

ACPAQ

FULLY AUTOMATED ORDER PICKING OF MIXED CASE PALLETS

FAST AND RELIABLE — AUTOMATED CASE PICKING FOR THE CHALLENGES OF TODAY AND TOMORROW

Retailers are facing many challenges today. They have to adapt to their customers' needs, e.g. offer a comfortable shopping experience and a wide selection of products, available in sufficient amounts in the stores, and operate several channels (growing demand in e-commerce). On the other hand they have to reduce costs and the daily workload of employees. To address these challenges, Swisslog has developed an innovative automated solution that fulfills retailers' daily logistic tasks in an efficient and economical manner.

ACPaq is a universally applicable solution for fully automated order picking of mixed case pallets based on customers' requirements. It combines best-in-class KUKA robotics and Swisslog's long-term experience in building logistics solutions.

The solution is a combination of proven intralogistics technology. It is configured using modules and is scalable for small, mid-size and large distribution centers handling up to 500.000 cases per day. The automated mixed case palletizing process is designed to fulfill order assignments in a defined sequence with a technical performance up to 1.000 units per hour and palletizing station.

BENEFITS

Reliable

Order picking by robots improves picking quality and quantity. Unique gripper type allows gentle handling of various package types.

Efficient

Optimized ROI and reduced labor costs thanks to compact solution design and best-in-class robotic performance with up to 1 000 units per hour. Special gripper allows picking of 4 cases per move.

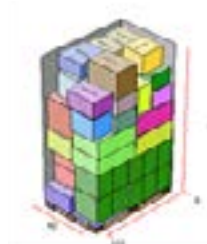
Flexible

The modular design allows growing companies to increase their capacity and efficiently handle peak demands. The solution is suited for small, medium and large companies. 1.000 units per hour. Special gripper allows picking of 4 cases per move.

SOLUTION FOR HIGH THROUGHPUT AND FAST DELIVERY

THE SOLUTION DESIGN

ACPaQ combines proven Swisslog technology such as the light goods shuttle system CycloneCarrier and conveyor systems with high performance de- and palletizing robots to create a fully automated system for order picking of mixed case pallets. To reach maximum availability and operational safety the loads are transported and stored on trays. In order to minimize manual intervention during the operation vision detection and self-correcting procedures are implemented. The warehouse management software SynQ by Swisslog connects the subsystems and creates an intelligent order picking solution allowing full transparency. The core of the system is the mixed row palletizing robot RowPaQ. Thanks to its unique 4 finger gripper a wide range of various products can be palletized. Row grouping of products by the palletizing robot allows for increased throughput up to 1 000 units per hour, two to three times more than traditional solutions.



ROBOT SOLUTION ROWPAQ

RowPaQ

The robot solution is designed for mixed row palletizing and consists of a KUKA palletizing robot (KR470) and a finger row gripper. It palletizes complete rows by taking up to 4 cases from a pick-up conveyor and placing them on a dispatch unit.

Gripper

The gripper is an unique 4 fork row gripper that can handle multiple cases. It consists of a frame to which gripper forks are mounted. For maintenance or in case of repair each fork can be exchanged individually. Not only single SKUs but also units of different dimensions can be processed simultaneously. This unique gripper type allows for gentle handling of multiple products and various package types such as cartons, crates, trays or shrink wrapped products.

SOFTWARE AND CASE BUFFER

Mixed Case Palletizing Software

In order to build stable pallet loads in a defined sequence based on different customer requirements a mixed case palletizing software is applied. Thus palletizing can be organized in line with individual store layout to replenish store shelves in an optimized way to save time and cost.

SynQ

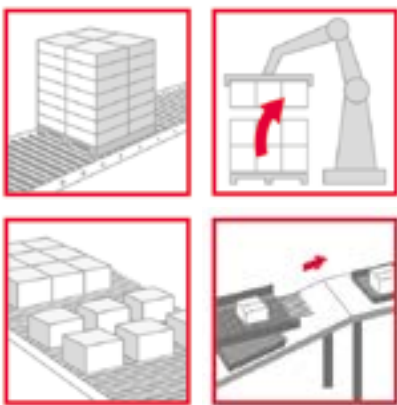
The entire ACPaQ system is managed by Swisslog's intelligent warehouse management software SynQ. It selects the cases required for order fulfillment and creates retrieval orders and activates and controls all movements within the system. The entire storage system, its components and software are perfectly integrated to ensure a reliable and transparent operation.

CycloneCarrier

The high-speed shuttle CycloneCarrier serves as case buffer and storage system. The shuttle releases the cases in the correct sequence once an order is assigned.

AUTOMATED CASE PICKING PROCESS

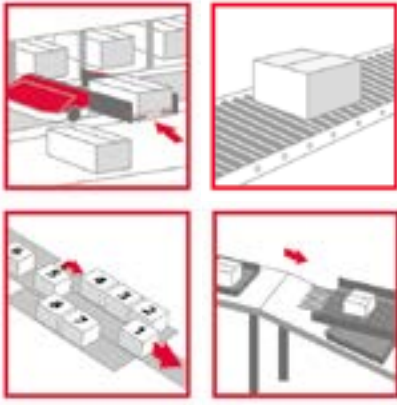
1.



INCOMING GOODS, DE-PALLETIZING AND DESCRAMBLING

1. Goods arrive in homogenous pallets
2. They are automatically
 - a) stored in the pallet storage, or
 - b) depalletized layer by layer by a depalletizing robot for replenishment
3. The depalletizing robot positions the pallet layers on a conveyor belt
4. The layers are descrambled
5. The single cases are loaded automatically into trays

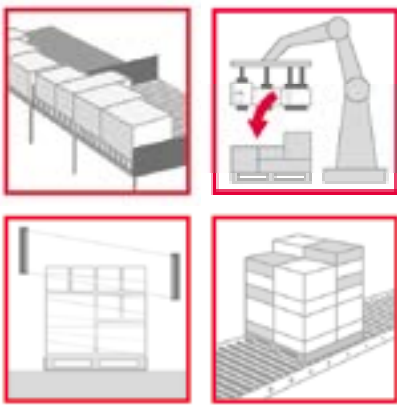
2.



CASE BUFFERING AND RE-SHUFFLING

6. The cases are stored in a multi-level storage served by CycloneCarrier for case buffering
7. After order assignment the cases are released from the case buffer and are put into the right sequence by the sequencer
8. The single cases are unloaded from the trays

3.



ROW FORMING, MIXED CASE PALLETIZING AND WRAPPING

9. The conveyor between the tray unloader and the palletizer forms a row of cases according to the palletizing pattern which is released when the pick-up conveyor is empty
10. The RowPaQ palletizes up to four cases in a single movement allowing a row-by-row principle
11. The order pallets are load secured by a wrapping machine in the robot station
12. The secured pallet is labelled and transported to the dispatching area

FACTS

ROWPAQ

Technical performance	Up to 1,000 cases per hour
Product range	Almost all types of cartons, plastic wrapped packages or bins.
Small tray load	up to 24 kg
Large tray load	up to 35 kg
Min. case dimensions (L x W x H)	125 mm x 125 mm x 50 mm
Max. case dimensions (L x W x H)	600 mm x 400 mm x 400 mm
Temperature range	Chilled environment: from 0°C to 4°C (32°F to 40°F) Ambient environment: from 5°C to 40°C (41° F to 104°F)
Pallets	Various types of pallets and roll cages

ABOUT SWISSLOG

In today's competitive world, companies must be able to deliver the right orders to the right customers at the right time. Errors and delays in order fulfillment can have a lasting negative impact on the brand – but maintaining high stock levels ties up capital and affects flexibility.

As a full-service provider of automated intralogistics systems, Swisslog delivers everything companies need to optimize logistics from planning through implementation.

Our order fulfillment and inventory solutions enable companies to achieve the highest throughput at the lowest cost, efficiently handle large catalogues of SKUs, and accurately meet delivery demands and requirements.

DESIGN



Consult



Analyze



Design
Variants



Select the
Solution

DEVELOP



Engineering



Integration



Installation



Ramp Up

DELIVER



Preventive
Maintenance



24/7 Support



Optimization
& Spare Parts



Moderni-
zation &
Expansion