TRAPO

Automated Intralogistics

GRIPPERS & (DE-)PALLETIZING SYSTEMS
THE RIGHT SOLUTION FOR YOUR PRODUCT

TRAPO | RETHINKING PACKAGING PROCESSES

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INNOVATIVE SOLUTIONS FOR EFFICIENT **AUTOMATED (DE-)PALLETIZING**

Specialist teams from TRAPO offer a maximum in flexibility when they intelligently automate intralogistics tasks – in the perfect interaction of palletizing and depalletizing systems as well as tailor-made gripper technology.

1 System | 1 Control: Mechanics and controls are adapted to the production task from a single source. Customers have one permanent contact person and profit from the knowledge of the TRAPO teams.

Depending on your product, your sector and your wishes, we palletize with layer(de-)palletizer, articulated arm robot or portal.

Proven technologies and groundbreaking developments: With the HLP Series and the HLP 6000 High-Speed LayerPalletizer, TRAPO presents a modular system that is flexible in terms of products and applications and can be tailored to fit into any environment.

Depalletizers are an integral part of fully automated process chains. They carefully remove palletized goods and place them on conveying systems for further processing.

Benefit from TRAPO's complete system competence for the life of the machine. We are at your side if you wish to automate existing processes or expand your production. And we support your success on the international stage: with company subsidiaries and worldwide representatives.

› These (de-)palletizing professionals secure your product pallets for intermodal transport: depending on the product and industry, with layer palletizers, gantry robots or articulated robots (from left to right).

FEED FOR OPTIMAL **LAYER AND STACK FORMATION**

Each product with its specific characteristics prescribes the requirements for a palletizing system. TRAPO creates solutions for this need with combinations which come together to form the perfect complete system.

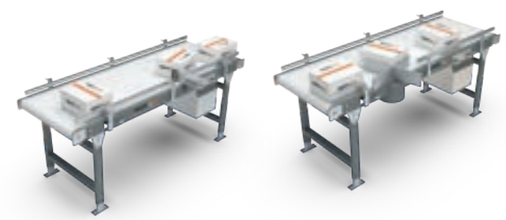
Several combination options are available:

The feed

- Maximum flexibility: multiple feeds possible, including feed from above and below
- Any pallet size can be handled, e. g. Euro, Industry, Düsseldorf-type and others
- Intermediate layer handling of most varied types

In the infeed zone reliable layer formation through:

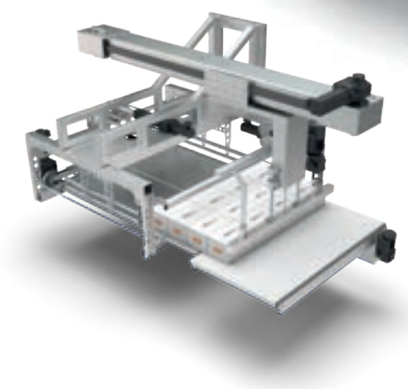
- **Conventional methods**
  Turntable, turnstile, hub, turning tappet, contraflow conveyor
- The **parallel kinematics (HKS Series)** programmed for high-speed



In the feed zone

Depending on the capacity and product, the following devices are optionally used:

- A simple slider with x-axis
- A double slider with x-axis and additional z-axis
- A double slider with x-axis and additional intermediate slider



TRAPO PACK: **OPTIMAL USE** OF TRUCK SPACE

The perfect combination: power, endurance and intelligence – high-speed palletizer plus TRAPO Pack software.

This software configures the optimum layer pattern from the dimensions of the package and the pallet – for perfect stacking as the basis for stable shipping units.

TRAPO Pack requires lower energy consumption and reduces material usage. TRAPO's own software is the basis for efficient palletizing at high-speed.
The layer patterns generated are optimized on the monitor. Layer patterns and pallet loads can be user-configured and memorized for subsequent palletizing operations.

The software monitors the process and thus minimizes downtimes during layer formation and palletizing.

Clear advantage: This saves enormous setup times – and thus costs!

TRAPO ensures optimum securing of the load – with minimal film consumption.

Our knowledge – your advantage

- Simple & operator-friendly
- Definition of packing pattern & pallet format
- Efficient placement of packages on pallets
- Maximum system availability
- Completely automated – enormously flexible

- The smart TRAPO Pack palletizing software configures perfect layer patterns and memorizes them for subsequent orders.

HLP 6000 ›
High-Speed Layer Palletizer

HLP 6000:
HIGH-SPEED LAYER PALLETIZING

The HLP 6000 High-Speed Layer Palletizer from the HLP Series offers high-speed capacity in the tightest of spaces – and serves an almost unlimited product range: Highly flexible, as it can be adapted to many products. In this way, with customer's high product diversity and different formats, perfect, clean layers and stacks can be formed.

With this significant advantage, the HLP 6000 exploits its unique selling point – absolute flexibility: Up to now, a great deal of effort was required to change over in order to implement complex layer patterns. The HLP 6000 places perfectly and thus realizes any layer patterns of different formats.

Our knowledge – your advantage:

- Low space requirement/extremely compact
- Palletizing capacity of up to 10 layers/min.
- Modular system
- High-speed
- Layer weight up to 200 kg

› Two high-speed layer palletizers for the food industry: The first variant with y-axis serves two palletizing stations, with two infeed areas above and palletizing stations below. In the second variant, the palletizer moves and palletizes goods from five infeeds, sorted by type, to five assigned palletizing stations.

ONE PALLETIZER –
THREE BASIC MODULES

In the palletizing area

Basic modules of the HLP 6000 are the lifting column, layer gripper and feed track.

› **Basic variant**
HLP 6000 with guide area above and palletizing position below.

› **Variant with y-axis**
The HLP 6000 serves two palletizing stations and can operate with both high and low infeed. The advantage:
In a small space, the infeed is performed from two levels to achieve the desired high output.

› **Variant with rotary module and traversing axis or a combination of both**
The traversing high-speed professional travels on a prescribed stretch. The rotatable variant functions in a radius of 180°.

HRS Series
High-Speed Robot System

EXTENSIVE AND FLEXIBLE:
HIGH-SPEED ROBOT SYSTEMS

4- or 6-axes articulated arm robots from various well-known brands act in a highly flexible manner. The high-speed systems palletize, sort, pick and place individual items, rows, partial or complete layers both swiftly and with high precision.

Our knowledge – your advantage:

- Lower space requirement
- On request: suitable for clean-rooms
- Flexibly employable for various applications
- Modular structure: Maximum adaptability to product properties
- Independent of product and industry: well-engineered gripper technologies transport the widest variey of goods
- Suitable for different packages and load carriers
- Gentle product handling
- Freely selectable layer patterns
- Placed on rails, the articulated arm robot travels to different palletizing locations
- Application-oriented, flexible combination of the optimal complementary technical properties of high-speed palettizers and robots

This articulated arm robot palletizes deli salads and secures them with intermediate layers for transport.

HPS Series
High-Speed Portal System

TAKE THE DIRECT ROUTE:
HIGH-SPEED PORTAL SYSTEMS

Our powerful portal robots operate on two or three linear axes in cubic space. We design and construct the portal robots at our in-house production facilities in Gescher-Hochmoor. They move particularly heavy products even over long distances.

We are also specialists in stainless steel portal robots for special applications in areas which have special hygiene and corrosion protection requirements.

HPS Series:

- **HPS 100** moves up to 100 kg
- **HPS 250** moves up to 250 kg
- **HPS 500** moves up to 500 kg

Our knowledge – your advantage:

- Modular structure
- Suitable for various packages and load carriers
- Gentle product handling
- On request: suitable for clean-rooms
- Higher weights can be implemented as a special design on request
- Portals are flexible in length, height and width

They are our palletizing giants: portal robots that lift the heaviest weights even over long distances. They are used in the automotive industry, for example.

HLDP Series
High-Speed Layer Depalletizer

HIGH-SPEED DEPALLETIZING SOLUTION: SECURE **HANDLING OF PALLET GOODS**

The High-Speed Layer Depalletizer (HLDP Series) from TRAPO offers several innovations: The space-saving arrangement of the module enables floor-level operation. **Performance is impressive with up to 90,000 empty cans per hour**. Thanks to its modular design, the HLDP can also handle glasses and bottles in the same manner.

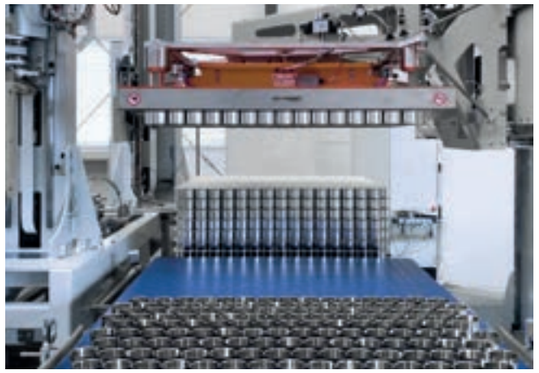
Every employee who has to climb up to 35 steps, several times, onto the platform to rectify a fault under time pressure knows that this is not only a time-consuming, but also dangerous climb. **The HLDP dispenses with the competitor's usual second operating level using a platform – an absolute bonus in terms of safety in this speed class**!

This innovative solution impresses by employing a lifting column in combination with a magnetic or vacuum gripper and enables efficient depalletizing of empty tin cans (tinplate/aluminium) or empty jars – with a capacity of up to six layers per minute. This corresponds approximately to 1,500 empty cans per minute.

Minimize fault sources – relieve employees

Until now, depalletizing tasks have often been performed manually. A depalletizer as an integral part of an automated line enables stable, secure processes and offers consistently efficient and traceable production processes.

Automated depalletizing solutions grip products piece by piece, as individual or complete layers. Depending on weight and state, portals (HPS Series) or articulated robots (HRS Series) plus multifunction grippers are utilized.



› More safety and impressively high-speed: floor-level high-speed layer depalletizing of up to 1,500 empty cans per minute.

HRS Series
High-Speed Robot System

PERFECTLY AUTOMATED: **SECURE LAYER DEPALLETIZING** OF AEROSOL CANS

Shaving foam, hairspray or deodorant: Aerosol cans are to be found in all households. Whereas depalletizing was previously performed by hand, this is now carried out by an efficient high-speed layer depalletizing station with articulated robot and tailor-made multifunctional gripper – five days a week in a three-shift operation.

A particular challenge is the wide variation in products and intermediate layers, as well as the high risk of cans tipping over when gripping, setting down, conveying and separating.

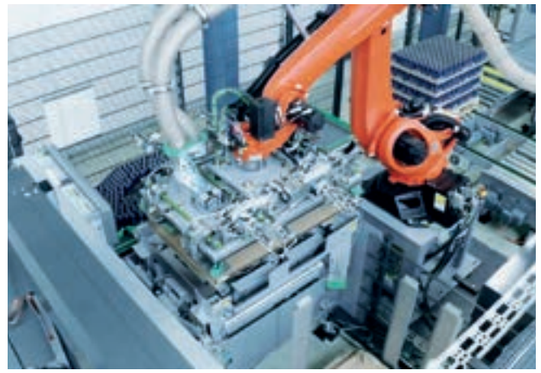
Robot depalletizing was equipped with a complex multi-function gripper which covers all functions in one system and saves considerable distance and space in production.

Initially, the gripper takes the exact tray dimensions during a sensor-monitored measuring run. Surface suction cups – tailored to the various can diameters and tray sizes – ensure the suction of the cans when they are removed from the full pallet and the secure placement on the running modular belt.

Lateral vacuum cups ensure that the intermediate layers/cardboard trays are transported safely and delivered separately.

Solutions which save resources

After the layer of cans has been placed on the conveyor belt for separation, the corners of the tray are separated in combination with the gripper and tilting table with a cutting device. This enables the cardboard boxes to be placed on a separate pallet to save space and optimizes recycling costs by stacking the trays higher.



› A multifunctional gripper in operation which saves distance and combines several functions.

THE PERFECT INTERPLAY: **ROBOT AND GRIPPER**

Tailor-made gripper technology perfects employment options, function and speed of a robot system. The application of the optimal gripper is decisive when it comes to sustainably increasing capacity and quality. Individual grippers are employed in fully automated robot applications as well as in collaborative assistance robots.

Multifunctional grippers
Multifunctional grippers are developed for the simultaneous handling of several products and also take on tasks from their periphery: Workpieces of any size, geometry and state are handled.

Mechanical grippers
Mechanical grippers prove their worth when bags or other products such as barrels, canisters or cartons are to be handled and palletized.

Fork grippers
Retracting fork grippers handle open containers or larger containers.

Vacuum grippers
Goods are picked up and conveyed securely by large-area vacuum grippers. Handling weights are increased by the number of suction cups and suitable vacuum generation.

Magnetic grippers
Magnetic grippers for ferro-magnetic materials obtain their holding power from permanent magnets or electromagnets.

› At the TRAPO Technical Center, components for gripper systems are developed, then assembled in the neighboring factory work floor and tested under real conditions.

EQUIPMENT OPTIONS AND TRANSPORT SAFETY

Profit from our numerous equipment options and customer-specific additional modules:

› Automatic feed and removal of pallets or other load carriers such as pallet cages, trays etc.

› Position detection through image processing or sensors

All TRAPO systems impress with the added integration of:

› Bag flattening

› Empty-pallet magazine with seperation and empty-pallet feed

› Placement of intermediate layers

› Secure with hot or cold glue

› Control functions: scales/ metal detectors

› Product printing/labeling

› Saving resources: cutting and stacking carton trays to save space – removal of the full pallet.

The TRAPO Stretch Wrapper (TWS Series)

› For warehouse and intermodal transport

› Pallet securing with wrapper

› Fully automatic securing for cartons, bags or pails

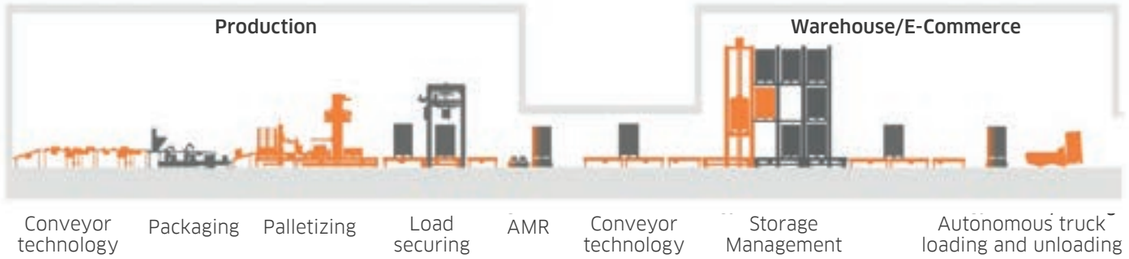
› The entire pallet is wrapped with film at high-speed – in this way, TRAPO guarantees the required conveying security

› Strong hold – low film consumption: The TRAPO Stretch Wrapper (TSW Series) enables pallet loads to be secured fully automatically.

OUR AUTOMATED SOLUTIONS FOR **YOUR INDUSTRY AND YOUR PRODUCT**

Customer satisfaction is decisive for us. We craft precise packages of measures to support our customers where they profit most from the TRAPO complete system competence – with a strong sales and service team at your side.

Our systems impress with flexibility, maximum speed, cost-effectiveness and predictive maintenance.



FLEXIBLE AND **PRODUCT-INDEPENDENT SOLUTIONS** FOR ALL REQUIREMENTS

TRAPO solutions optimize work performance in production and intralogistics. As a system provider, we offer tailor-made solutions, partial and complete systems for industries that are geared to the respective product. With special know-how in the field of hygiene design for care areas.

TIM

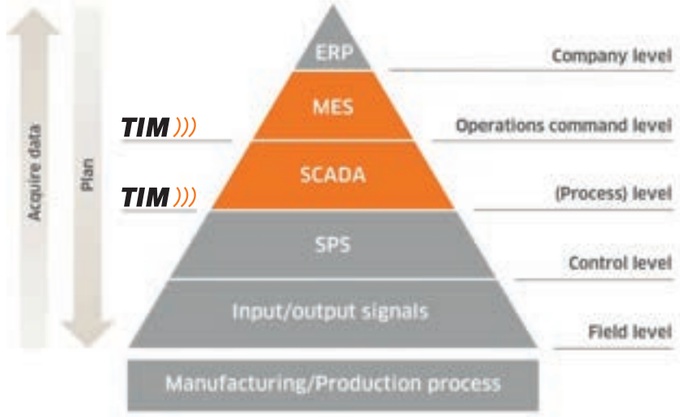
TRAPO **I**NTELLIGENT **M**E SYSTEM

TIM was already introduced in 2018 at the TRAPO Technical Center for all needs of plant and mechanical engineering as an ME System (Manufacturing Execution System). TIM is industry-independent, can be configured by the customer, connects production systems and, thanks to open interfaces, can both integrate third-party systems and existing systems.

Plant monitoring

TIM monitors process flows and intralogistics based on specified OEE performance (Overall Equipment Effectiveness).

With TIM, customers have an overview of their company key figures in real time.



Plant operation

TIM offers a web-based, user-friendly HMI (Human Machine Interface).

Plant optimization

Continuous control and the data collected from it enable targeted optimization of the monitored systems. Moreover, TIM specifies the optimal time for predictive maintenance – and simplifies ordering processes to the providers of the a digital shopping basket.

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