



SmartPick system

WORKING CONDITIONS

PARAMETER	ACCEPTABLE RANGE
Nominal voltage	400V - 50Hz R-S-T-N+G
Tolerance in voltage variation	+10% -15%
Tolerance in frequency variation	±1Hz
Working temperature	0°C to 45°C
Temperature gradient	<0.3°C/min.
Working humidity	< 75% RH, without condensation
For short period (less than 1 month)	< 95% RH, without condensation
Gas presence	An adequate protection system is required in case the machine is installed in a polluted environment (powders, dielectric fluids, organic solvents, acids, corrosive gas, salts).
Installation category	Category III, pollution degree 3, IEC60664-1 and IEC61010-
Vibrations	< 0,5GSe
Altitude	< 1000 m/sea level.
Non Ionizing radiations	A shield has to be installed if the machine is installed in an environment exposed to radiations (microwaves, UV rays, laser, X-rays, electromagnetic fields both static and varying)

SYSTEM DESCRIPTION “SmartPick”

The proposed system provides for the installation of one articulated robots which can manage bag gripping from 5 pallets, cut contents and then empty into 2 hoppers. One cleaning station can optionally take care of cleaning the outer bags.

The pallets are positioned by forklift

The empty bags are released into a compactor or a container (to be defined)

SMART PICK Palletising- Bag opening - Bag emptying (Patented)

Smart Pick comes from the revolutionary idea of applying robotics to industrial palletizing, cutting and emptying of bags.

Making use of 4-5-6 axis Robots with very high performance and reliability, it has been possible to obtain a system BASED ON 5 EXCLUSIVE PATENTS related to the system, a gripper and the cutting device.

SIMPLICITY - SmartPick is based on an extremely simple concept: to imitate operator operations. This is why it is simple to use and fits into any industrial environment.

FLEXIBILITY - Thanks to the incredible adaptability of the robot, it is possible to simultaneously manage up to 20 different working pallets and just as many cutting hoppers. As already demonstrated in many areas, the system can pick up, cut and empty raffia, jute, plastic, paper, paper + plastic, aluminum, raffia + plastic bags without replacing the gripper.

CLEANING - Product changing and cleaning are immediate: simply clean the cutting hopper with compressed air and the system is ready for a new process. This characteristic makes **SmartPick** suitable for food uses, where a high standard of hygiene is necessary, and in the chemical industry, where it is essential to ensure that two distinct materials do not pollute one another.

SYSTEM PRECISION - The system has been developed with open loop software. After a first phase of setting bag height, carried out on a sample pallet, the robot carries out later gripping based on the saved settings. Thanks to the patented Smart Grip gripping device, the system is very tolerant of poor bag placement, as long as these fall in the grip of the suction cup itself. Emptying is similarly improved as the bag is gripped in a central position.



Design specifications

System capacity	: Up to 180 bags/h **	Bag weight	: 25 kg
Theoretical capacity	: To be defined	Bag dimensions	: Max 700x500 mm
Net system capacity	: To be defined	Ambient temperature	: 10°C - 40°C
		Dew point	: -10°C

Note: The robot is not certified for use in ATEX classified areas

Technical notes

** The capacity indicated refers to a cycle including gripping, cutting, and release of empty bags, as the average of the most favourable and the least favourable. THIS VALUE IS DUE MAINLY TO THE EMPTYING CYCLE. THE CAPACITY CAN BE CONFIRMED ONLY AFTER PRACTICAL TESTING ON YOUR MATERIALS.

Smart Pick has been designed to optimise bag emptying (normally over 99.5%). However, there is no guarantee that some of the material will not remain deposited in the sides of the bag. This degree of emptying can however only be confirmed after testing in production.

Although the design of the system and the presence of the bottom grid in the hopper are such that the waste of packaging from cutting is minimal, it is not however possible to ensure that there will be no traces of bag material inside the emptied product. In any case, the quantity will not exceed that resulting from manual bag cutting. As is the case with manual cutting, bags that do not have adequate resistance or parts free from the package may release more substantial parts.

Code / Item description

Qty

01

DE-BAGGING ROBOTS

De-bagging robots were created for fast applications and are distinguished by:

- High axis speed
- High productivity in handling applications
- Possibility of rotation of the pieces at high speed
- Ideal for complex handling with reduced cycle times
- Presence of digital signals and air passages in the vicinity of the end effector
- Robust mechanics in light alloy.
- Minimum maintenance

The gripper has been constructed with vacuum technology in a manner to be determined jointly after preliminary tests.

The robot will be equipped with an on-board junction box for the control of electronic signals coming from the end-effector and with a set of pipes for vacuum and possible pneumatic management.



Technical features

Load capacity	: To be defined	Min/max axis speed	: 130-360°/sec
Maximum extension	: 2900 mm	Protection level	: IP 54, IP67 wrist and axis 3
Mechanical unit weight	: About 1500 kg	Finishes/Painting	: RAL1021
Repeatability	: +/- 0.2 mm	Number of axes	: 5 minimum
Installed power	: 15 KVA (the consumed power is <5KVA as an average)		

Note: The robot is not certified for use in ATEX classified areas

Optional features

Piping for vacuum/pressure/signals	: Flex and rigid up to the wrist	1	Included
SW Handling Tools /collision skip	: Specific for handling	1	Included
SW Collision Guard Package	: Anti-collision with guards	1	Included
I/O interface and Robot equipment	: Digital input + Digital Output (32+32)	1	Included
R-30iA Controller + panel	: Robot controller + iPendant	1	Included
Ethernet ports	: 10/100 Mbit Ethernet ports	2	Included
iPendant keypad with display	: TOUCH SCREEN - Color model, multi-page customizable	1	Included
Integrated PLC	: PMC GE FANUC with ladder prog.	1	Included
Fabric protection device	: Made of wear-proof material		Not included

NOTE:

ATEX robot of this size do not exist .The robot can be equipped as an option with a pressurized dress that can be inflated with nitrogen.

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Qty
01

"SmartGrip" BAG GRIPPER DEVICE (Patented)

*This device, the result of considerable research and development, is covered by several exclusive patents.
SmartGrip can be adapted to all types of bags (Plastic, raffia, jute, paper, paper + PE, aluminum, aluminum + PE)*.
The adaptive bag touch helps to ensure a firm grip even on uneven or irregular surfaces.
The mixed technology grip maximizes retaining force even in the case of porous materials.
The special sensors used on the **SmartGrip** optimize the speed and force with which the bag is intercepted and picked up.*



NOTES:

** Although the system has been used with success with hundreds of types of different bags, it is important to remember that the gripping force of the bag depends on the degree of impermeability to vacuums offered by the packaging.
Coated paper, plastic and aluminum do not normally give problems in this area.
Micro-perforated (or porous) paper and raffia must be subjected to tests in order to confirm system performance. The lifting of compact sacks normally offers greater reliability.*

Technical features

Grip technology	: UNIVERSAL Vacuum / Mechanical grip		
Vacuum generator	: Compressed air ejector	1	Included
Vacuum generator air consumption	: from 35 to 70 NI/s (inlet pressure 6 bar) based on final tests in our laboratory (only during the handling of the bag)		
Loading capacity	: 25 Kg bags		
Bag Material	: see specifications		
Construction material	: AL alloy and AISI 304		

Optional

Z bag research sensor	: Included	Artificial vision sensor	: Excluded
SmartTouch and Grip sensor	: Included	Special optics	: Excluded
Pallet gripper	: Excluded	Gripper change device	: Excluded