



Robotized palletizing and manipulation systems

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SIPA S.p.A.

Via Caduti del Lavoro, 3
31029 Vittorio Veneto (TV) - ITALY
Tel: +39 0438 911511
Fax: +39 0438 912273
E-mail: sipa@zoppas.com
Website: www.sipa.it

SIPA FILLING & PACKAGING DIVISION

Via Provinciale, 36
43038 Sala Baganza (PR) - ITALY
Tel: +39 0521 548111
Fax: +39 0521 548112
E-mail: sipa@zoppas.com
Website: www.sipa.it

SIPA LUXEMBOURG S.A.

2°, rue du Commerce – Ecostart 2
Centre d'Entreprise et d'Innovation
L-3895 FOETZ / Luxembourg
Tel: +352 26 55 16 89
Fax: +352 26 55 09 60
E-mail: sipa@zoppas.com

SIPA NORTH AMERICA

4341 International Parkway
Suite 110
Atlanta, Georgia 30354 - U.S.A.
Tel: +1 404 3493966
Fax: +1 404 5745568
E-mail: sales.northamerica@zoppas.com

SIPAMERICAN INDUSTRIES

Circuito Mexico 120
Parque Industrial Tres Naciones
San Luis Potosí S.L.P. CP 78395 - MEXICO
Tel: +52 444 8047400
Fax: +52 444 8047499
E-mail: sipamerican.industries@zoppas.com

SIPA COLOMBIA

Av el Dorado # 68C 61 Oficina 430-1
Bogota - COLOMBIA
Tel: +571 479 5252
Fax: +571 476 3444
E-mail: sipa.andina@zoppas.com

SIPA SUL AMERICA Ltda

Estrada Dr. Cicero Borges de Morais, 584
Vila Universal
Cep. 06407-900 - Barueri - SP - BRASIL
Tel: +55 11 47728300
Fax: +55 11 47728301
E-mail: sipa.sulamerica@zoppas.com

SC SIPA ENGINEERING ROMANIA S.r.l.

Str. Mangalia, 61
300186 Timisoara - ROMANIA
Tel: +40 356 434200
Fax: +40 356 434280
E-mail: sipa.romania@zoppas.com

SIPA TURKEY

SIPET A..
SITKI BEY PLAZA - Atatürk Caddesi No: 82/1
19 Mayıs Mahallesi - Kat:13 Daire:34
34736 Kozyatagi - Kadıköy - Istanbul - TURKEY
Tel: +90 216 474 9780
Fax: +90 216 474 9779
E-mail: SipaSalesTr@zoppas.com

SIPA UKRAINE

Office 37, 9 Turovs'ka St., Kyiv
04080 Kiev - UKRAINE
Tel: +380 (44) 4636645
Fax: +380 (44) 4257275
E-mail: office@sipa.kiev.ua

SIPA RUSSIA

Varshavskoe shosse 1 str. 6, office A425,
117105 Moscow - RUSSIA
Tel: +7 495 269 41 91
Fax: +7 495 269 41 90
E-mail: siparussia.office@zoppas.com

SIPA MIDDLE EAST LLC

Office n. 807 - Arenco Tower
P.O. Box 214525, Dubai Media City
Dubai U.A.E.
Tel: +971 4 3754607
Fax: +971 4 4230636
E-mail: SipaME@zoppas.com

SIPA SOUTH AFRICA

Zoppas Industries South Africa (pty) ltd
Suite 2, office 602 - 6th Floor
The Point Centre,
76 Regent Road, Sea Point
Cape Town 8005 - SOUTH AFRICA
Tel: +27 (0) 214182750
E-mail: sipa.southafrica@zoppas.com

SIPA INDIA

B 101, Mangalya
Off Marol Maroshi Road
Marol, Andheri (East)
Mumbai - INDIA 400 059
Tel: +91 22 29201785
Fax: +91 22 29201795
E-mail: sipa.india@zoppas.com

SIPA THAILAND

3rd Floor, MSC Building, 571, Sukhumvit 71 Rd.,
Klongton - Nua, Vadhana
Bangkok 10110 - THAILAND
Tel: +662 713 0973-5
Fax: +662 713 0976
E-mail: sipa.fareast@zoppas.com

SIPA MACHINERY HANGZHOU

3 Road 14, Economic & Technology Development Zone
310018 Hang Zhou, Zhejiang province - CHINA
Tel: +86 571 28978501
Fax: +86 571 28978599
E-mail: smh@zoppas.com

SIPA JAPAN Ltd.

Cent-Urban Bldg. 604, 3-23-15, Nishinakajima,
Yodogawa-ku, Osaka 532-0011 - JAPAN
Tel: +81 6 4862 4801
Fax: +81 6 4862 4803
E-mail: tanigaki@sipajapan.com

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SIPA

Zoppas Industries

Feel free to imagine. We make it happen.

SIPA



Robby

Robotized palletizing and manipulation systems

The Robby system is a comprehensive approach developed by SIPA to meet the increasing market demand for packaging flexibility and efficiency for a wide range of containers and packaging. In particular, it offers an extremely viable alternative to traditional palletizing and depalletizing systems.

By integrating an anthropomorphic robotic arm with the other components required, SIPA can create equipment and systems for palletizing/depalletizing and handling packages, crates, cartons, packs, bottles, cans, pallets and interlayer pads.

In addition to its experience in creating the right system configuration and managing installation electronics, SIPA's breakthrough lies in the design and realization of a gripper head for each product type and all movement modes.

Its long-time experience in robotized manipulation has allowed SIPA to create a wide range of heads:

- halving platform
- pliers-type
- jaw-head and hook
- permanent magnet with release
- vacuum head
- inflatable pipes
- cap-type for lipped and lipless bottles
- suction cup

These are multifunction heads designed to handle not only the product but also other related elements such as empty pallets, plastic or cardboard interlayer pads, display trays etc.

Its broad range of traditional palletizing equipment allowed SIPA to realize the full potential of solutions for product feed and layer preparation in order to meet any positioning need in any operational setting.

Main characteristics and advantages

- **Flexibility.** One of the main features of this type of solution. It can handle any type of container under any conditions and serve multiple lines at the same time. The Multihead versions (equipped with head-change), can even handle completely different product lines (for example, packs and loose containers) using the same pallet island.
- **Footprint.** The Robby system allows for solutions with a very reduced footprint and, thanks to the compact, flexible robot body, it easily adapts to working areas of any size and layout, including pre-existing lines.
- **Modularity.** Robotized applications can be modular and integrable by combining a number of applications with different functions, custom configurations can be created to meet a wide range of needs.

- **Convertibility.** Robby can be relocated or converted easily in the event the installation needs to be modified in the future.
- **Reliability.** Movements are extremely precise and consistent.
- **Speed and Efficiency.** Thanks to the possibility of creating the best configuration and optimum control, cycle times are much shorter. As a result, the system can be applied to a wide range of production speeds, including high end.
- **Maintenance.** Reduced maintenance costs thanks to high product industrialization.
- **Size change.** The time required for size change is very short, both for product format and head change (possibility of automatic release system). Pallet layout can be modified by simply reprogramming from the control panel.
- **Environmental impact.** Using the robot arm significantly reduces the number of traditional mechanical components and, as a result, product noise levels.





A

Robby Pal

Layer palletizer

An extremely complete solution to handle different types of containers and products. Thanks to its versatility and reliability, it is one of the most widely-used on medium and high-speed bottling lines.






This configuration can use the following head types:

- halving platform for packs and cartons
- jaws and hooks for plastic crates with and without windows
- magnet with release for tin containers or those with metal lids
- vacuum head for uniform, stable packs (e.g., packs of cans)

When required (for for speed reasons, type of product etc.) the **Fastlayer** robotic layer preparation with active pack orientation can be included.

Robby Pal layer handling applications are extremely flexible and can be designed to palletize a range of pallet sizes as well as half- and quarter-pallets.

Products that can be processed

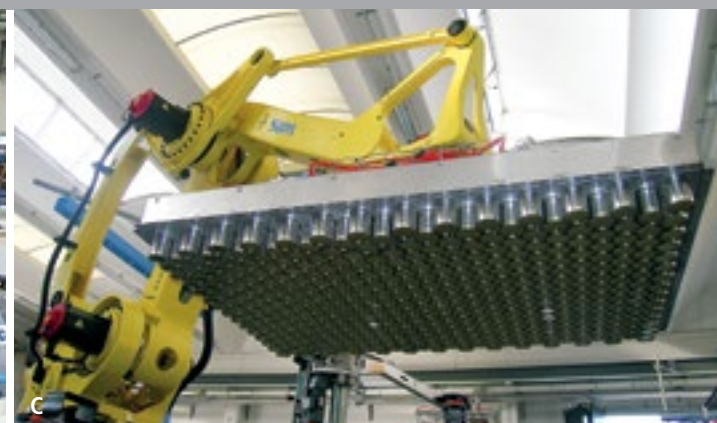
-  Packs
-  Cartons
-  Crates
-  Cans
-  Tin containers



E



B



C



D



- A) Multifunction gripper head.
- B) Vacuum gripper head.
- C) Magnetic gripper head.
- D) Layer preparation area with Fastlayer
- E) Robot with halving platform.







Robby Pal

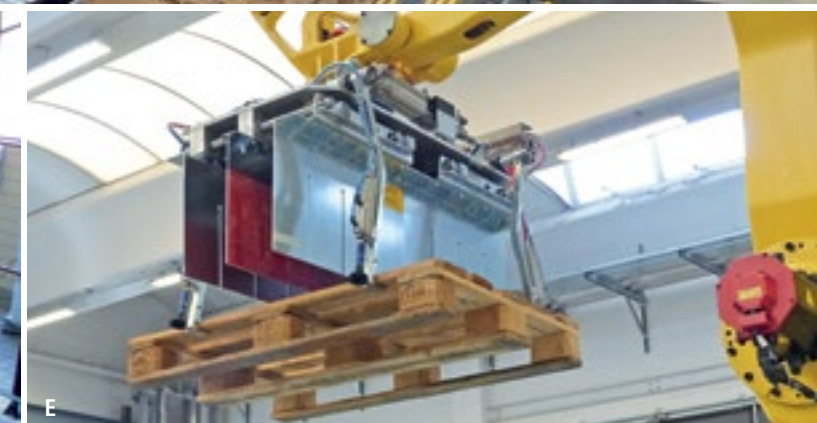
Row palletizer

This type of pick-up is suitable for low- and medium-speed lines, but also to handle special shape or large containers. The size and shape of the grippers have been designed on the basis of the type of container or package to be handled.

On this type of equipment, accessory devices can be integrated into the product gripper head (for example, interlayer or empty pallet grippers) which greatly reduces the amount of required space. In traditional palletizing systems, this equipment is normally separate and occupies a significant amount of space.

Products that can be processed

-  Packs
-  Cartons
-  Crates
-  Big size bottles



- A) Close-up of pliers-type gripper.
- B) Configuration for plastic crates with independent sector gripper.
- C) Configuration for 5 l PET bottles.
- D) Configuration for cartons.
- E) Multipurpose gripper head



A

Robby Pal

Multihead and loose product palletizer

This configuration is used to palletize both filled and empty loose containers in glass or PET.

Head types that may be used in this configuration are:

- cap-type for lipped and lipless bottles
- row pliers-type
- inflatable pipe
- vacuum head

If required by the application, self-adjusting heads can also be provided to handle special products or products in various sizes.

For this type of application, the row infeed and preparation area is extremely important because often the equipment handles products that are especially unstable or delicate.

Palletization may be carried out directly on the pallet, or cardboard or plastic display tray.

These applications can be integrated into MULTIHEAD solution a single palletization island that can handle a variety of products utilizing two different layer prep zones and two different head types, one for packs and the other for loose bottles. The robotic arm is positioned in the center and, thanks to a rapid head change system, can comfortably work with the current layer prep to palletize the type of selected product.

Products that can be processed



Loose PET bottles (filled or empty)



Loose glass bottles (filled or empty)



Jars



B



C



D



E

Thanks to their versatility, robotized applications are fully suitable for "special" operations, such as decanting system, bottle transfer, product pallet configuration, checking for empty pallets etc.

- A) Palletizing filled loose PET bottles on displays.
- B) Multihead configuration for packs and loose bottles.
- C) Close-up of filled loose PET bottle gripper head.
- D) Loose glass bottle decanting system.
- E) Close-up of self-adjusting row gripper head.



Robby Rack

Large-size palletizer on racks or pallets

This application is particularly suitable for handling 3 and 5 gallon bottles. SIPA first presented this configuration in 2000 and since then has acquired significant experience in handling a range of 5 gallon bottle types, including round, triangular and rectangular. Numerous types of racks have also been utilized in both metal and plastic, and palletization on pallets completes the configuration options for this type of application.

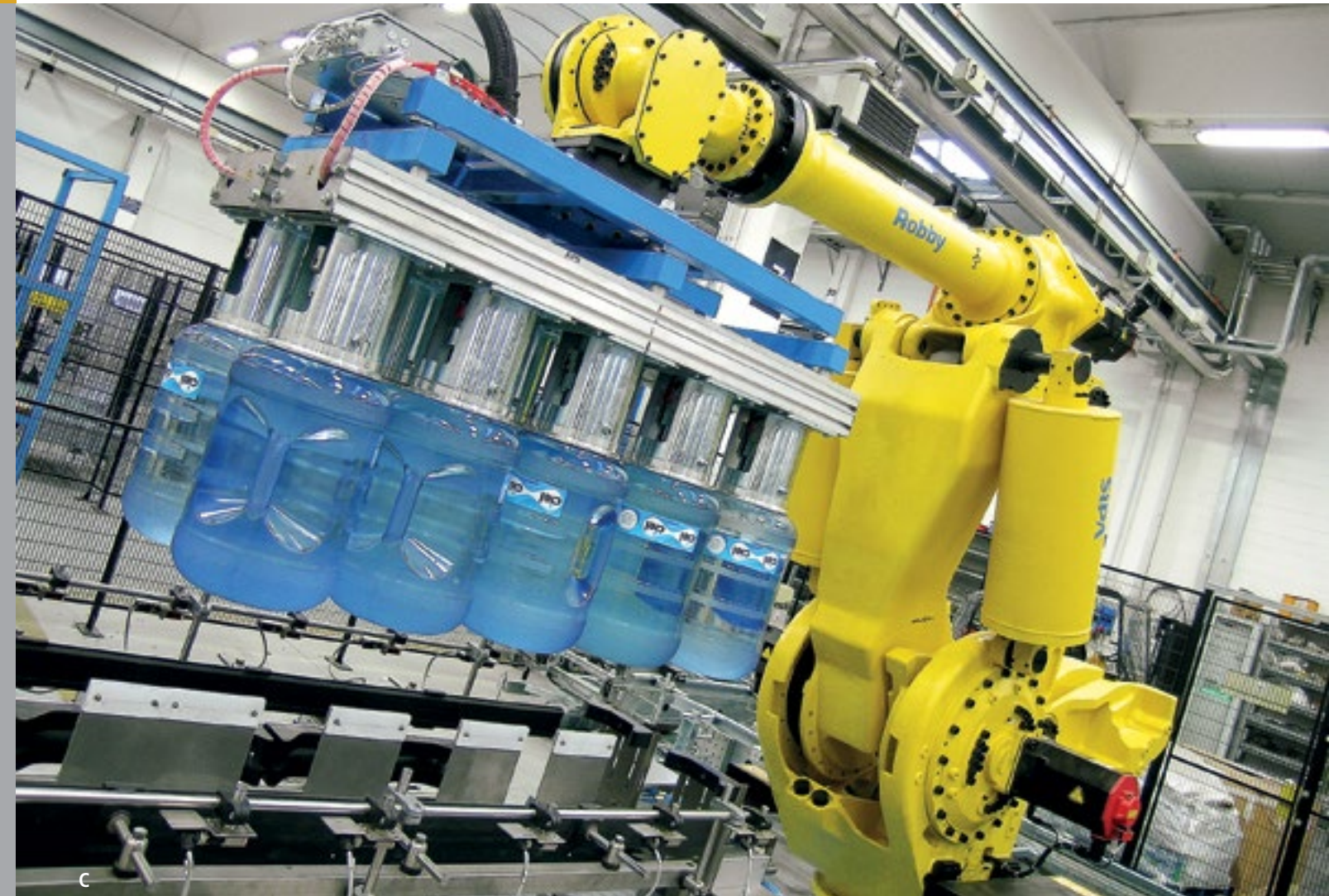
Its 6-axis robotic configuration is especially good for complex movements, making it extremely suitable for handling "special" containers and packages, including large-sized ones such as canisters, drums, kegs etc.

Again here the heart of the application is its head designed for optimum gripping during the entire handling process, without damaging the container in any way. Depending on the installation speed, multiple heads can also be mounted in order to handle a number of containers simultaneously (from 1 to 10 during racking of full 5 gallon bottles) with the choice of robot model based on the weight to be handled.

A modular gripping system has been designed to provide for interchangeability of the grippers as the installation evolves over time.

For these operations, movement precision, reliability and consistency are fundamental, but there are also safety measures against unforeseen problems, such as damaged or defective racks. In these situations, the internal safety program stops the machine before the installation is damaged.

Robby Rack may be used for either depalletizing or palletizing lines, as well as in combined cycles to simultaneously empty and fill the rack. If required by the application, self-adjusting grippers to handle special racks or ones of different size can also be supplied.



- A) OP-crate palletization.
- B) Handling triangular 5 gallon bottles.
- C) Palletizing cycle with 10 filled 5 gallon bottles.
- D) Self-adjusting gripper head.