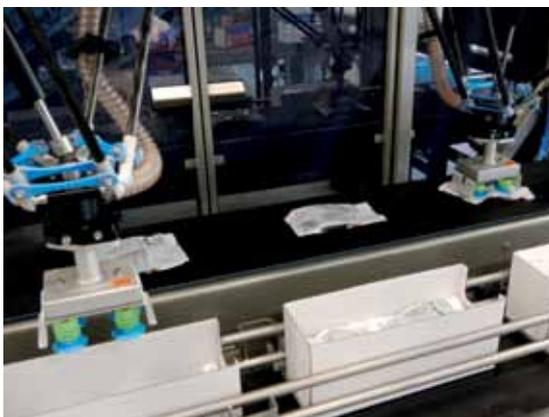
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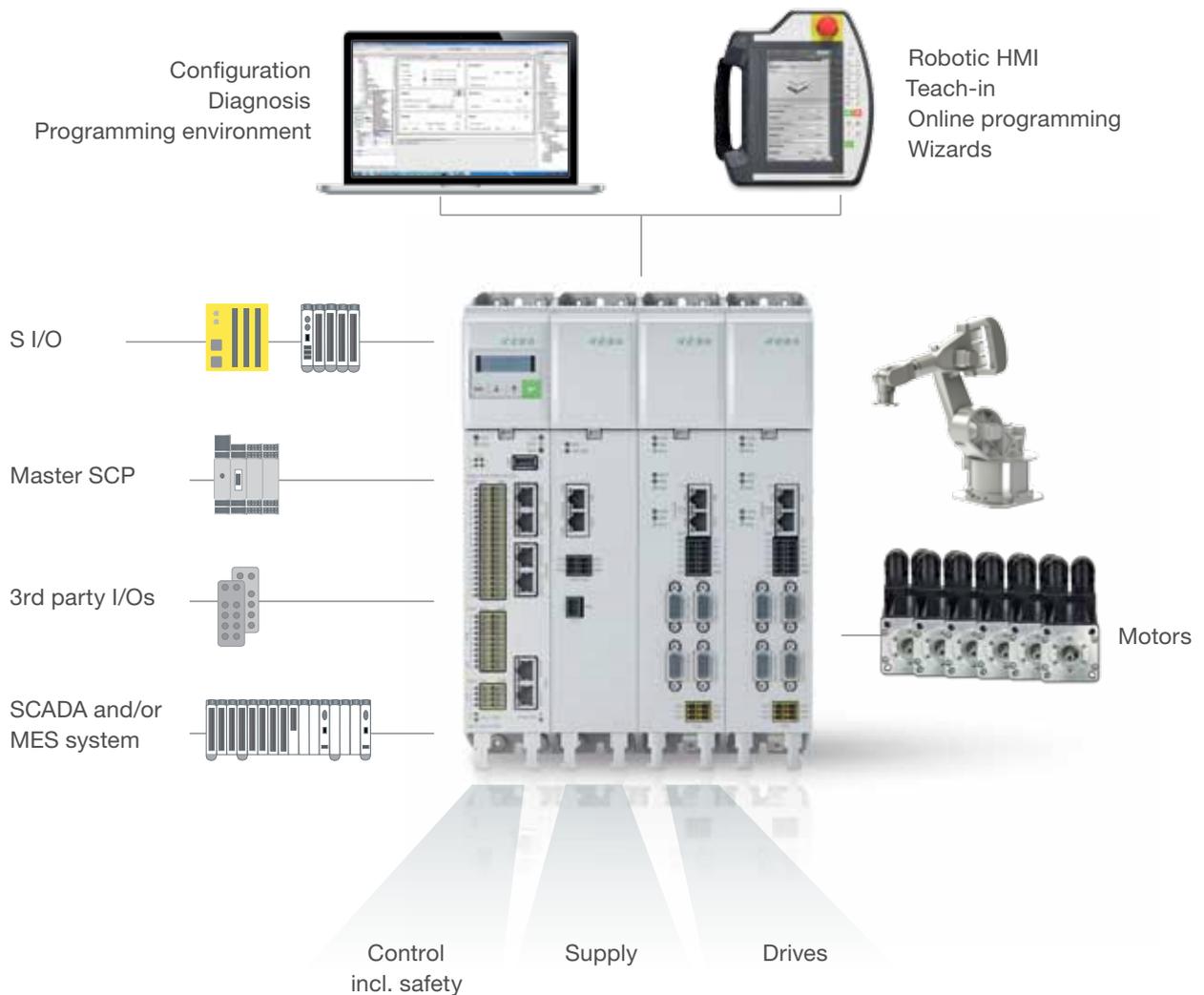
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Bending • Painting • Welding • Pick & Place • Palletizing • Handling • CNC  
Glueing • Service Robotics • Textile Printing • Die Casting • Plastics • etc.

# Hardware and software perfectly matched

KeMotion consists of five core components. At the heart of this high-performance combination is a single control system. Processes only need to be written in a single program; communication takes place directly and without delay. Numerous standardized interfaces facilitate networking with other Industry-4.0-ready devices.





### Robotics

#### Real robotics

The turnkey robotics solution from KeMotion scores with unique high-end technologies for maximum performance and precision.

### PLC + Motion

#### Full-fledged PLC + motion

KeMotion is more than a robotics solution, it can be used to control the entire machine.

### Control + Drives

#### Compact control and drive technology

The modular, all-in-one KeDrive for Motion system with optionally integrated safety controller is only half as big as comparable systems.

### Safety

#### Scalable safety technology

KeSafe is a space-saving safety solution for PLC, single axes and robotics that guarantees maximum safety for man and machine.

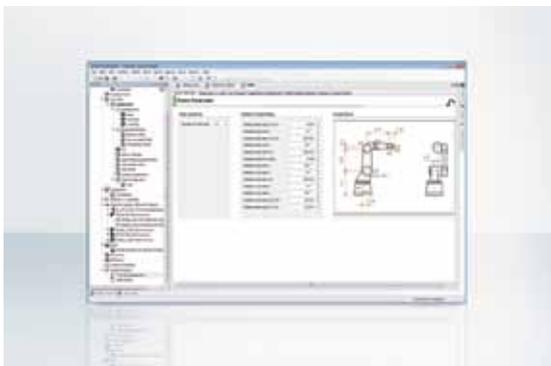
### HMI

#### Intuitive operation

The ready-to-use robot HMI from KeMotion and the wide range of KeTop devices facilitate simple and fast operation.

# Implement projects **more easily and faster** thanks to **turnkey** robotics

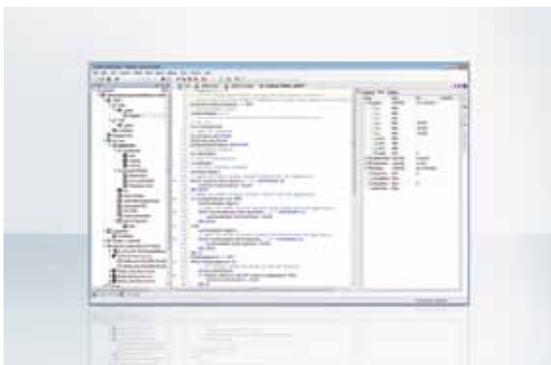
Short development times, application-optimized machine design as well as easy and fast commissioning are the fundamental requirements of machine manufacturers. The extensive software package from KeMotion provides support with convenient features as well as intelligent wizards and templates.



## User-friendly tool set with more than 30 predefined types of robot

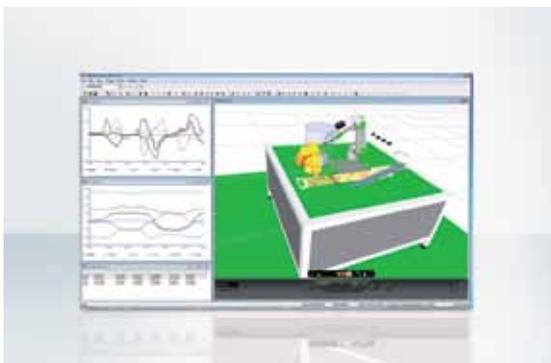
For user-friendly configuration and programming of robots and machines, an extensive tool set is available with KeMotion – including easy CAD import.

A variety of robot types are available preconfigured in the system. After entering mechanical parameters such as dimensions, gear ratios, etc., in ready-made masks, the programming of the application already can begin.



## Robotic applications with up to 10x less code

All robot applications are created easily and quickly with the intuitive TeachView programming system using the extensive KAIRO robot command set – either online on a KeTop handheld operating device or offline on a PC. Compared to conventional systems, up to 10x less code needs to be programmed. Through the use of easy-to-understand instructions, KAIRO supports the user in programming the desired robot paths and the entire process.



## Simple machine optimization by means of 3D simulation

The Real World Simulation Package is a user-friendly 3D simulation tool for the easy creation, optimization, validation and visualization of robot programs and machine processes. Users benefit from an Industry-4.0-compliant virtualization with numerous adjustment options for the design of machines, robots and robot cells – even before commissioning.

## 4x faster commissioning thanks to intelligent wizards and templates

Make things as easy as possible for the user – that is the meaning of the KEBA motto “parametrizing instead of programming.” Commissioning of machines and robots takes place noticeably faster; modifications can be done much more easily.



## Easy integration of robot tools

Using a predefined program sequence, a wizard facilitates the automatic detection of geometries of end-of-arm tools – e.g., with grippers, welding devices, grinding devices, etc. Users do not need to program a single line of code and can fully concentrate their resources on the actual process.



## Freely definable working areas, blocking areas and signal areas

Working, blocking and signal areas define where a robot may move and where it may not move. They serve to protect man and machine. With KeMotion, these zones are freely definable and are created step-by-step with the help of an intelligent wizard.



## Create palletizing patterns in just a few steps

Without needing to program a single line of code, intelligent palletizing wizards guide the user to the best-possible solution for all palletizing tasks in just a few steps, for everything from the placement of a single type of product in a carton to mixed pallets.

# Intelligence and look-ahead function – The basis for optimized robotic and machine processes

Highest economic efficiency is a must for modern production systems. The key factors here are maximum machine performance with minimal energy consumption. KeMotion offers numerous high-end technologies for achieving these goals.

## Know the future

### Robot paths automatically planned

KeMotion generates a list of movement commands on basis of the robot program created with KAIRO. Every movement command corresponds to a path segment. Beginning with this list, the path of the robot is planned over all segments. In doing so, smooth blending movements are automatically calculated from one path segment to the next.

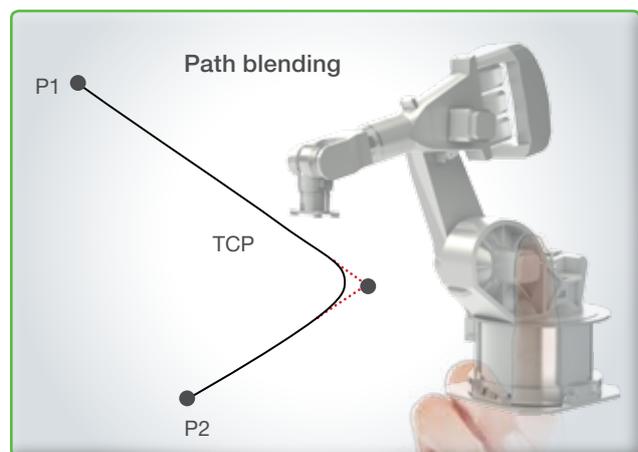
### Optimized movements by means of look-ahead function

While traveling the planned robot path, a so-called look-ahead function moves in advance of the actual robot by precalculating the movements of the robot for a defined period of time. KeMotion can thereby automatically calculate the optimum dynamics on a desired path and respond in good time.

### Automatic dynamic limiting

Special limiter functions guarantee that the robot does not exceed the dynamic limits at a desired speed, thereby ensuring that the motors are not overloaded. This makes possible fast, precise and, at the same time, smooth robot movements.

Path planning and the look-ahead function are the basis for a wide range of technological functions, which are described in further detail on the following pages.



## Fast and gentle on the mechanics

### Fast and energy-saving thanks to Intelligent Motion

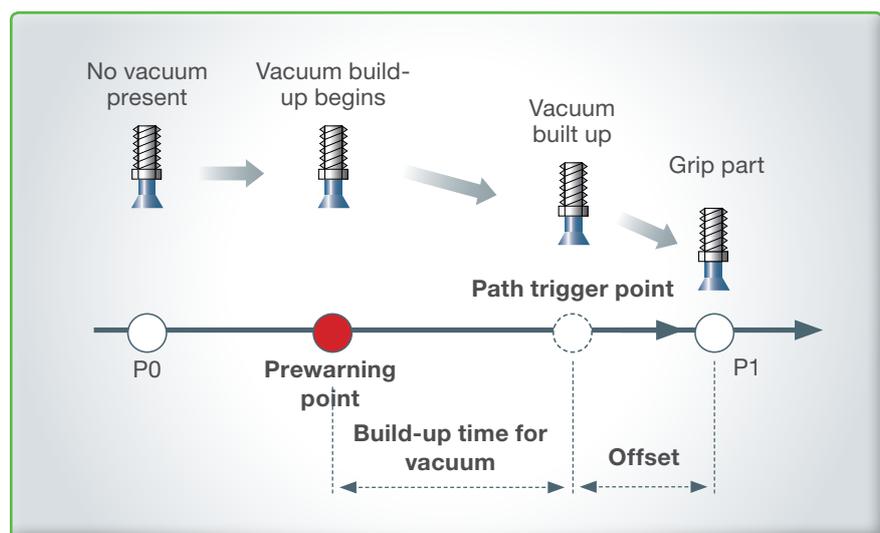
Without additional programming effort, Intelligent Motion automatically adapts the robot movements to other robots and processes. Based on the automatic planning of the robot path, movements are optimized and abrupt start/stop actions eliminated.

With high-speed pick & place applications, parts are picked up immediately upon entry into the working area and the robot is moved only as fast as necessary thanks to Intelligent Motion. This increases the performance, extends the lifetime of the mechanical parts and ensures the energy-saving use of the robot.

## Process control without dead time

### Look-ahead trigger points for maximum productivity and process quality

The exact synchronization of robot movements and processes is a decisive quality factor for many robot applications. Path trigger points ensure this. Thanks to the look-ahead function, with KeMotion the dead times in the process are also compensated. For example, the build-up of the vacuum for a gripper starts even before the path trigger point is reached so that the vacuum is available precisely at the path trigger point.



# Unique features for more productivity and quality

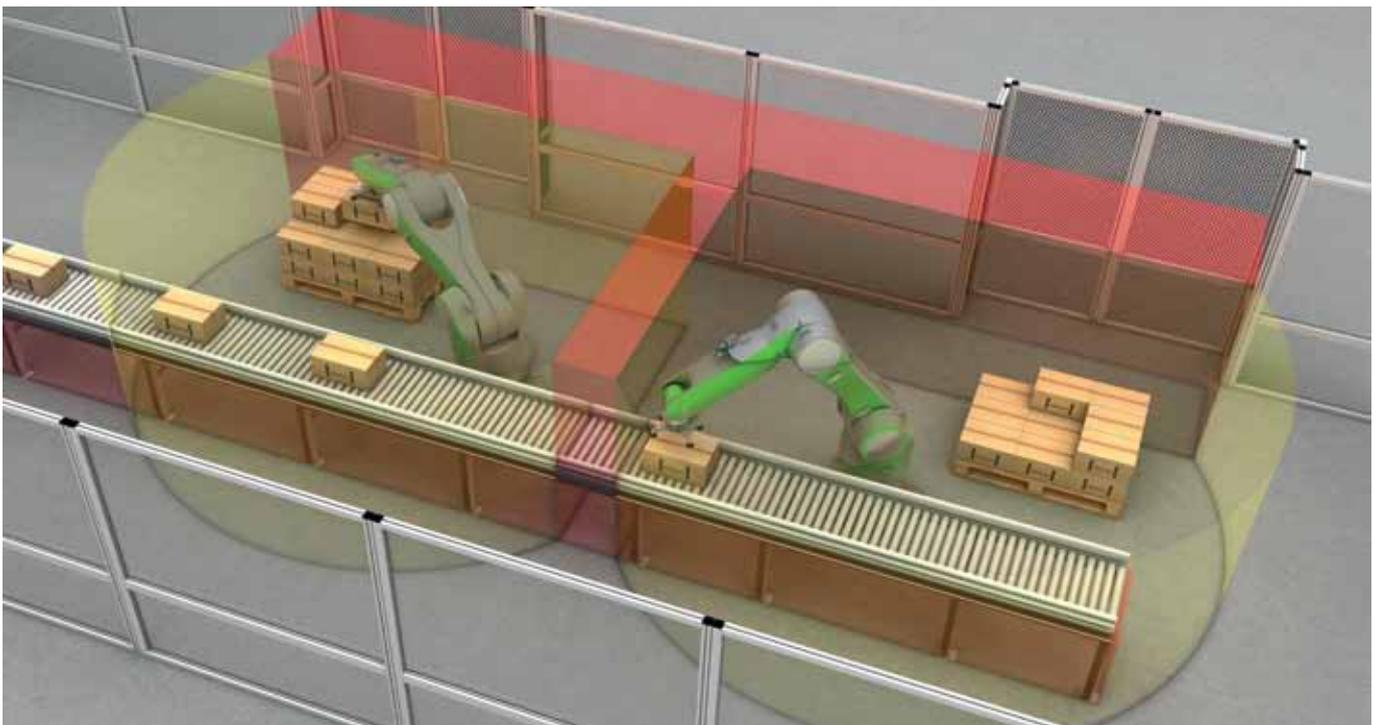
## Robotics

### Collision avoidance with foresight

#### Working and blocking areas for more safety

To avoid collisions, a robot may only move within specified limits (working area) and may not move into certain areas (blocking area). With KeMotion, working areas and blocking areas can be freely defined. Thanks to the look-ahead function for the robot path, for example, exiting the working area or entering a blocking area, will be detected early and the robot will be braked automatically.

If multiple robots are working together, then a common working area can be defined as well. It is thereby ensured that only one robot is active in this area at a given time. The second robot adjusts its speed so that it then enters the common working area exactly when the first robot leaves this area.



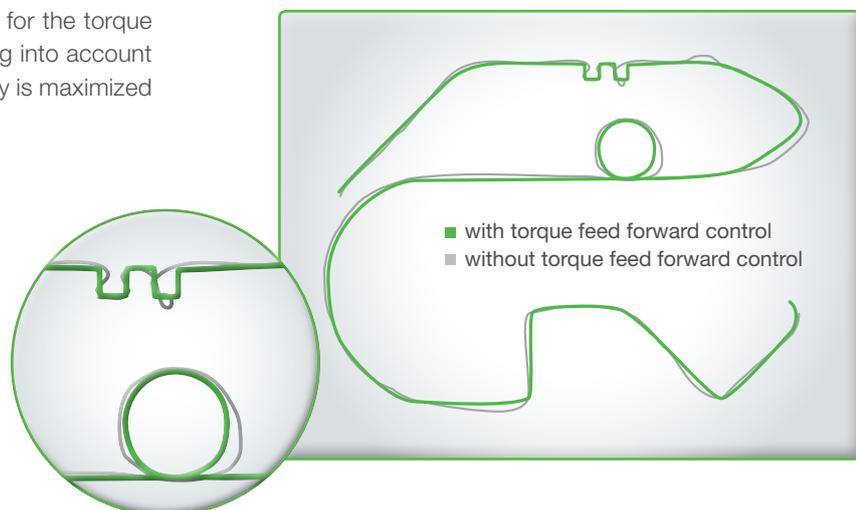


## Traveling the ideal line

### Fastest movements with maximum precision thanks to the dynamic torque model

The dynamic torque model is the modeled representation of the actual robot. It takes into account masses, inertias, elasticities and frictions of the individual robot components. It also compensates for mechanical fluctuations by means of elasticity compensation. In addition to the geometric properties of the robot, the physical properties are thereby also taken into account in the path interpolation. Not only are position, speed and acceleration calculated, the torque is determined as well.

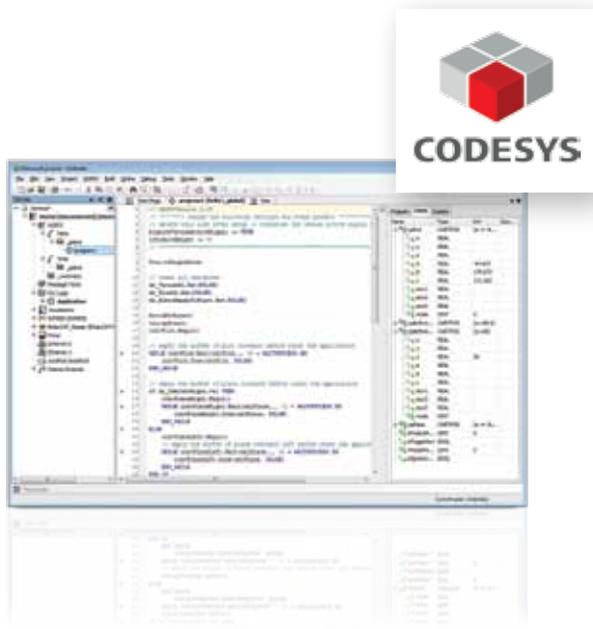
The dynamic torque model is the basis for the torque feed forward control on the drive. Taking into account the calculated torque, the path accuracy is maximized and the contouring error reduced.



# Control every machine with PLC and motion

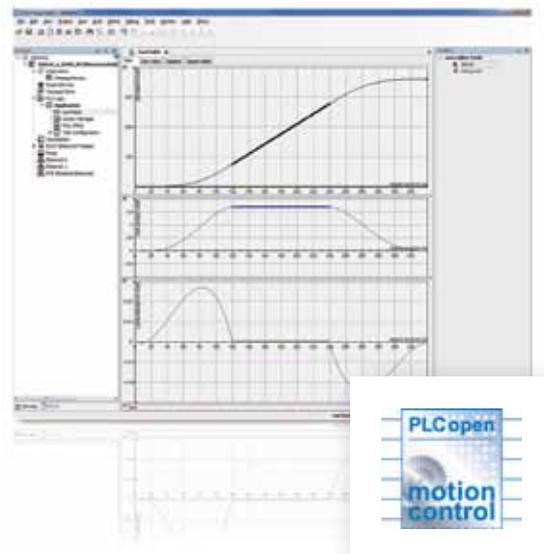
Robotics as well as PLC and motion are combined in a single control with KeMotion. This simplifies the system and facilitates faster commissioning. Cabling requirements are greatly reduced; interfaces between PLC, motion and robot control are eliminated. System cycle and all program sequences are always perfectly synchronized. Furthermore, users benefit from a standardized programming interface and special extensions for the machine control.

PLC + Motion



## Simple and powerful PLC programming

The integrated PLC based on CODESYS 3.5 is programmable in accordance with IEC 61131-3. It supports all standardized PLC programming languages: Instruction List (IL), Structured Text (ST), Sequential Function Chart (SFC), Function Block Diagram (FBD) and Ladder Diagram (LD).



## Full-fledged machine control included

In addition to the powerful robot control functions, the PLC and the motion function blocks, which are PLCOpen compliant, can also be used to control the entire machine. Standard modules, such as flying saw, cam disc and line shaft, are available for this purpose.

Special technology modules for the packaging industry are also already integrated, e.g., for controlling multi belts, intelligent infeed systems and indexing belts.

# KeDrive for Motion – High-performance drive technology compactly combined with control and safety technology

The KeDrive for Motion platform is an ideally matched combination of control, safety controller and multi-axis drives. It is highly flexible and allows optimum solutions to be found for a wide range of control and drive tasks.

## Control + Drives

### Modular, scalable system setup

Thanks to the well-designed system setup, it is also possible to use just individual modules of the system depending on the automation task. For example, with a decentral control cabinet concept, the drive modules can be used remotely from the control.

### A more than 50 % space saving

Compared to standard system configurations, the compact KeDrive for Motion system takes less than half as much space in the control cabinet.

### Cost-saving multi-axis drives

The highly dynamic drive modules are overload resistant to 300 % and are available in 1-, 2-, and 3-axis versions.

### Integrated safety controller

The multi-axis KeSafe safety controller together with its safety I/Os can optionally be integrated directly in the control module. KeSafe is scalable and offers safety functions for logic, single axes and robotics.

### All-in-one



Motion control + Safety + Drives

### Modular



Motion control  
Motion control  
+ Safety

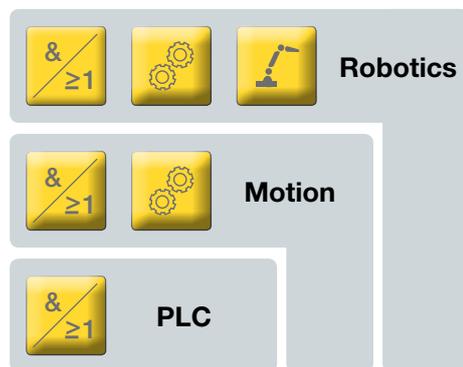
### Decentral



Drives

# KeSafe – Maximum safety for man and machine

The freely programmable KeSafe safety controller makes machines and robots with serial kinematics safe. All safety-relevant standards and directives are taken into account; extensive certification work is eliminated. In addition, space-saving design of the robot cells is made possible. Moreover, the integration of the safety controller in the KeDrive for Motion system results in space-savings in the control cabinet.



## Safe operation

- Safe TCP speed
- Safe guard speed

## Suitable for all kinematics

- Freely selectable monitoring points on robot and tool
- Including additional axes

## Scalable safety technology

KeSafe is available in 3 functional configuration levels:

- **KeSafe PLC:** safe logic
- **KeSafe Motion:** safe single axes
- **KeSafe Robotics:** safe robotics and safe robot axes

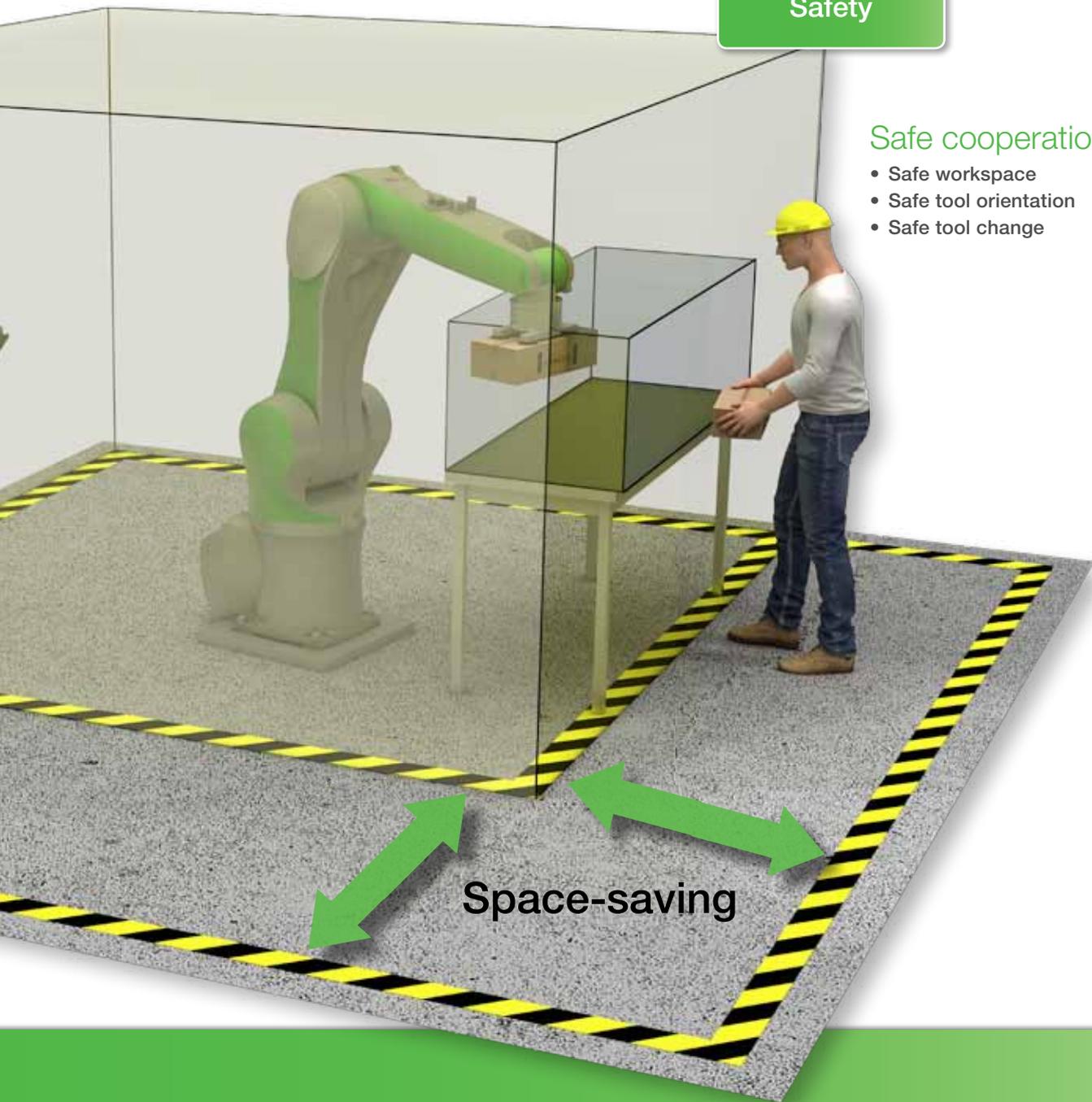
## The following standards are met:

- Complete solution up to category 4, PLe according to EN ISO 13849-1 and SIL3 according to EN 62061 and EN 61508
- Safe single-axis functions according to EN 61800-5-2 (KeSafe Motion)
- Safe robot modules according to EN ISO 10218 (KeSafe Robotics)

## Safety

### Safe cooperation

- Safe workspace
- Safe tool orientation
- Safe tool change



### Smaller robot cells through intelligent safety functions

KeSafe guarantees the safe monitoring of the robot working areas, the speed at the TCP and freely definable robot points. Uncontrolled robot movements are reliably prevented. Safety guards for safe enclosure can be mounted closer to the robot, which makes possible space-saving cells with minimal footprint.

# KeTop – Intuitive operation of robot and machine

Best ergonomics and an intuitive user interface are key factors for efficient operation and monitoring. With the KeTop devices, high-performance, application-optimized hardware is available. The turnkey TeachView robotics user interface enables fast and easy teach-in. User-friendly HMIs are created with the easy-to-operate KeView visualization software; an optimum user experience is guaranteed.

## The sophisticated operating concept for working efficiently with robots

The turnkey TeachView robotics user interface enables the time-saving creation of robot programs. In doing so, the user can make use of the extensive KAIRO robot command set as well as numerous intelligent wizards and templates. This guarantees optimum results in record time.

Moreover, various KeTop handheld operating devices for intuitive teach-in are available. Modern features, such as gyro sensors for easy pointing the desired direction of robot movements, additional rear side keyboards for simultaneously moving multiple axes and targeted user guidance – such as by displaying and hiding buttons – results in an optimized complete package for user-friendly and error-free robot programming.

## Versatile customization possibilities for hardware and software

Perfect integration of the KeTop operating devices in existing customer solutions is easily possible thanks to extensive customization possibilities with respect to housing construction, operating elements, keyboard layout and machine visualization.



# HMI

## From mobile to stationary with just one software

With KEBA, intuitive user interfaces only need to be created once with the user-friendly KeStudio automation tool. They can be used equally well for both mobile as well as stationary operating devices.



Optimized solutions espec

## KeMotion Packaging



ially for your applications

KeMotion  
Handling



# KeMotion Packaging – The fastest robotics solution for the packaging industry

KeMotion Packaging complements the strengths of KeMotion with additional special packaging functions – it is optimized for the requirements of the packaging industry. The highest throughput rates as well as maximum flexibility for product changeovers and program changes are guaranteed.

With KeMotion Packaging, all **processes** of the packaging industry can be **controlled easily, quickly and precisely**:

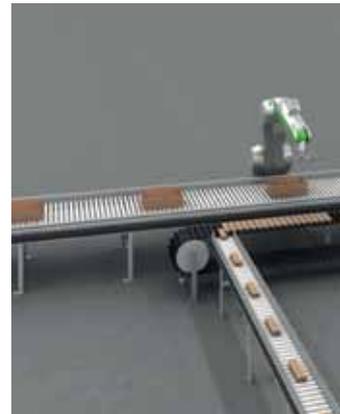
Pick & place



Palletizing robots



Top loaders



Cartoning machines

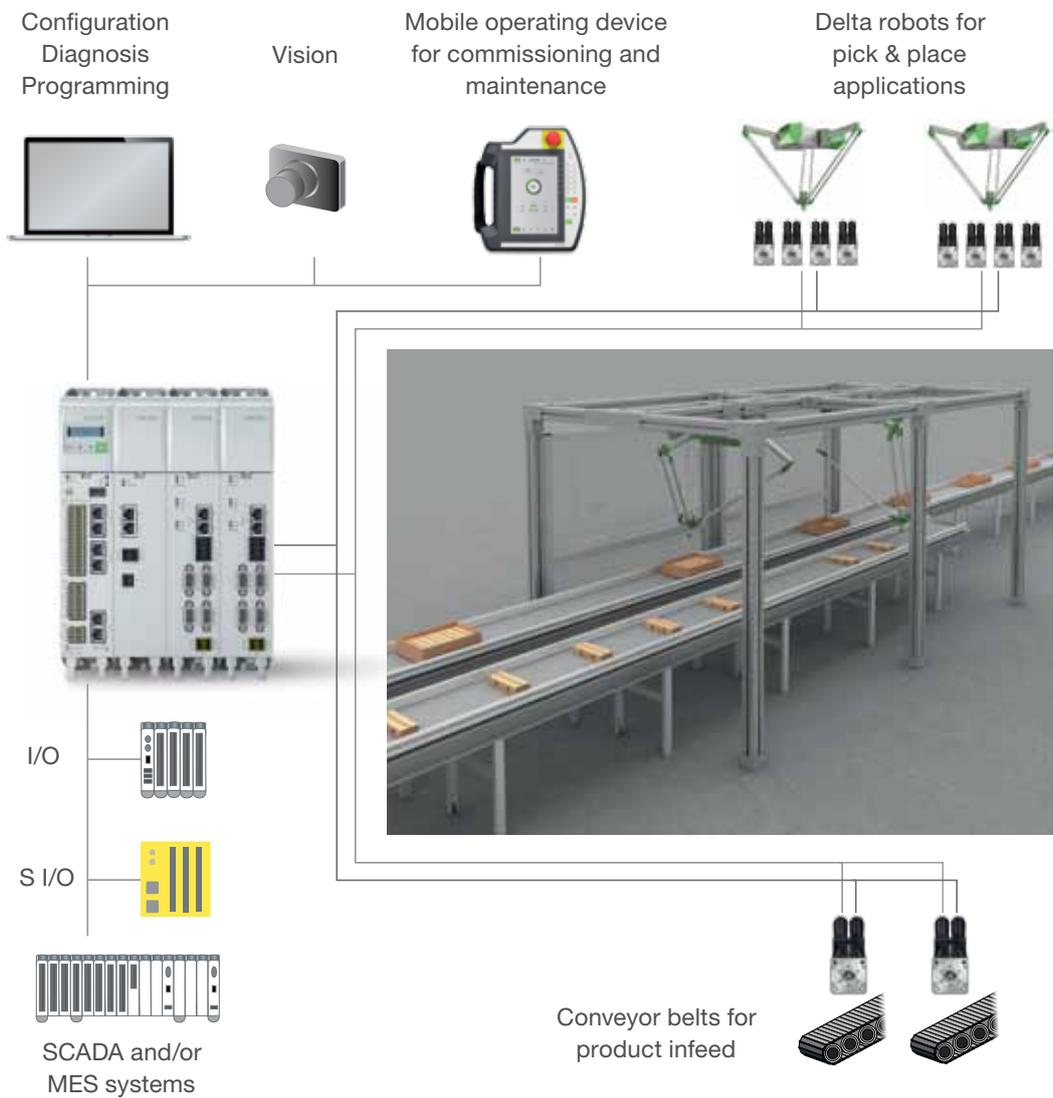


Layer palletizers



Dividers

All **automation components**  
from the field of packaging technology are available.





## Optimized machines thanks to Real World Simulation Package

With the Real World Simulation Package, robots, robot cells and entire robot lines can easily be configured. The 3D simulation shows already in the planning phase how the real system later actually performs.

This reduces the development time and increases the machine performance. Offers can thereby be entered into the sales process more quickly and with greater certainty.



### An overview of the advantages of the Real World Simulation Package:

- Create, optimize, validate and visualize entire line concepts
- Simulation based on the dynamic behavior of the actual robot
- Visualization of the dynamic effects in the product and carton infeed
- Identification of the optimum pick & place strategy
- Ready-made functions for system optimization and improvements in efficiency

# In record time to the perfect packaging machine

KeMotion Packaging makes optimized systems possible thanks to a unique 3D simulation tool. For the fastest commissioning and product changeovers, user-friendly wizards and templates are available.

## 3x faster during commissioning and product changeovers

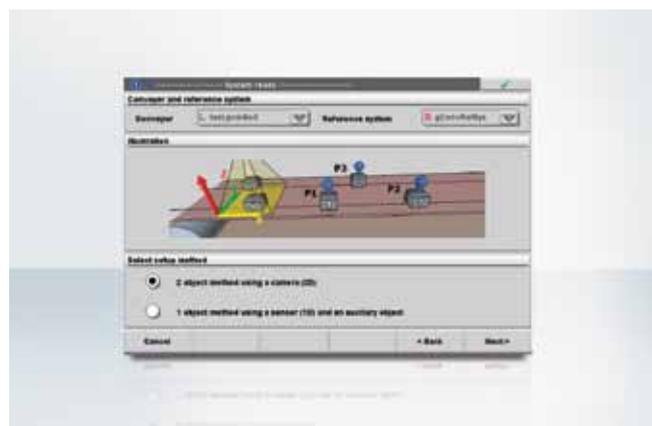
Parametrizing instead of programming with wizards and templates - pick & place never was this easy.

## Open for every camera

In just a few steps, any camera can be configured and connected to the KeMotion control. In addition, cameras such as Cognex® cameras are preconfigured in the system and can be integrated even more quickly.

## PackML implemented more quickly

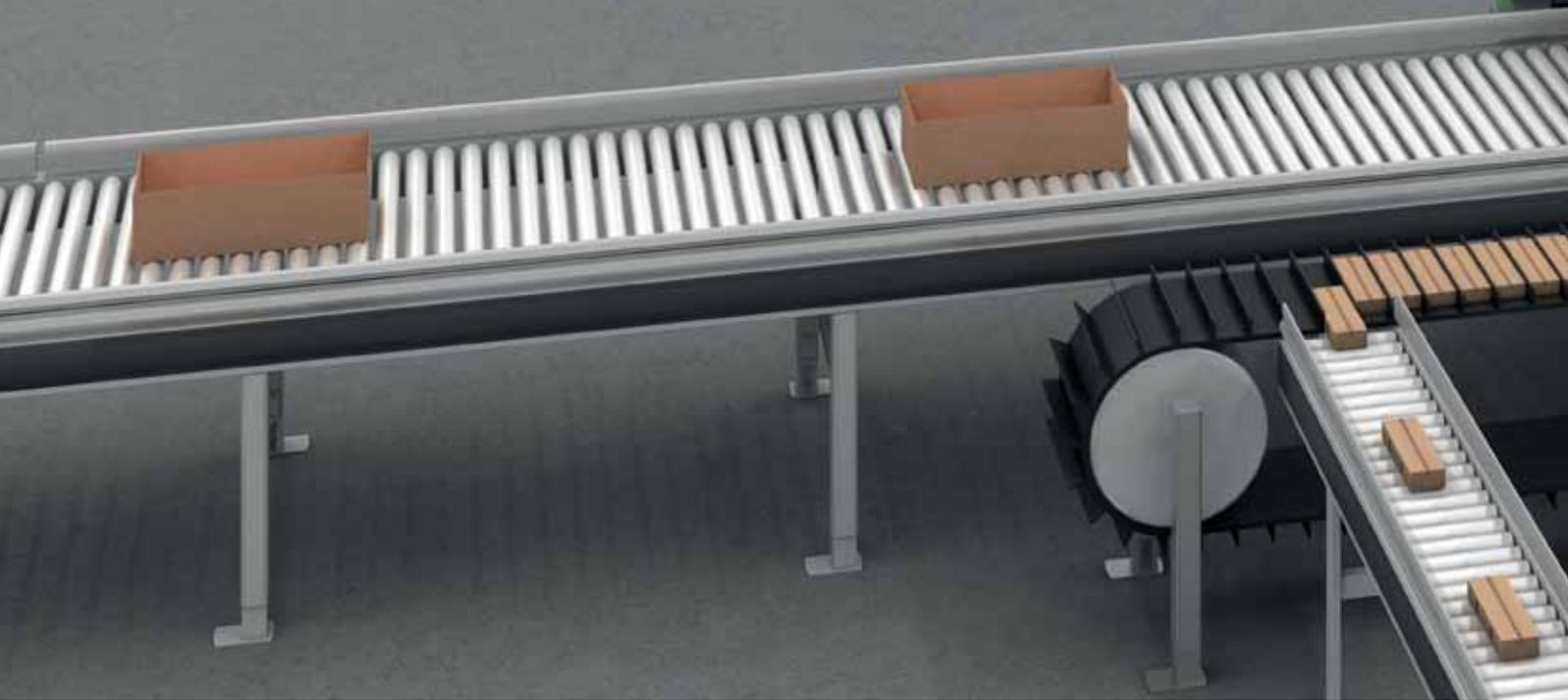
KeMotion Packaging is provided with a PackML template based on the OMAC standard. Machine and robot applications can thereby be created according to the structure specified by the standard. For the visualization of the machine status, the template contains HMI masks for mobile and stationary display devices.



## Tracking easily realized

Tracking applications, including cameras and conveyor belts, are set up easily and quickly, step-by-step via individual masks. Special status masks facilitate the convenient checking and optimization of the system with respect to capacity utilization and performance.

# The decisive steps ahead with high-end technology functions



## Perfect synchronization for highest performance

### Control of multi belts for continuous product flow

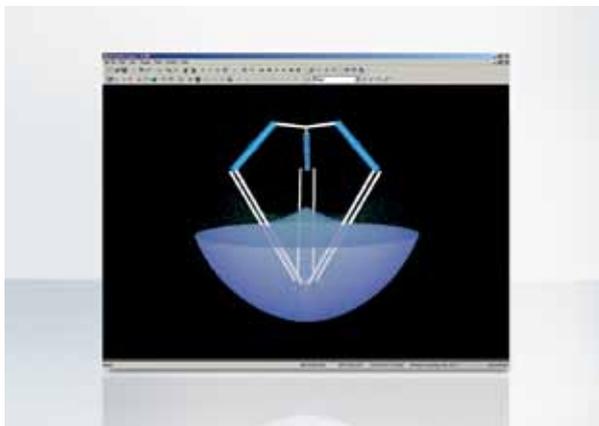
Many process steps in the packaging industry require a disorganized product flow to be transformed into an organized one. For this purpose, KeMotion Packaging features the “MultiBelt” function, which can be used to easily control multiple belts with multiple movements. For example, with “Multibelt” a robot is continuously supplied during toploding with the required number of products and at the specified rate.

### More than 25 % faster during tracking on indexing belts

Decisive for the success of this application is the synchronicity of the movements of the robot and the indexed belt. With KeMotion Packaging, robots and belt are – for this reason – operated with just one control. As a result, an external encoder is no longer necessary, thereby eliminating the associated inaccuracies. A unique function is available for controlling the indexing belts. By planning and precalculating the belt movements, it is possible to synchronize the belt movements with the movement of the robot. This results in significantly greater pick & place accuracy while still maintaining the highest speed.



KeMotion Packaging offers technology modules for intelligent process control. These facilitate an improvement in efficiency and maximize the productivity of packaging machines.



### Packaging without leftovers due to automatic placement belt control

Decisive in pick & place applications is that all products be picked up from the belt and that all possible placement positions be filled with products. KeMotion Packaging automatically ensures this. The speed of the placement belt is controlled as a function of the number of products on the belt and the number of places that are free in the placement compartments.

### Optimized systems through visualization of the actual robot working area

Knowing the actual robot working area is essential for the optimum machine integration. With KeMotion Packaging, this is calculated automatically and can be visualized in both the 3D simulation as well as in CAD programs.

# KeMotion Handling – The fastest robotics solution for handling applications

KeMotion Handling is based on KeMotion and is optimized for automated take-out processes. Intelligent technology functions ensure highly dynamic movements and vibration-free braking – minimal cycle times are guaranteed. The intuitive, user-friendly operating concept as well as numerous predefined removal programs simplify programming. This results in record-breaking times for commissioning and product changeovers.

KeMotion Handling is the **ideal control solution for all handling applications:**

**Take-out from injection molding machines**



**Take-out from machine tools**

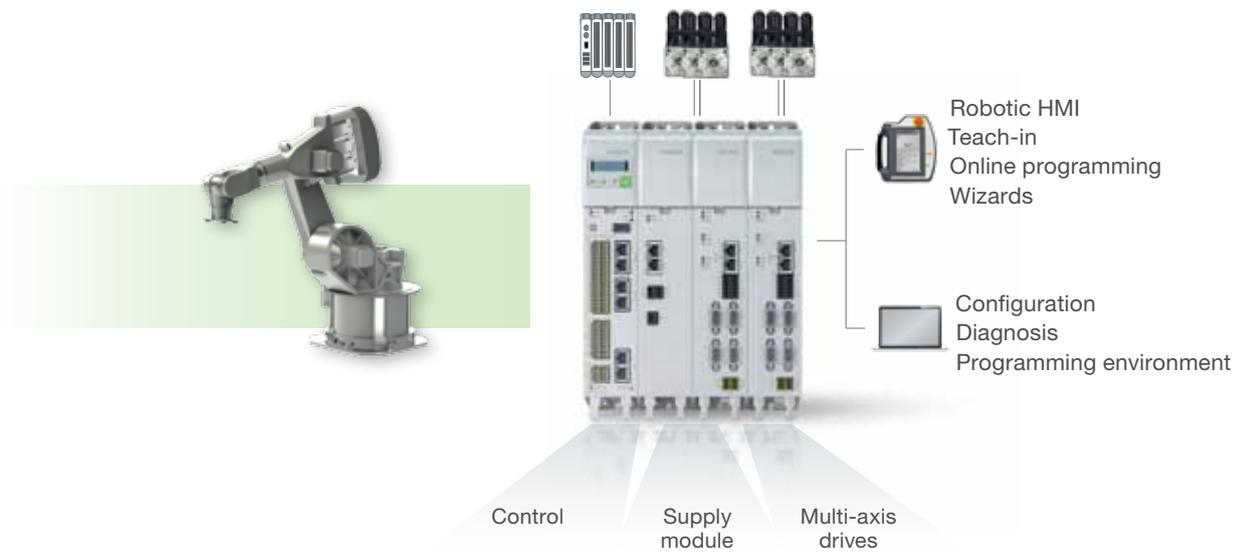


**Handling of heavy loads**



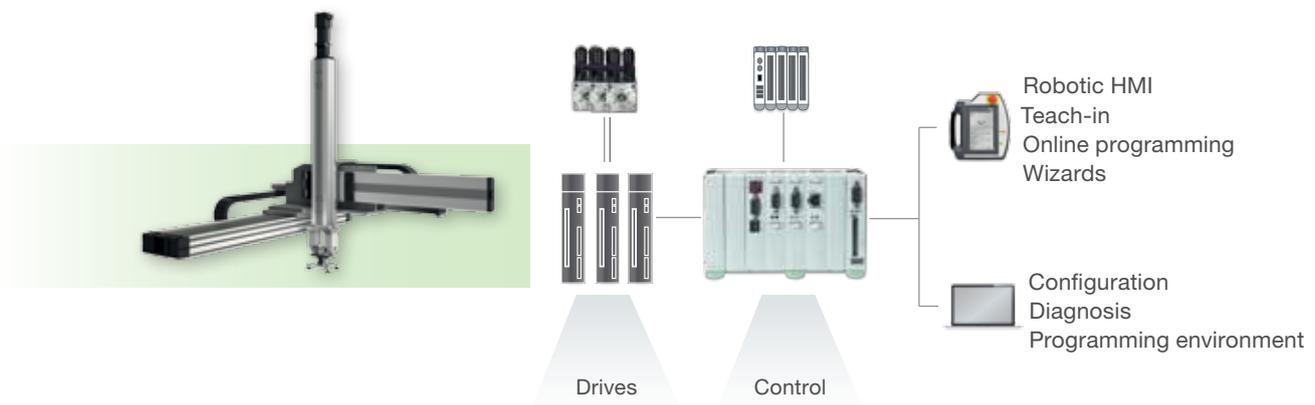
**Intralogistics**

## The optimized technology package for every handling application



### KeMotion Handling Premium – high-performance, open and scalable

- For a wide range of robot types and entire production cells
- Top performance
- Freely scalable and adaptable
- Easy integration of own software modules
- Optional safety control



### KeMotion Handling Eco – user friendly and ready for use

- Ideal for standard 3-axis handling systems
- Optimized price/performance ratio
- Turnkey solution
- Graphical teach-in programming

# Simply fast during commissioning and product changeovers

With KeMotion Handling, take-out projects are created in three simple steps. Thanks to wizards and a guided, graphical user interface, no programming knowledge is required. "Lean Engineering" in accordance with Industry 4.0 thereby becomes reality.

## Three steps to a finished take-out project

A template with predefined movement sequences is easily adjusted with the help of wizards and graphical programming. In the recipe management area, all data associated with the part that is to be taken-out is saved in a project and can be called up again at any time.

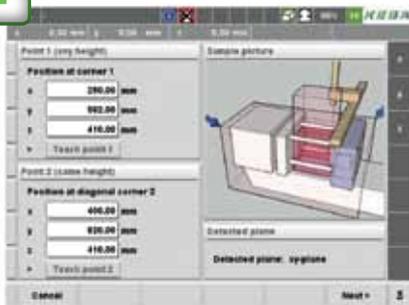
### 1 Create the project

### 1 Create the project



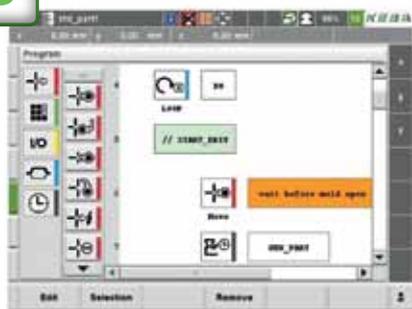
Name the project, select a template for a typical take-out cycle and provide information as well as a photo of the part that is to be taken-out. If the required project already exists, it can simply be executed and the following steps can be omitted.

### 2 Configure the parameters



User-friendly configuration of path points, working areas, Euromap interface, vacuum, etc.

### 3 Optimize the movements



Fine tuning is performed with the help of icon-based programming. Robot paths and movements can easily be adapted.

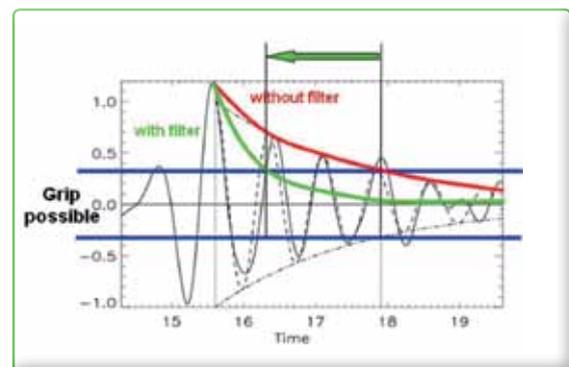
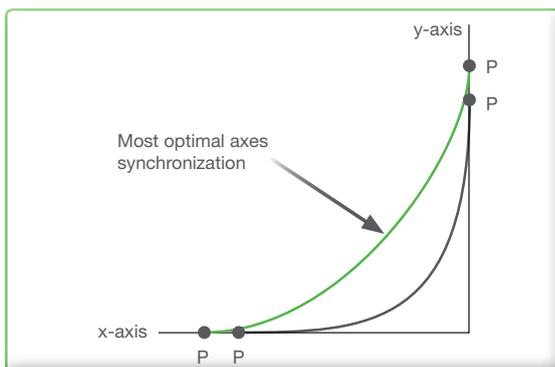


# Record time for take-out robots

Extremely short take-out cycles are essential for maximum machine performance and highest productivity. The high-end technologies of KeMotion Handling automatically ensure this.

## 20 % shorter take-out cycles

If parts are not taken-out quickly enough, the entire production process is delayed. KeMotion Handling offers high-end functions for perfect path blending and vibration-free braking. As a result, the take-out cycles are one fifth shorter than those of conventional systems.



## Perfect path blending

The KeMotion Handling technology package includes a ready-to-use movement command for the best possible path blending. This is based on the KeMotion “look-ahead path planning” function and on an optimum synchronization of the robot axes.

## Vibration-free positioning

Special filter algorithms suppress vibrations at the gripper during taking out the part from the machine. As a result, the robot reaches the pick position in half the time.

# Software licenses

## Functional KeMotion control

	Application area	License	Function range	Controls <sup>2)</sup>
	<p>From multi-robot lines with torque feed forward control to simple handling applications</p> <p>Interface in the IEC for controlling robots</p>	Robotics Professional <sup>1)</sup>	<ul style="list-style-type: none"> <li>- Path-conformant restriction of the axis torque</li> <li>- Torque feed forward control</li> <li>- Elasticity compensation</li> </ul>	DU 360 CP 265
		Robotics Advanced <sup>1)</sup>	<ul style="list-style-type: none"> <li>- Path look-ahead function</li> <li>- Trigger points with predictive function</li> <li>- Path-conformant restriction of the axis speeds and accelerations</li> <li>- Axis-/rail-/6D-tracking</li> <li>- Working area monitoring</li> </ul>	DU 360 DU 330 CP 265 CP 263
		Robotics <sup>1)</sup>	<ul style="list-style-type: none"> <li>- KAIRO robot command set</li> <li>- LIN, CIRC interpolation</li> <li>- Path blending</li> <li>- Robot-dependent error reaction</li> <li>- All robot types</li> <li>- Interface in the IEC for controlling robots</li> </ul>	DU 360 DU 330 CP 265 CP 263 CP 232
	<p>Synchronized axes (CAM, coupled axes)</p> <p>Single-axis applications</p> <p>Function blocks (PLCopen Part 1 + 2)</p>	Motion	<ul style="list-style-type: none"> <li>- KEBA Motion acc. to PLCopen Part 1+2</li> </ul>	DU 360 DU 330 CP 265 CP 263 CP 232
	I/O logic control	PLC	<ul style="list-style-type: none"> <li>- CoDeSys 3.5 function scope</li> <li>- Additional KEBA service libraries</li> </ul>	DU 360 DU 330 CP 265 CP 263 CP 232

<sup>1)</sup> License also available as multi-robot license (one multi-robot license for each additional robot)

<sup>2)</sup> Suitability dependent on cycle time and machine/process application

## KeSafe safety controller

Application area		License <sup>1)</sup>	Function		
	Safety functions for robotics	KeSafe Robotics Advanced	SZMc Safe Cartesian Zone Monitoring		
			SOMc Safe Orientation Monitoring		
			SCUc Safe Changing Unit (Safe Tool)		
		KeSafe Robotics	SRTc Safe Cartesian Robot Transformation		
			SLSc Safely-Limited Cartesian Speed		
	Safety functions for single-axis monitoring	KeSafe Motion Absolute	SLP Safely-Limited Position		
			SEL Safe Emergency Limit		
			SCA Safe Cam		
			SRX Safe Referencing		
		KeSafe Motion Relative	SOS Safe Operating Stop		
			SDI Safe Direction		
			SLS Safely-Limited Speed		
			SLA Safely-Limited Acceleration		
			SLI Safely-Limited Increment		
			SSx Safe Stop 1/2		
			SBT Safe Brake Test		
			Safety functions for logic	KeSafe PLC	Logical operations/modules: <ul style="list-style-type: none"> <li>• AND, OR, XOR, Timer, RS-Flip-Flop, etc</li> </ul>
					Commonly used safety elements: <ul style="list-style-type: none"> <li>• Enabling button</li> <li>• Emergency stop</li> <li>• Door locking</li> <li>• 2-hand button</li> <li>• Limit switch</li> <li>• Light curtain</li> <li>• Operating mode selector switch</li> <li>• Sensor</li> </ul>
Output elements: <ul style="list-style-type: none"> <li>• Safe digital outputs <sup>3)</sup></li> </ul>					
Safe interface to KeSafe system components: <ul style="list-style-type: none"> <li>• FSoE master via EtherCAT</li> </ul>					
Safe interfaces for data exchange with higher-level safety controller		KeSafe Interface FSoE-Slave <sup>2)</sup>	FSoE slave via EtherCAT		
		KeSafe Interface PROFIsafe F-Device <sup>2)</sup>	PROFIsafe F-Device via PROFINET		

<sup>1)</sup> Basic licenses (PLC to Robotics Advanced) always include all functions of the lower-level basic licenses (for example: Motion Absolute includes the functions from PLC, Motion Relative and those described for Motion Absolute)

<sup>2)</sup> Possible in combination with all licenses

<sup>3)</sup> Can also be used for activating safety functions at the drive axis (STO – Safe Torque Off and SBC – Safe Brake Control) and at the encoder box (SBC)

# KeControl – Controls for PLC, motion and robotics



The fast, scalable KeControl controls are optimized for industrial automation tasks – from simple PLCs to motion applications to complex multi-robot applications.

## Overview of controls

Control		CP232/Z	CP263/X	CP265/X	DU330/A	DU335/A	DU360/A	DU365/A
Performance factor		1	3.5	6	5	5	19	19
Onboard interfaces	EtherCAT	-	x	x	x	x	x	x
	CAN	x	x	x	-	-	-	-
	Sercos III	-	opt.	opt.	x	x	x	x
	Ethernet	-	x	x	x	x	x	x
	USB	x	x	x	x	x	x	x
	Serial	RS485	-	-	-	-	-	-
	Graphic	-	x	x	x	x	x	x
	Slave	-	-	-	EtherCAT, Sercos, Profinet, Ethernet IP			
Max. number of robots with cycle time of	1 ms	-	-	-	-	-	2	2
	2 ms	-	-	-	-	-	4	4
	4 ms	-	-	1	-	-	8	8
	6 ms	-	1	2	1	1	12	12
	8 ms	1	1	2	1	1	16	16
Kinematic types	Cartesian Handling	x	x	x	x	x	x	x
	Scara	-	x	x	x	x	x	x
	Delta	-	x	x	x	x	x	x
	Palletizers	-	x	x	x	x	x	x
	Articulated arm	-	x	x	x	x	x	x
	Multi-kinematics	-	-	x	-	-	x	x
KeMotion licenses	PLC	x	x	x	x	x	x	x
	Motion	x	x	x	x	x	x	x
	Robotics	x	x	x	x	x	x	x
	Robotics Advanced	-	x	x	x	x	x	x
	Robotics Professional	-	-	x	-	-	x	x
KeSafe licenses	Interface PROFIsafe F-Device	-	-	-	-	x	-	x
	Interface FSoE Slave	-	-	-	-	x	-	x
	PLC	-	-	-	-	x	-	x
	Motion Relative	-	-	-	-	x	-	x
	Motion Absolute	-	-	-	-	x	-	x
	Robotics	-	-	-	-	x	-	x
	Robotics Advanced	-	-	-	-	x	-	x



## KeControl FlexCore

### The advantage of openness for best-possible differentiation

In addition to the KeMotion turnkey solution, KEBA also offers the open KeControl FlexCore control system. The two systems differ from one another in the degree of openness; both consist of the same components, however.

KeControl FlexCore is a comprehensive and scalable automation system with modular design. It permits adaptations on all levels of the control architecture. Customers select the required modules and complement these with their own software packages and runtime systems directly on the Linux operating system level.

The use of basic functions, such as I/O access, diagnosis and communication service, is easy to realize directly from the C/C++ environment. An extremely high level of customization is thereby achieved.

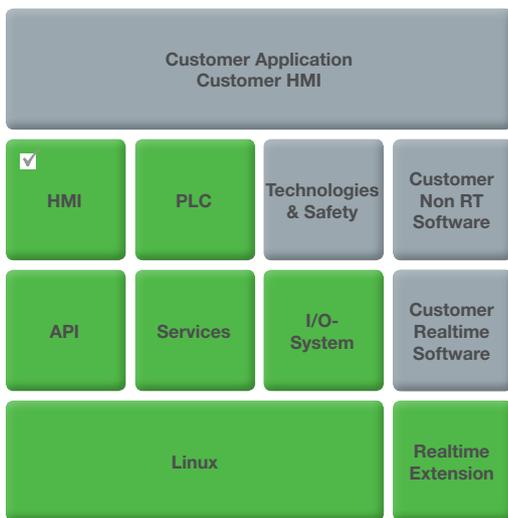
Focusing on one's own core competencies guarantees the best-possible differentiation from the competition. By using the provided development environment, customers can generate their system completely independently and thereby protect their know-how.



# The open automation solution for even greater differentiation

The knowledge of one's own applications and processes is among machine manufacturers' core competences. Differentiation in these areas is decisive for commercial success. With the FlexCore control solutions from KEBA, users can more easily integrate their special know-how in the proven KEBA system and thereby ensure optimum protection.

Full flexibility, from the control core to the tool



Development  
Configuration  
Project work  
Simulation  
Diagnosis

# Fit for the future with KEBA.

KEBA AG was founded in 1968 and is an internationally successful electronics company headquartered in Linz (Austria) with branch offices worldwide. In line with its credo, "Automation by innovation" KEBA has been developing and producing inventive, top quality automation solutions for 45 years for industrial, banking, services and energy automation branches.

Indeed, as a result of competence, experience and courage, KEBA is the technology and innovation leader in its market segments. Extensive development and production expertise have proved a recipe for highest quality.

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# KEBA®

Automation by innovation.