



# 2AS

## Two Automatic System

The bilateral load system for modern waste collection combined with containers in recycled material and photovoltaic compactors



2AS

# Two Automatic System

The system consisting of the bilateral load robotic arm, waste compactor, container washer and open top container, makes 2AS the most complete and versatile solution on the market. Easy to install on any chassis, 2AS allows the collection of both above ground and underground containers and the handling of solar powered compactors, contributing to maximize the separate collection system.

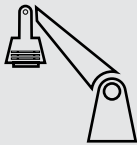
The main benefit of the ESA proposal is to leave freedom of choice for the customer, who can decide to combine the various components, that can be completely integrated with others already in his possession.





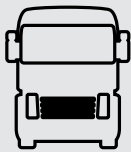
## THE SYSTEM

# 2AS - the modular waste collection system



### ROBOTIC EQUIPMENT

2AS bilateral equipment for hooking and lifting of containers, provided with automatic system and control devices for management by single operator.



### CHASSIS

the system can be integrated on the most diffused types of 2, 2+1, 3 and 4 axle chassis on the market.



### CONTAINERS

the system is suitable for lifting above ground containers in recycled HDPE, underground containers and all the containers provided with Kinshofer hook.





### WASTE COMPACTORS - CONTAINER WASHERS AND OPEN TOP CONTAINERS

complementary stationary or roll-off  
equipment, suitable to every chassis for  
waste management and logistics.



### SOLAR POWERED COMPACTORS

ecological waste compactors powered  
by photovoltaic energy, suitable for  
temporary events and markets, movable  
by 2AS system.



## ADVANTAGES

# 2AS - the waste collection system of the future



### 65" COMPLETE OPERATING CYCLE

reduction of the time needed to complete the entire operating cycle to give greater availability to perform other activities related to the service with consequent less pollution.



### SINGLE MAN OPERATED

greater efficiency in execution of the service with minimal use of staff compared to classic collection work



### BILATERAL COLLECTION

greater freedom in the positioning of the road containers

### DOUBLE ROW LIFTING

lifting capacity in double row and overcoming obstacles placed in front of the container



### PAYLOAD 9.500 Kg\*

the higher payload, given by the lightness of the equipment, allows a greater autonomy of conferment, reducing the trips to empty the load; lower CO<sub>2</sub> emissions

\* with 3 axle chassis, 26 Ton and stationary compactor



### WORKERS HEALTH

the ease of managing all the work from the cockpit avoids the onset of chronic diseases in the long term; moreover the worker is less likely to be exposed to bacteria and polluting agents. This guarantees a better quality of the work



### THE BEST ROUTE

the filling level detection systems and those for sending the parameters of exercise placed on the containers allow to program the daily path from time to time, avoiding unnecessary emptying and increasing the organizational efficiency of the collection



### LOWER COSTS

by type of waste collected, work area, distance of the house from the container and longevity of the equipment, it is possible to save on the costs of the collection compared to the same work with traditional methods



### MODULAR SYSTEM

2AS robotic equipment can be equipped on every chassis on the market and allows the installation of waste compactors, containers washers and open top containers.

The current configuration of the clamp allows the hooking of every container provided with different lengths of Kinshofer hook.

**A single vehicle for multiple operations.**

## TECHNOLOGY AND R&D

# 2AS - IoT applied to the world of waste



More and more we are moving towards the fourth industrial revolution that leads companies to a strategy of greater connection and digitization. ESA technical office is characterized by ensuring an IT process that allows our customers / partners to have a significant and positive impact thanks to a clever use of data, aimed at generating value for the whole community.

The continuous technological research pushes to go further and to have complete control of all the activities that the machines carry out; the flow of information in real time translates concretely into greater operational ease. Remote control allows to intervene on the individual units by changing the various parameters in real time.

Our devices can provide the following services:



### CONTROLLED ACCESS

to improve separate collection services, the manager could incentivize citizen virtuous behavior through the registration of conferment data and users could easily access the service via SMARTPHONE or CARD



### SENDING OF OPERATING PARAMETERS

the various sensors placed on the container detect the filling level, communicating to the system when this needs to be emptied and report any anomalies in real time



### THE BEST ROUTE

by sending of the operating parameters, it is possible to program the daily path from time to time, avoiding unnecessary emptying and increasing the organizational efficiency of the collection







### 24/7 REMOTE ASSISTANCE AND CONTROL

to maintain the efficiency and effectiveness of the equipment over time, ESA offers a constant upgrade of the management software and a 24/7 remote assistance service. Therefore, the software is continuously updated, and the ordinary maintenance interventions decrease significantly



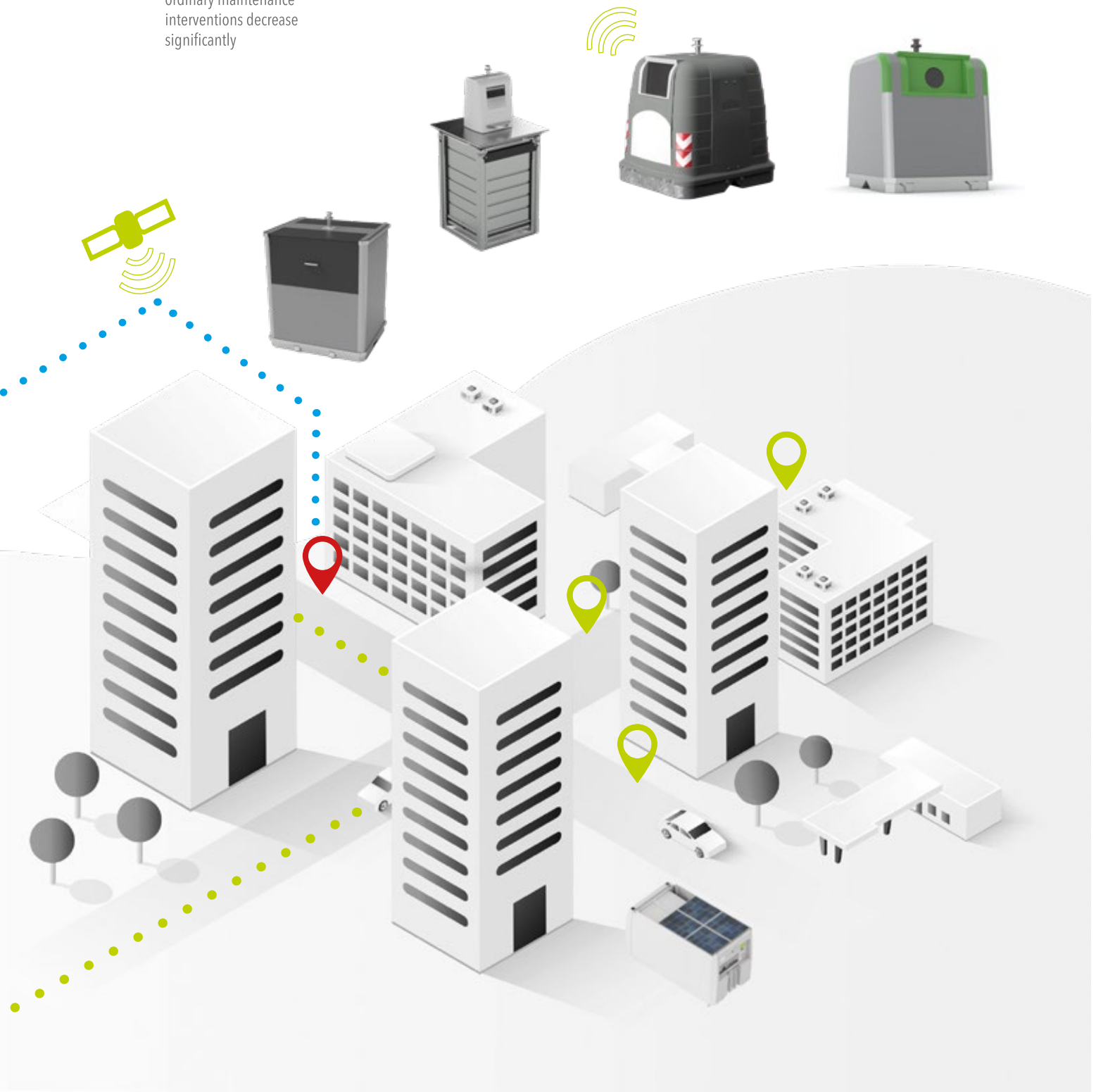
### CONTAINER RECOGNITION SYSTEM

the UHF tag placed on the container allows the system to recognize the content of the container and the operating status of it, while GPS identifies its position



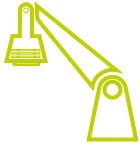
### THE IDEAL MODEL FOR EVERY CITY

a system of infrastructures and technologies always interconnected allows a smart and sustainable management of the services offered to citizens of modern smart cities



## ROBOTIC EQUIPMENT

# The heart of the system



Bilateral equipment 2AS for hooking and lifting of containers of different kinds and volumes, equipped with an automatic system and control devices for management by single operator.



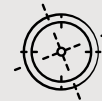
### 7 CAMERAS

the seven IP cameras allow total control of the operations through the touch and scroll monitor placed inside the cockpit



### UHF CONTAINER RECOGNITION SYSTEM

the UHF tag on the container, read by the antenna placed on the robotic equipment, allows the system to identify the data and the operating status of the container itself



### SELF-LEVELLING

the equipment is provided with an automatic levelling system, capable of safely managing any operation, even with long distance hooking (\*see load diagram)



### LASER GUIDE

the robotic equipment movement system is assisted, through the software, from the latest generation laser pointing system



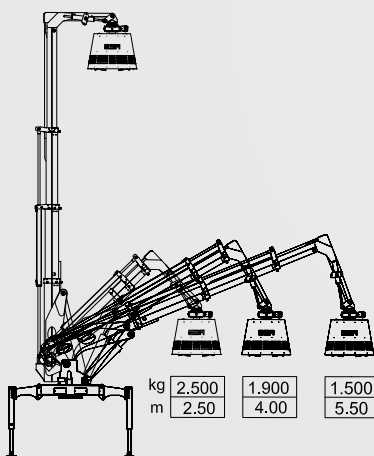
### INTEGRATED WEIGHING SYSTEM

the weighing system integrated in the robotic arm allows the immediate control of the quantity of waste took in charge



### CLAMP FOR HOOKING

the current configuration of the clamp allows the hooking of all the containers provided with different lengths of Kinshofer hook



### LOAD DIAGRAM

the lifting capacity up to 2,500 Kg and the extension capacity up to 5,5 m allow the hooking also in presence of obstacles placed in front of the container







## WASTE COMPACTORS - CONTAINER WASHERS - OPEN TOP CONTAINERS

# The customized equipment



The robotic crane can be installed on every chassis on the market, also methane powered. Moreover, 2AS allows to fit compactors, containers washers and open top containers to meet all the operational needs. The current configuration of the clamp allows the hooking of all the containers provided with different lengths of Kinshofer hook.



**One vehicle for different operations.**

Stationary or roll-off equipment suitable for the installation of compactors from 11 to 20 m<sup>3</sup>, open top containers from 20 to 29 m<sup>3</sup> and containers washers. System CE certified by the manufacturer, complying with technical standards and directives:

- 2006/42/CE - machinery directives
- directive on electromagnetic compatibility
- 2014/35/UE - "low voltage" directive
- ISO 4306 2010 - lifting devices



### ROLL-OFF AND STATIONARY SYSTEM

the robotic equipment can be installed on every chassis on the market; 2AS can also be installed on both roll-off and stationary systems in combination with compactors, containers washers and open top containers



### NOZZLE CONTAINERS WASHING SYSTEM

the nozzles with high water jet pressure, also hot, allow a better wash and sanitization of surfaces and they extend the life of the containers themselves in the absence of mechanical rubbing





## SOLAR POWERED COMPACTORS

# Ecological by vocation



Innovative solar powered, roll-off, single blade compactors.

Designed for the temporary needs of the community and urban centers, they also adapt effectively in industrial contexts, providing valuable support to the needs of individuals and businesses who need to manage high volumes of waste and at the same time wish to reduce energy costs.

- Complete compacting cycle in 28"
- RFID computerized disposal system
- "Easy-web-service" system for remote access and Geolocation
- Truncated cone shape to facilitate the unloading of materials
- 4 photovoltaic panels of 255 W each
- Customizable surface



### PHOTOVOLTAIC ENERGY POWERED

thanks to the photovoltaic panels, these compactors power themselves and succeed to complete several work cycles in the absence of electricity, thus decreasing energy costs



### MARKETS AND EVENTS

photovoltaic compactors are the ideal solution to cover the request of delivery of waste in areas related to temporary or itinerant events, such as markets, exhibitions and special events



### CONTROLLED CONFERMENT

to improve separate collection services, the manager could incentivize citizen virtuous behavior through the registration of conferment data and users could easily access the service via SMARTPHONE or CARD



## HDPE CONTAINERS

# Made of recycled material



### CONTAINER MADE WITH RECYCLED PLASTIC

HDPE containers by ESA represent a perfect example of circular economy. The plastic used for their realization in fact comes from separate collection itself. Each container can be recycled at the end of its life cycle, thus obtaining a substantial reduction of waste, a simultaneous recycling of the material and a lower overall environmental impact.



ESA high-density polyethylene (HDPE) containers show an original design that can adapt to every urban context. Printed by rotational molding using recycled polyethylene, they are classified as ECO-COMPATIBLE. Bascule, levers and drum skid are in galvanized steel to give greater stability to the container. They are CE certified to give maximum reliability and tranquility to operators.



### FEATURES OF HDPE CONTAINERS

CONTAINERS	STANDARD SERIES VOLUMES			SLIM SERIES VOLUMES			
		2500L	3000L	3750L	1750L	2100L	2700L
Width	(mm)	1265	1465	1765	1265	1465	1765
Height	(mm)	1840	1840	1840	1840	1840	1840
Depth	(mm)	1614	1614	1614	1214	1214	1214
Weight	(kg)	220	250	285	200	220	250
Load	(kg)	1000	1200	1500	700	850	1100
Loading point height	(mm)	1250	1250	1250	1250	1250	1250
Loading points dimensions							
Porthole	(mm)	Ø200	Ø200	Ø200	Ø200	Ø200	Ø200
Sliding loading point	(mm)	340x400	540x400	840x400	340x400	540x400	840x400
Paper/Cardboard opening	(mm)	-	500x245	800x245	-	500x245	800x245
Cover/Drawer loading point	(L)	20/40	20/40	20/40	20/40	20/40	20/40
Loading point shape	-	porthole sliding cover drawer	porthole sliding loop-hole cover	porthole sliding loop-hole cover drawer	porthole sliding cover drawer	porthole sliding loop-hole cover drawer	porthole sliding cover drawer



HDPE containers, suitable for separate collection, also have considerable advantages from an ergonomic point of view, both for professional operators, who can enjoy greater safety during the collection service, and for final users, who are guaranteed extreme ease of conferment. Thanks to the presence of accessories and opening systems designed to facilitate the access, HDPE containers can be easily used by people with disabilities.

### SIX VOLUMES TO COVER MARKET DEMANDS

HDPE STANDARD CONTAINERS 2500, 3000, 3750 L  
 HDPE SLIM CONTAINERS 1750, 2100, 2700 L



40%

MADE OF  
RECYCLED MATERIAL



### AN ECO-FRIENDLY CHOICE

Recycled HDPE is to be classified as environmentally friendly and therefore the containers adapt to all contexts where attention is paid to the environmental impact

### DIFFERENT TYPES OF LOADING POINTS



#### LIGHT

the use of polyethylene allows a remarkable total weight reduction by increasing the load potential



#### RECYCLABLE

the use of polyethylene allows the container to return to the plastic life cycle



#### RESISTANT TO CHEMICAL AGENTS

thanks to the component of polyethylene, containers can be washed and sanitized without damaging



#### HIGH SHOCK RESISTANCE

HDPE flexibility makes the containers more resistant to impacts and not subject to deformation



#### NO PAINT NEEDED

the absence of paint guarantees greater longevity of the container and less pollution



#### 30% OF NOISE REDUCTION

the feature of HDPE is a sensitive noise abatement, especially during the conferment of glass



#### UHF RECOGNITION SYSTEMS

the UHF tag placed on the container allows the system to identify the data and the operating status of the container itself



#### CONTROLLED ACCESS

to improve separate collection services, the manager could incentivize citizen virtuous behavior through the registration of conferment data and users could easily access the service via SMARTPHONE or CARD

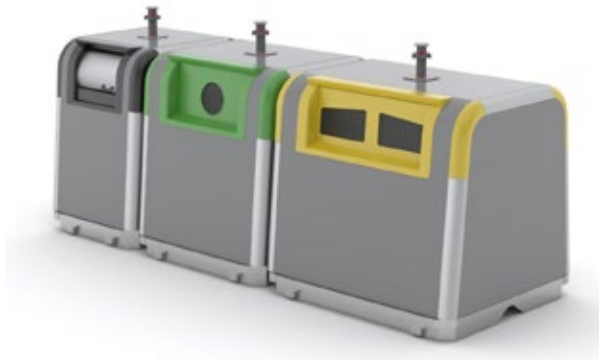
## METAL CONTAINERS

# A long tradition



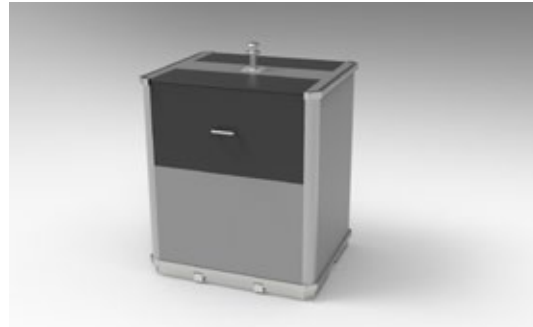
Above ground metallic containers by ESA are designed with a modern, non-conventional design. The surfaces are treated with hot galvanization and can be painted with polyester powder to guarantee greater resistance to chemical and atmospheric agents.

### STREET CONTAINERS



The supporting structure is made of painted steel, while the containment tank is designed and produced in hot galvanized steel; the continuous wire industrial welding process guarantees high water tightness and a long-life cycle. Metal containers have been produced for separate collection and vertical loading, allowing a faster unloading cycle; this also guarantees an easy hooking.

### INDUSTRIAL CONTAINERS



Metal industrial containers by ESA are designed for the collection dedicated to the industrial users. Suitable for any surface and production context and equipped with large delivery points, they allow the selective collection of production residues and packaging. The frame is realized in hot galvanized steel and the external structure in pre-galvanized steel.

The loading points of all the ESA containers are customizable in colour, dimension and shape.

### SIX VOLUMES

STANDARD CONTAINERS 2500, 3000, 3750 L  
SLIM CONTAINERS 2700, 2100, 1750 L



INDUSTRIAL  
WELDING



EXTREMELY  
RESISTANT



CONTROLLED  
ACCESS



MODERN, NON-  
CONVENTIONAL DESIGN



POSSIBILITY OF PAINTING WITH  
SPECIAL RAL COLOUR

### FOUR VOLUMES

CONTAINERS 4, 5, 6, 7 m<sup>3</sup>

Metal containers have a long tradition of use and are still the most diffused type on the market.

UNDERGROUND SYSTEMS

# Where visibility and deterioration of waste make the difference



THREE VOLUMES  
3, 4, 5 m<sup>3</sup>



Ease of use, hygiene and security aimed to improve the living conditions of the people who use them, are the advantages which distinguish underground systems, with a particular attention to the weaker categories: disabled, elderly and children.



CONTROLLED  
ACCESS



LOW MAINTENANCE  
COSTS



LOW ODOR  
EMISSIONS



LOW  
MAINTENANCE



REDUCED  
VISUAL IMPACT

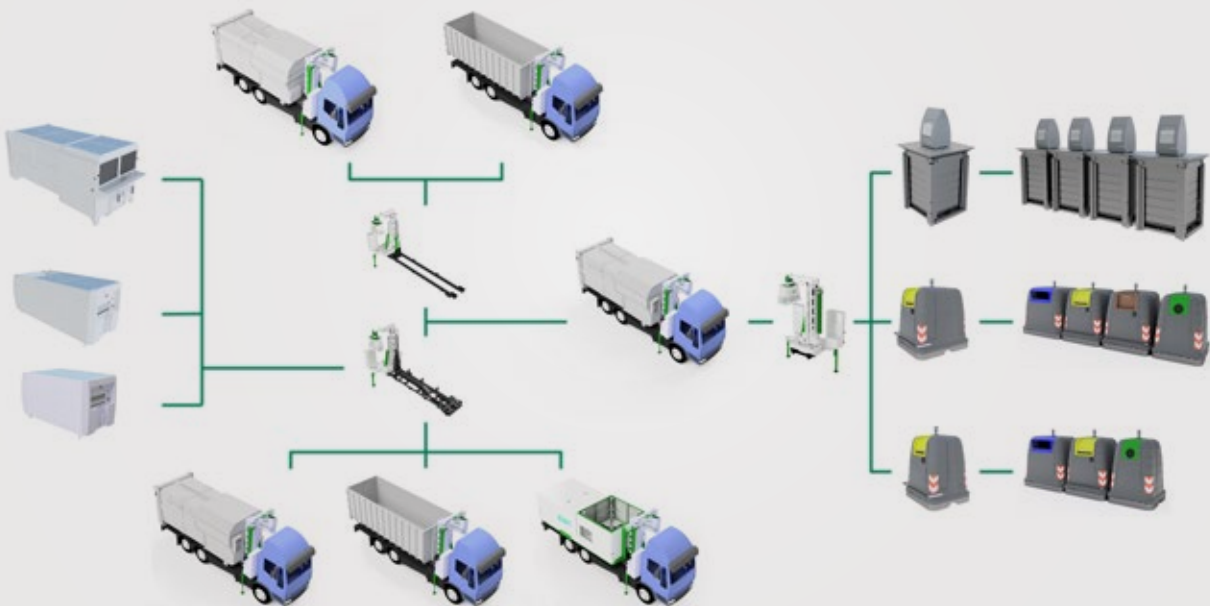
## SET-UPS

# Configure your system

ROBOTIC EQUIPMENT	Stationary system	Roll-off system	2 axle chassis	2+1 axle chassis	3 axle chassis	4 axle chassis
Compactor	●	●	●	●	●	●
Open top container	●	●	●	●	●	●
Containers washer	-	●	●	●	●	●
KS7	-	●	●	-	-	-
KS12	-	●	-	●	●	-
CMK21	-	●	-	-	●	●

2AS - Two Automatic System can be purchased in separate modules to meet the specific needs of each customer.

### 2AS - MULTIPLE COMBINATIONS





## WE CONFIGURE YOUR SOLUTION

Configura la postazione

STANDARD

GUIDA A TERRA CONTENITORE	<input checked="" type="checkbox"/>	ELETTRONICA COMPLETA DI ELETTROSERRATURA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ADESIVO	<input checked="" type="checkbox"/>	CONTROLLO LIVELLO DI RIEMPIMENTO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
PEDALIERA	<input checked="" type="checkbox"/>						
TAG UHF DI CODIFICA CONTENITORE	<input checked="" type="checkbox"/>						

NUMERO CONTENITORI: + -

LUNGHEZZA TOTALE POSTAZIONE: 7425 mm

VOLUME TOTALE POSTAZIONE: 15250 L

1465	1465	1765	1465	1265
3000 L	3000 L	3750 L	3000 L	2500 L



### CONFIGURATOR 2AS

Thanks to our own software, we are able to find the best solution for your city according to the predefined needs and requirements. The goal is to improve waste collection in a specific, timely and sustainable way

Contact us to find the solution that best suits your City

2AS

# Freedom of choice

The design peculiarity of 2AS System is the complete modularity of the various components, which leaves the partner the freedom of choice. The robotic equipment is able to integrate with any container equipped with a Kinshofer hook, the containers can adapt to different cranes and also the solar compactors can be moved by the most traditional means on the market. The whole gives maximum safety and better working performance, but at the same time the individual components manage to integrate perfectly with solutions already in the partner's possession.







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