



SMART ROBOTICS  
*MASTERS IN FLEXIBLE AUTOMATION*

# SMART PALLETIZER<sup>®</sup>

## INFORMATION PACKAGE



# SMART PALLETIZER®

## (SP2 SERIES)

### PALLETIZING

The cobot on its standardized frame, with two pallet slots, takes up minimum space and can be quickly installed. Without security fences, the Smart Palletizer® fits on 3m<sup>2</sup>.

The Smart Palletizer® is easy to use and needs no programming or teach-in. Entering product size, pallet type, action (e.g. insert interlay) and number of layers is sufficient. The stacking pattern can be obtained automatically from programs like Palopti®.

The Smart Palletizer® is equipped with 3D printed grippers, dedicated for handling cardboard boxes, shrink-wrapped boxes, open boxes (with/without lid), display boxes, CBL crates, bags or shrink-wrapped trays with products.

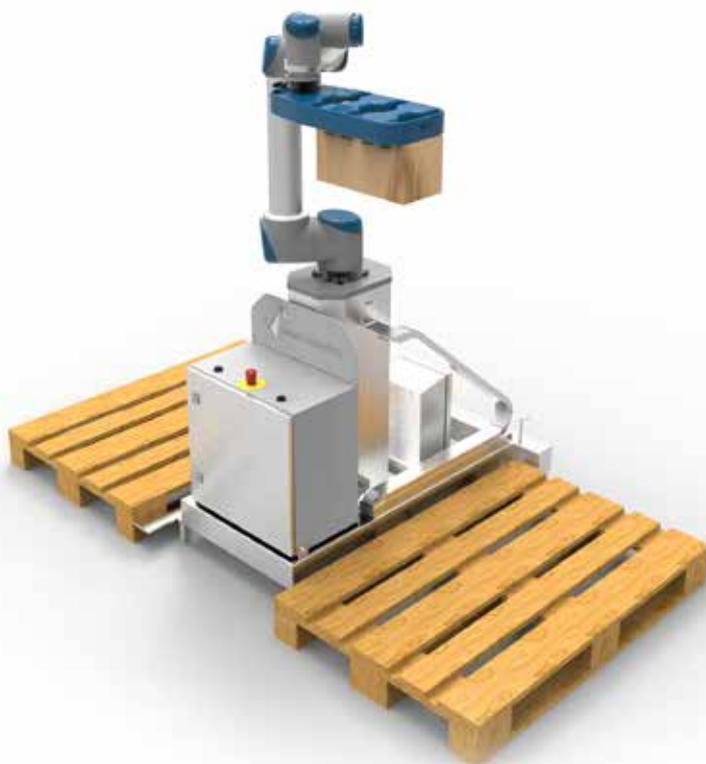
### GENERAL USE

The Smart Palletizer® is generally used end of line for palletizing products in an ultra flexible way. Working together with humans, the palletizer requires minimum space and is directly accessible from all sides. Taking products up to 8 Kg, the Smart Palletizer® reduces the strain on humans. With a speed of 7 boxes per minute - up to 14 with multiple boxes picked at once - it is a valuable addition to your workforce.

### QUICK START

Talk to us about your needs. Send us a copy of your article list and we will run a quick scan with our simulation software and recommend a configuration. From there on it is simply a question of ordering the Smart Palletizer® and putting it on the shopfloor.

Our customers are used to start production with the Smart Palletizer® within 2 hours after delivery.



# SMART PALLETIZER®

## SOFTWARE

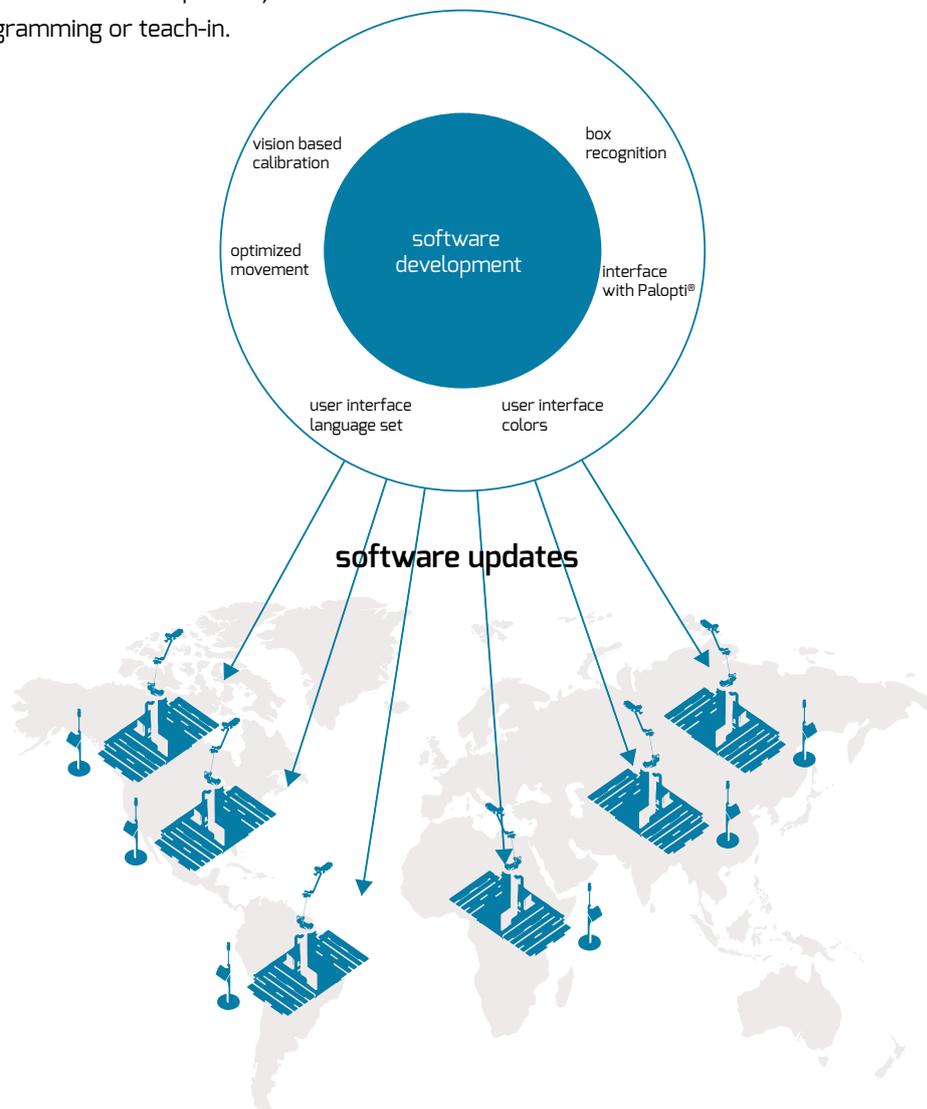
### SOFTWARE

Intelligent software for fast and flexible cobot deployment is our core business. We take pride in solving mechanical challenges through software.

Our core business is to develop software that lets the cobots be operated just as easy as your smartphone or tablet. With our software, cobots do not require any application dependent programming or teach-in.

### GETTING SMARTER

Through regular software updates uploaded to the Smart Palletizer® in the field, we not only keep them up-to-date but also let them benefit from the latest skills developed by our software engineers.



# SMART PALLETIZER®

## SAFETY

### COBOTS

For our Smart Palletizer® we use a cobot from Universal Robots. The cobot can work with people, among people and does not require fencing off.

Universal Robots has many cobots in operation in the automotive industry, the metal and electronics industry. They are today considered the market leader for industrial cobots.

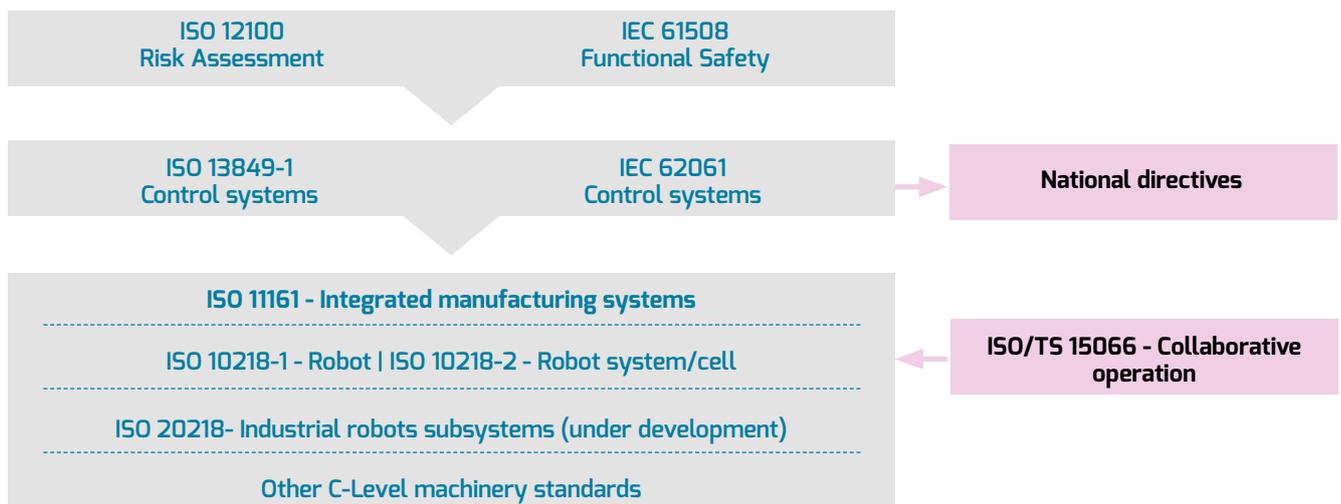
### COBOT SAFETY

Cobots are inherently safe. The special force sensors in all joints are used to restrict the forces at impact. As a cobot works among people, it is inevitable that they will come in contact with humans.

This is laid down in the safety standard ISO/TS 15066: "If contact between robots and humans is allowed, and incidental contact does occur, then that contact shall not result in injury. Reduce risk by limiting mechanical impact force to human bodyparts by moving parts of robot, end-effector or work piece".

*Heico Sandee, Director at Smart Robotics, chairs the Dutch norm commission on robotics and is part of ISO TC 299 Robotics.*

Cobot safety is at the forefront of all our developments. They comply with all appropriate regulations specially developed and implemented for cobots in ISO norms and CE. Including the European Machine Directive 2006/42/EC. The UR10 is also TÜV certified for safe deployment.



# SMART PALLETIZER®

## TECHNICAL SPECS

(SP2 SERIES)

GENERAL SPECS	
Cobot	Universal Robotics type UR10, for detailed specifications see the Universal Robots brochure and tech specifications on <a href="http://www.universal-robots.com">www.universal-robots.com</a>
Frame	Stainless steel frame with 2 pallet seats and automatic sliding mounting pillar for raising and lowering the robot position during pallet loading
Controls	Integrated stainless steel control cabinet with two push buttons for registration of empty pallets Separate pneumatic box with Festo air handling unit Detached light pillar with 2 color lamp (green and red) and mounted stainless steel control panel for application touch screen, including 4.5 m cable
Software	Smart Robotics robot software for easy (re)configuration of the cobot
CAPABILITIES	
Payload	The maximum payload for the UR10 cobot is 10 kg
Lifting weight	depending on the gripper design, the maximum lifting weight is 7,5 - 8 kg per pick
Pallets	1200 x 800 mm and 1200 x 1000 mm
Stack height	Pallet height up to approximately 2,100mm, depending on the product and its size
Cycle time	Cycle time required to pick and place a box is app. 8 - 9 seconds This is app. 7 boxes/min. or double with duo picks
Safety	15 advanced safety features tested according to EN ISO 13849: 2008 PL d and EN ISO 10218-1: 2011, Clause 5.4.3
ELECTRICAL SPECS	
Input Voltage	100 - 240 VAC 50-60Hz
System operation	24 and 48 VDC
Operation power	app. 400 W for a standard program
Temperature range	0 - 50° C
Classification	IP54

# GRIPPERS

## PRODUCT INFORMATION

Our specialized lightweight grippers are 3D printed in polyamide (Nylon) material which is strong and durable. After printing, the grippers are spray coated to smoothen the surface.

3D printing allows for rounded edges - following the safety rules for cobots - as well as integrated pneumatic channels and components to minimize cables.

A standardized fast-exchange flange make changing grippers a task of only seconds.

## GENERAL USE

The grippers are used with our Smart Palletizer®, Smart Plano Loaders® and Smart Packers®.

The grippers used on the Smart Palletizer® are designed to be able to place interlay sheets between layers.

## SMART VACUUM GRIPPER®

For boxes, cases and products that can be picked from the top we use the vacuum gripper. The gripper has double vacuum chambers to pick single or multiple products and integrated venturi vacuum generators.



Picture: gripper type GV01

# GRIPPERS

## SMART FORK GRIPPER®

For trays, open boxes, boxes with a lid that cannot be picked with vacuum from the top but have to be carried, we have the fork gripper.

Retractable forks and a vacuum pad on the side carry the box. In this fork gripper the venturi vacuum generator is also integrated.

## SMART FORK GRIPPER SPECIAL EXECUTION

Double pick and boxes where a top lid has to be secured during movement, require special executions of the fork gripper which are often box size related. Through the 3D printing process we are able to effortlessly adapt the fork gripper to these special designs.



Picture: gripper type GF01

# SMART FORMATION UNIT®

## (SFU400 & SFU600 SERIES)

### PRODUCT INFORMATION

The Smart Formation Unit® (SFU) is an integrated motor roller based system that allows for zero pressure accumulation of packages, formation of packages and other features aiding the automation process in collaboration with the Smart Palletizer®. Due to the smart alignment no mechanical changes are required when handling different package dimensions.

The SFU is beneficial for packaging applications that require flexibility in terms of number of packages to be picked and placed. The SFU can be configured to align formations at the pick-up location and has one standard buffering section for more control and time management.

### GENERAL USE

The SFU is generally used as the pre-formation station for the Smart Palletizer®. Based on the configuration, a number of packages can be stored (buffered) in order to enable and maintain autonomous production without the intervention of an operator. The precise pick-up location allows for a seamless integration with existing production facilities and prevents anomalies in pick-up formations, which improves operation speed.



Picture: Smart formation unit®  
type SFU600

# SMART FORMATION UNIT®

(SFU400 & SFU600 SERIES)

	SFU400 SERIES	SFU600 SERIES
<b>MECHANICAL SPECS</b>		
Dimensions	2200 x 1230 x 850 mm	2200 x 1530 x 850 mm
IP Classification	IP54	IP54
Frame material	Stainless steel	Stainless steel
Minimum closed box size	200 x 130 x h mm	200 x 130 x h mm
Minimum open box size	200 x 180 x h mm	200 x 180 x h mm
Maximum box size	400 x 300 x h mm	600 x 400 x h mm
Accessories	5 meter power input cable, 5 meter Harting Connector cable for SR Robot SFBU communication	
<b>ELECTRICAL SPECS</b>		
Input voltage	100 - 240 VAC 50-60 Hz	
System Operation	24 VDC	
Operation Power	300 W	



# INTERLAY SHEET BIN (SB)

## PRODUCT INFORMATION

The Sheet bin (SB) can be placed beside or over the Smart Formation Unit® or infeed belt. Filled with interlay sheets it provides a fixed position for the Smart Palletizer® to take the sheets, if required in a stack.

Slightly tilted (10°) it aligns the sheets at one side after manual filling of the bin. The bin is only closed on two edges to accommodate easy filling.

The open structure of the bottom plate is easy to clean and enables the cobots sensors to "feel" the last sheet.

## GENERAL USE

The SB is generally used in combination with the Smart Palletizer® when stacking patterns require a separation sheet between layers to stabilize the pallet stack. The precise pick-up location allows for a seamless integration with the Smart Palletizer®.



DIMENSIONS	
Sheets	Sheets for pallets up to 1000 x 1200 mm
Frame	Stainless steel
Dimensions	1200 x 1000 x 800 mm (width x length x height)

# FLOOR SPACE

## **PALLETIZING ON THE SMALLEST FOOTPRINT**

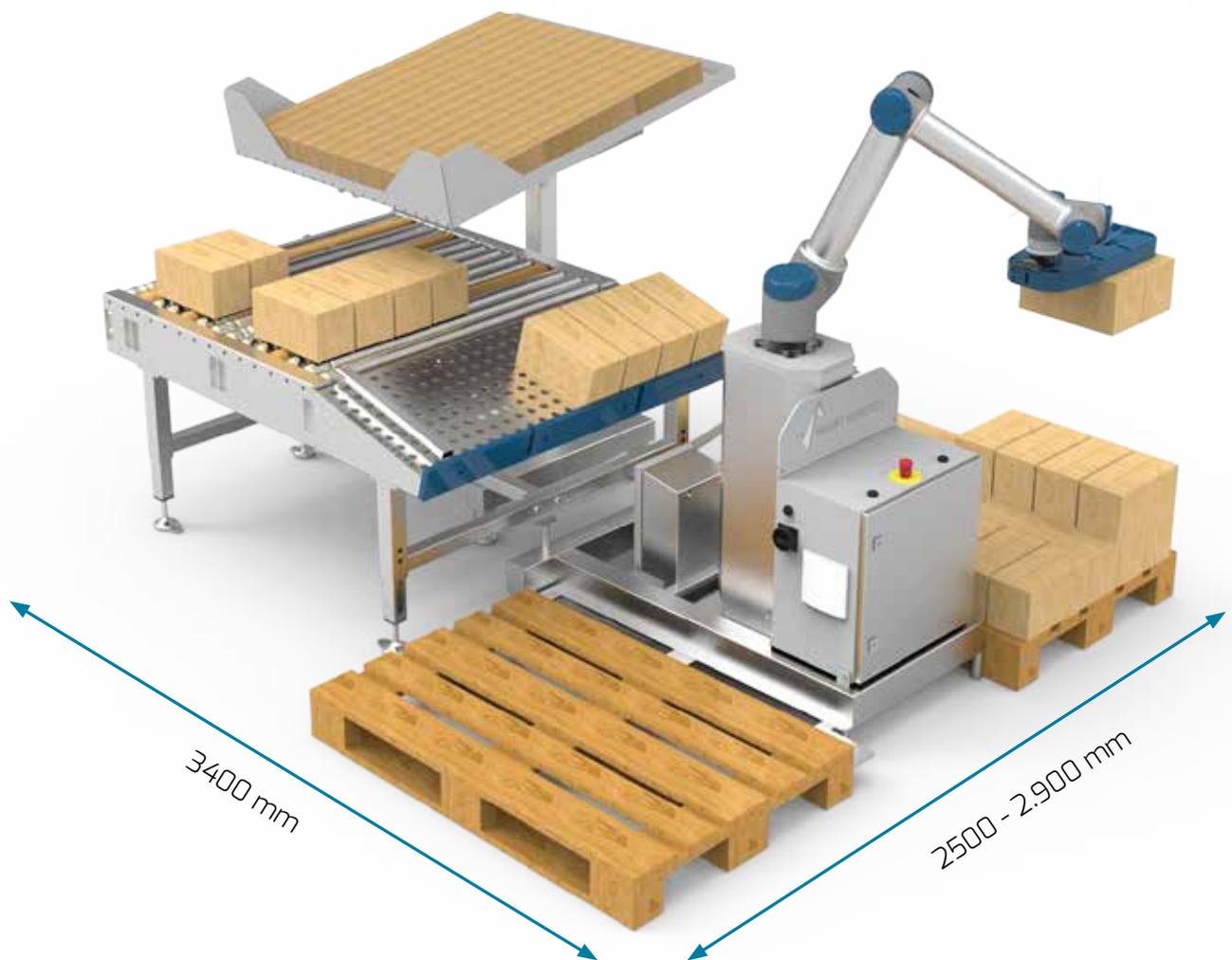
The Smart Palletizer® fits on 3 m<sup>2</sup> including the pallets. Combined with the Smart Formation Unit® and the Sheet Bin you are still well under 9 m<sup>2</sup>. Not only a small footprint but also easy accesable.

In case you want to project the Smart Palletizer® in your factory lay-out we are happy to provide drawings in Autocad or 3D step files.

Please let us know if we can be of assistance.



# FLOOR SPACE





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