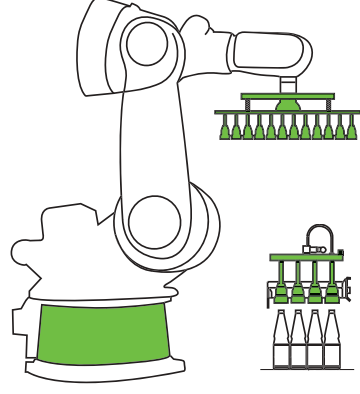


Innopack

Packing Technology for Returnable and Non-Returnable Applications



Versatile, Highly Productive, and Future-Safe –
The New Generation of KHS Packing and Unpacking Robots



■ Innopack Packing and Unpacking Robots – A New Name for a New Generation of Machines	4
■ Innopack SP 12 Packing or Unpacking Robots – Small, Versatile, Convincing Packing Performance	6
■ Innopack SP 18 Packing or Unpacking Robots – The Powerful Solution for the Medium Performance Range	8
■ Innopack PPZ Packing or Unpacking Robots – Compelling All-rounder in the High-performance Packing Range	10
■ Bottle Alignment – Dots the i of Your Product Presentation	14
■ Innopack RS 3 Single-column Robots – For Packing or Unpacking Loads up to 500 kg and Your Capacity Range up to 520 Layers per Hour	16
■ Innopack RK Articulated-arm Robots – For Loads up to 210 kg, 360 kg, and 570 kg. Flexibility <small>to the Power of 3!</small>	18

The information contained in this brochure is non-binding.
Only the technical specifications of our quotes are determinative with regard to design and scope of delivery.
Subject to design modifications.

Innopack Packing and Unpacking Robots – A New Name for a New Generation of Machines



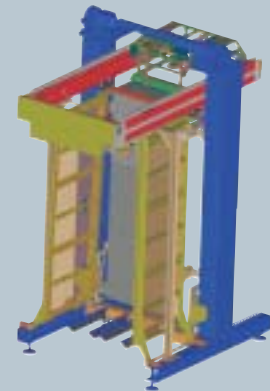
The new-generation KHS packing and unpacking are modular design machines operated by robot technology. This is why we call them “packing and unpacking robots”. A new drive concept was developed with main features such as servomotors, toothed belts, and continuous-path control. The overall concept consistently meets all market demands for:

- High flexibility
Product conversion and changeover easily carried out during production operation.
 - Great reliability
High-availability packing and unpacking robots operate dependably and handle products exceptionally gently in three-shift operation.
 - Ease of maintenance
Standardized operating for all machines. Ergonomically perfect. Control panels with large-size graphical user interfaces.
 - Environmental soundness
Low power, water, and air consumption, small footprint, and in general low-noise operation.
- For implementation, this means specifically:
- Identical, interchangeable modules such as guide columns, floor frames, lift drives.
Reduction of the assortment of parts to thus cut the cost of spare part stockkeeping.
 - Standardized modular drive technology for all machines. Servodrives. Coordinated control of axis movement. Absolute drive position sensing system.
Highly dynamic, sequence of motion optimally matched exactly to the product; position accuracy of ± 0.5 mm.

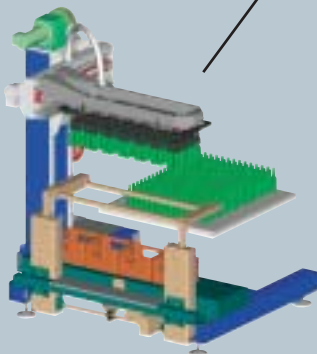
The KHS central control concept ensures maximum line efficiency



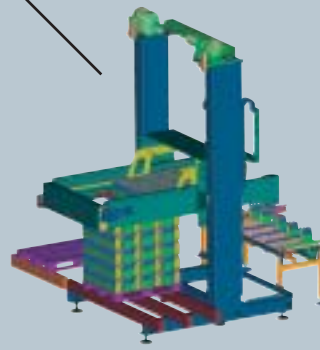
Articulated-arm robot



Depalletizing robot



Packing robot



Palletizer

- A typical feature of the KHS PC-based robot control:
Only one intelligence that controls everything!
No more interface problems.
- Use of heavy-duty toothed belt drives.
Smooth operation, minimum wear, and low-cost servicing and maintenance.
- All product-contacting machine parts covered with plastic.
High product assurance and gentlest possible handling of the goods to be processed.

- Extensive application of bus technology
Less wiring.
- Integration of Soft PLC and visualization
Prerequisite for easy and safe operating.
- Consistent use of plug-and-socket components
Plug & Play technology in servo control cabinets for simplified handling. Saves time and work.
- Direct Teleservice via modem or LAN.
Direct service capabilities for greater reliability. Simplified troubleshooting.

Innopack SP 12 Packing or Unpacking Robots – Small, Versatile, Convincing Packing Performance



Lifting column, lift unit with infeed table, here: H-shaped layout

- Single-column modular packer for 4,000 to 18,000 bottle-per-hour outputs

Tailored to the needs of medium-size businesses.

- Compact modular design system.

Requires considerably less space.

- Variable table widths up to 1,200 mm for bottle pickup/placement

Flexible packaging quantities.

- Programmable packing cam. Two programmable axes of motion.

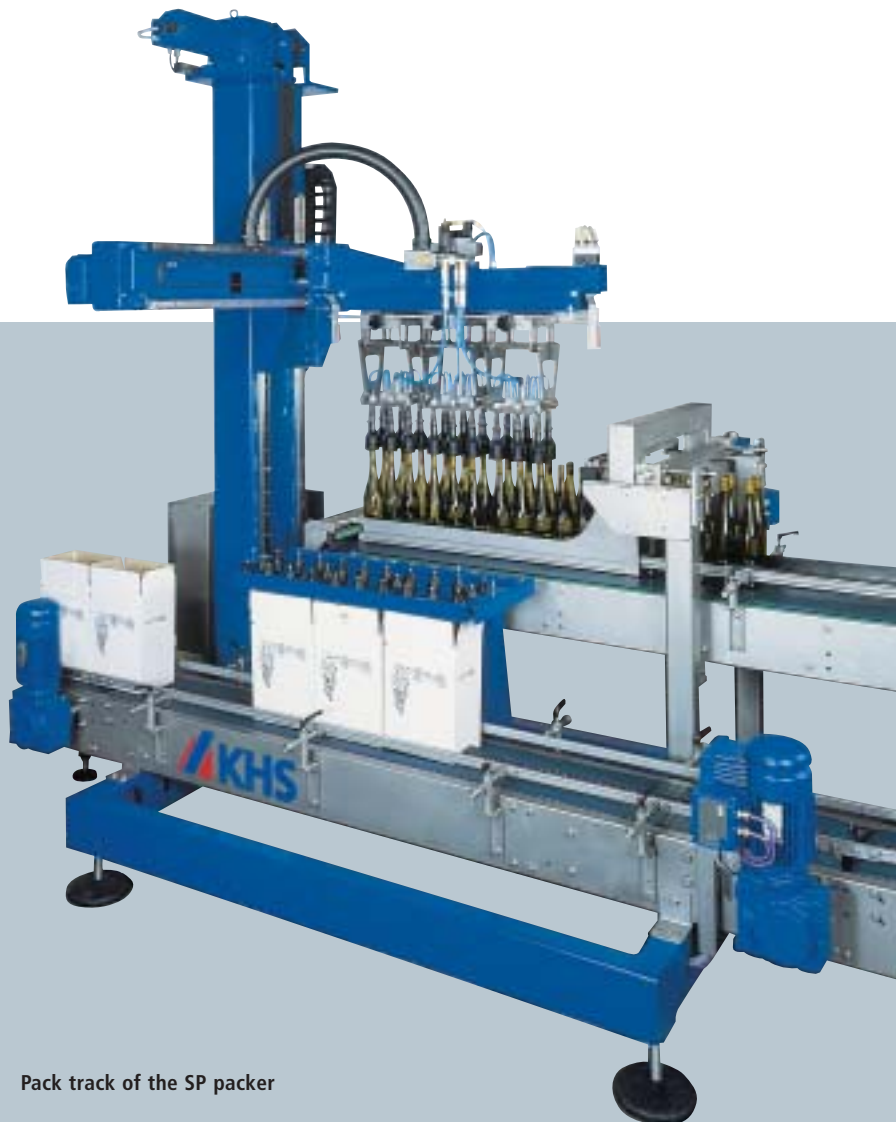
Reliable processing capabilities for all standard container shapes and pack styles.

- The number of packing bells can be quickly and easily changed.

Optimum adaptation to a widest possible variety of packaging tasks.

Bottles being packed through the centering frame





Pack track of the SP packer

■ The lifting unit and cross-conveying station operate with servo technology and toothed belt drives.

This means: Low-noise operation, nearly no wear, less servicing effort.

■ Processing range

Bottles, jars, containers made of plastic or glass; item diameters ranging from 60 to 105 mm; into and out of plastic crates, folded cartons with or without partitions

Technical Specifications

Innopack SP single-lane	SP-E1-1200 packer	SP-A1-1200 unpacker
Processing sizes up 1,200 mm	580 cycles per hour	600 cycles per hour

Innopack SP 18 Packing or Unpacking Robots – The Powerful Solution for the Medium Performance Range



Innopack SP 18 with T-feed, servomotor-driven centering frame

- Single-column modular packer for 16,000 to 60,000 bottle-per-hour outputs.

A “power package” for many areas of application.

- Compact model modular design system.

Space-saving design optimally integrable in any line concept.

- Optionally with single- or dual-lane container infeed.

Perfectly matched to output capacity specifications.

- Variable table widths for bottle pickup/placement:

Single-lane: 1,800 mm maximum

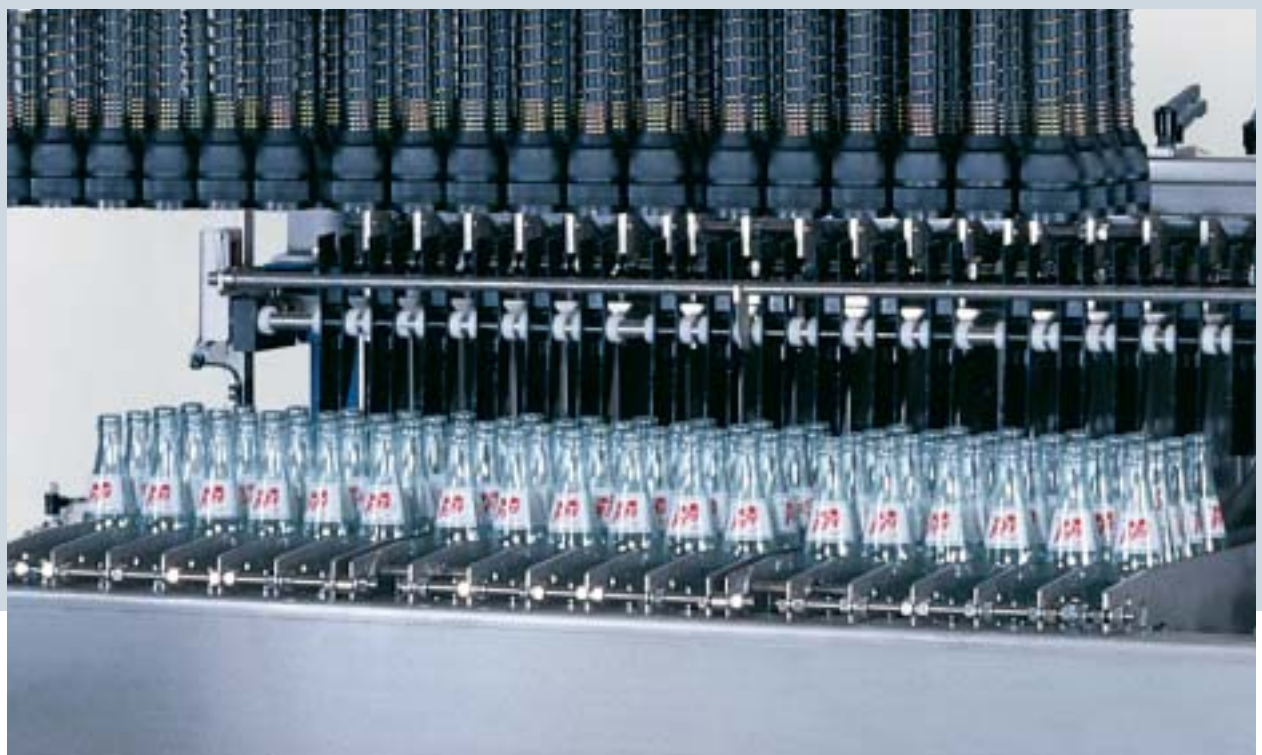
Dual-lane: 1,400 mm maximum

Highly flexible packaging quantities.

- Packing cam programmable via two programmable axes of motion.

The result: Reliable processing capabilities for all standard container shapes and pack styles.

Lanes at the bottle table





Packing head guidance on linear units without play

- The lifting unit and cross-conveying station operate with servo technology and toothed belt drives.

This means: Smooth, low-noise operation, minimum wear, and decreased servicing costs.

- The number of packing bells can be quickly and easily changed.

Prerequisite for optimum adaptation to all packing tasks.

- Processing range:

Bottles, jars, containers made of plastic or glass; item diameters ranging from 70 to 105 mm; into and out of plastic crates, folded cartons with or without partitions

Technical Specifications

Innopack SP single-lane	SP-E1-1800 packer	SP-A1-1800 unpacker
Processing sizes up 1,200 mm	580 cycles per hour	600 cycles per hour

Innopack PPZ Packing or Unpacking Robots – Compelling All-rounder in the High-performance Packing Range



Economical enclosure of the Innopack PPZ; operator panel equipped with visualization and operator prompting

- Two-column packing or unpacking robot for the high-performance range.
The “ultimate” for your packing tasks.
- Optionally available with single- or dual-lane pack circulating.
Maximum single-lane speed: 520 work cycles per hour (product-dependent)
Maximum dual-lane speed: 420 work cycles per hour (product-dependent)
- Compact clearly arranged modular design system.
Saves you space and offers you high performance within a limited amount of space. Also ideal for low-ceiling areas.





Fast-running shaft between the gears for precision synchronous operation

- Variable design programmable packing cam via two servo-axes.
This gives you more flexibility regarding packing quantities and style design. You can adapt the packer to all changes in condition. Future-safe for all new packaging shapes and styles.
Enables you to react quickly to new trends.
- Lifting unit and cross-conveyor are moved over two axes each equipped with a servodrive.
The programmable packing cam provides you travel paths and cycle time options.
- The number of packing bells can be easily changed.
Up to 30 packing heads depending on the task.
This equals up to 384 containers at a time.
Emphasizes the versatility and gives you additional freedom of movement for numerous applications.

- Synchronous toothed belts drive the lifting unit and cross-conveyor.
A quiet, precise, and at the same time maintenance-free solution that additionally ensures high machine availability.

Innopack PPZ Packing or Unpacking Robots – Compelling All-rounder in the High-performance Packing Range



Pack track of the Innopack PPZ

- Lifting motion produced by toothed belt drive.
The low-noise operation, simple design, and the low cost of servicing are impressive in this case as well.

- Consistent use of robotics and bus technology.
Exact adherence to programmed packing positions.
High machine efficiency through fully developed engineering.

- The packing or unpacking Innopack PPZ robot can be equipped with various packing head systems that can be changed manually, semi-automatically, or fully automatically.
Your benefit: Time savings! Above all if you process many different types of product.

- A choice of 4 gripping systems is offered:
 - Plastic grippers with durable sleeves
 - Mechanical packing bells
 - Vacuum pickup
 - Mechanical multipack grippersEnabling you to process virtually all styles of container.

Selective unpacker for mixed no-return and non-refillable deposit PET





Double-T bottle infeed

- The packing heads are attached with quick-action fasteners. **This ensures fast format part changing and high machine availability.**
- The Innopack PP packs or unpacks. Both operations are integrated in one machine. **You can use the packer for a variety of tasks and save money on spare part stockkeeping, servicing, and manpower. For you, and effective investment.**
- Depending on the packaging materials and the packing formation, container conveying with infeed and discharge is possible parallel or at right angles to the pack conveyor. **Giving you greater flexibility in the project planning. No crowding in the lanes of parallel infeed; container dressings are handled gently and remain intact.**
- Sorted unpacking is also possible by installing electronic container detection facilities upstream. **Enabling you to directly sort mixed empties out of the packs; saves on machine capacity, manpower, and sorting time.**

Bottle Alignment – Dots the i of Your Product Presentation



Aligned bottles in 8-bottle PET crates

- The Innopack PPZ can be optionally equipped with alignment facilities that turn the bottles so that they are perfectly aligned with the outer sides of the crate. Regardless of how the retailer sets up the crates, consumers are able to see the whole label immediately, and reach for their brand. This boosts your efforts to win over customers for your products in competition. A sales-promoting action that supports your brand strategy.

Innopack PPZ with alignment head





Sensory equipment (bottom) and motors (top) at the alignment head

■ Processing range:

Glass bottles, plastic bottles, contour bottles with diameters ranging from 60 to 105 mm in and out of plastic crates, low-wall crates, split-boxes, and cartons and trays.

Technical Specifications

The maximum output of the single-lane machine (PPZ E 1)	520 work cycles per hour (product-dependent)
The maximum output of the dual-lane machine (PPZ E 2)	420 work cycles per hour

Innopack RS 3 Single-column Robots –

For Packing or Unpacking Loads up to 450 kg and Your Capacity Range up to 320 Layers per Hour



Innopack RS 3 as a combined packer: Packing and unpacking at each cycle

- Innopack RS 3 - multiple-station packing and unpacking robot with a 180-degree working radius.
Advantages: A wide variety of variants and uses, higher output, and greater flexibility within a small amount of space.

- One robot is able to serve several pack conveyors and container infeed and discharge tables.
For you this means: Increased output and optimum utilization of shop floor space.
- Modular drive technology used such as maintenance-free, highly dynamic servomotors and low-noise toothed belts.
You can run shorter cycles, reduce wear and servicing effort.
- The three-axis device is effortlessly programmed.
This gives you more flexibility and optimum capabilities for adaptation to all of your packing tasks.
- Innopack RS 3 packing and unpacking robots can be optionally equipped with various packing head systems.
Flexibility for your range of products.





Combined packer bottle infeed and discharge

- A choice of 4 gripping systems is available:
 - Plastic grippers with durable sleeves
 - Mechanical packing bells
 - Vacuum pickups
 - Mechanical multipack grippers
 Enabling you to process virtually all styles of container.
- The packing heads are attached with quick-action fasteners.

This means: Faster format part changing and high machine availability.
- Optional capabilities are available for changing the entire packing head automatically.

This saves you time, manpower, and work effort.

■ Depending on the style of packaging and the packing formation, container conveying with infeed and discharge is possible parallel or at right angles to the pack conveyor.

Gives you greater flexibility in project planning. No crowding in the lanes of parallel infeed; container dressings are handled gently.

■ Modular design control. Braking energy recovery, time tagging, and ASI bus technology.

Increased safety; no time-consuming reference travel. An end to the jungle of wires and sensors! Fewer spare parts, increased operational safety, decreased operating costs.

■ Processing range:

Glass bottles, plastic bottles, contour bottles with diameters ranging from 70 to 105 mm in and out of plastic crates, low-wall crates, split-boxes, and cartons and trays.

Technical Specifications

Machine speed	320 cycles per hour
Load capacity	450 kg

Innopack RK Articulated-arm Robots –

For Loads up to 210 kg, 360 kg, and 570 kg. Flexibility to the Power of 3!



Innopack RK packer

- Articulated-arm model Innopack RK packing and unpacking robots. Implementable in many other areas including the palletizing area.

Future-safe thanks to the great variety of uses.

- Multi-axis controlled articulated-arm robot with a large 360-degree working radius.

Total freedom of movement. No "blind spots".

Provides you greater project planning flexibility.

- Great mobility within a minimum amount of space.

Travel- and time-optimized sequences of motion enable best possible utilization of available space.

- Use of state-of-the-art robot technology

For you this means many benefits:

- Highly dynamic, maintenance-free servo motors
- High performance
- Less space due to fewer peripherals in the surrounding area
- Saves on the cost of investment in conveying systems

Innopack RK sorting packer





- The robot is programmable.
Virtually all sequences of motion are programmable.
The result: Maximum flexibility of use and increased assurance of solving future packing tasks.
- High-resolution absolute encoders ensure precise positioning and exact reproducibility.
Ideal for packing a widest possible range of products and packs.
- Modular design control.
Braking energy recovery, absolute encoders, and ASI bus technology.
This increases safety and saves reference travel.
- Sensors in the gripper head detect various container and packaging heights.
Your benefit: Unlimited flexibility. You can pack and unpack all styles of container, jar, PET, and can of virtually any size in crates, cartons, displays, and even pin-bottom crates.
- A choice of various gripper heads are available that can be equipped with automatic changing capabilities on request.
This enables you to process a widest possible range of different container and pack styles.
Six-packs, large trays, packs in special displays.
Perfect solutions for packing in packagings.
Multipacks for many branches of industry.

Technical Specifications	Innopack RK 4-180	Innopack RK 6-350	Innopack RK 6-500
Load capacity	210 kg	360 kg	570 kg
Machine speed	520 cycles per hour	425 cycles per hour	380 cycles per hour



**KHS Maschinen- und
Anlagenbau Aktiengesellschaft**

Juchostrasse 20
44143 Dortmund
Germany
Phone +49 (231) 569-0
Fax +49 (231) 569-1541

Planiger Strasse 139-147
55543 Bad Kreuznach
Germany
Phone +49 (671) 852-0
Fax +49 (671) 852-2411

Enzingerstrasse 139
67551 Worms
Germany
Phone +49 (6247) 97-0
Fax +49 (6247) 97-3300

www.khs-ag.com
Email: info@khs-ag.com