



AUTOMATION

iwt

a **TECNIPLAST** company

Introduction

Since 1999 IWT, the washing, automation and decontamination division of the Tecniplast group, has designed, developed and engineered automation solutions for laboratory animal industry. A relationship between robotics and Tecniplast which starts over 30 years ago when the first anthropomorphic robots have been introduced in its molding and injection workshops. Today, thanks to the experience matured by the over 100 robots installed in the most prestigious vivarium worldwide and the millions of cages processed, Tecniplast is proud to provide you with the most comprehensive portfolio of automated solutions that you can find in the market.


Modern animal facilities, regardless of their size and procedures adopted, have to face daily growing concerns associated to ergonomics and allergen exposure with the target to maximize efficiency and improve the staff motivation providing a better working environment.



These are the aims that have lead IWT since the beginning in the developing of its robotic solutions:

- **Modular** to fit any size facility both in terms of both number of cages and space available.
- **Flexible** to accomplish multiple tasks from dirty to clean side operations and to adapt to different procedures such as partial or integral cage change SOPs.
- **Ergonomics** and **operator protection** at the center of attention leaving robots to face the most hazardous activities.
- **Cost effective** to meet every budget and documented by Return On Investment analysis.
- Based on **cutting edge technologies** and innovative patented concepts.

The result of years of studies and developments is a unique portfolio of Automations capable to meet any possible needs in term of washing equipment to be automatized and procedure adopted.

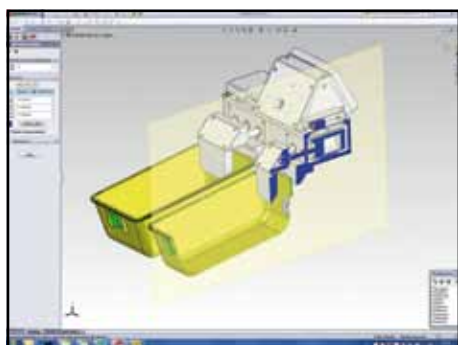
	Rack Washer	Tunnel Washer
Partial Cage Change		
Integral Cage Change		

Expertise and Standard Features

The IWT automated solutions are the result of the expertise of an internal team composed by designers, software engineers and R&D specialists, a team with a total commitment and focus in developing automations. The full process in house is considered crucial to guarantee the efficacy and reliability of these systems, fundamental to tailor made the outcome and to meet the high demands of the lab animal applications, essential to grant post-installation service and prompt response times.

Some of the complementary services are:

- **3D design:**
all the solutions are fully engineered via 3D modeling of the single components making any single system unique to fit the specific project.
- **3D software simulation:**
the robotic cells are verified in advance thanks to a simulator which allows the preparation and check of the robots and PLC softwares to evaluate any possible space and throughput concerns associated to any specific layout.
- **Real integration and internal commissioning:**
IWT is entirely producing and not outsourcing the full range of product components of an automated solution for a total integrated solution. Every single system is assembled and operational in the IWT facility at the end of production for internal testing (and factory acceptance tests or in advance customer trainings). Washers, bedding handling systems and robots are fully functioning and integrated in order to verify all functionalities and guarantee on site the smoothest and quickest installation and handover.
- **Throughput and Return On Investment analysis:**
support to analyze in advance the cage wash area workload and to custom ROI for budget funding and project justifications.



Some of the embedded features are:

- **eMeter:** a dedicated feature to allow the monitoring of the most common utilities such as electricity, water, steam and detergent consumptions.
- **Self-start:** a weekly programmable tool to automatically switch on the automation system and start the cage processing without the operators' intervention.
- **LiteView:** an outstanding and unique tablet application to keep under control the automation system wherever you are. Monitor the machines, set parameters (washing recipes and self-start data) and send messages directly on the equipment HMI.
- **Teleservice:** a specific functionality which allows IWT to directly connect via internet (after customer's permission is granted) to quicken and simplify the troubleshooting activities.
- **Webcams:** always available to enhance remote visibility (both LiteView and Teleservice) and simplify communications between dirty and clean sides of the washing area.



1/Introduction

ARES system is specifically developed for those facilities performing **partial cage change procedures** and looking for **automatizing a rack washer scenario**.

Mainly thought for **small-medium size vivaria**, existing or new, with an amount of **2000 to 8000 cages** to be processed a week. Ares enhances operator protection and increases the efficiency of your washing area with a return on investment which range around 3-5 years. Robots entirely take care of dirty and clean side operations allowing operators just to handle logistics.

2/Modularity & Flexibility

Rack washers are considered the most versatile equipment in modern washing areas: Ares is following same philosophy. A dirty side system can be installed at first while the clean side system can be purchased later on in order to phase the investments. The unique gripper design, simulating the human hand, can manage **all the standard rodent cages available in the market** regardless of the manufacturer brand. Tailor-made logistics is designed in order to fit any cage type and rack washer chamber dimensions with the aim to maximize washing throughput reducing storage footprint.

3/Integration

IWT bedding handling family completes the robotic cells thanks to the integration of a disposal station and a bedding dispenser providing a **turnkey automated solution**.

Ares can also be easily integrated with any third party bedding systems and rack washers, both existing or brand new.

4/Footprint Configurations

Ares comes in **two possible setups** (BB and ST) which are allowing to balance throughput and space requirements with available budgets. Different robot dimensions, from small to medium, different robotic cell footprints, from 12m² (130ft²) to 20m² (215ft²) **for the solution that suits better your needs**.

5/Operator Safety

High levels of allergens and dust exposure during cages dumping, scraping and refilling, repetitive bending and stretching during presentation racks loading and unloading: **all hazardous activities can be avoided** thanks to Ares. Operators are simply maneuvering logistics and managing the system from the graphic user friendly interface.

Introduction



Modularity & Flexibility



Trolley Solutions

Integration





Operator Safety **5**



Operator Interface

THROUGHPUT		
	Ares BB	Ares SB
Type III	Up to 150 cages/hour	Up to 270 cages/hour
Type III	Up to 80 cages/hour	Up to 140 cages/hour
Type IV	-	Up to 70 cages/hour

* Indicative throughputs based on standard machines configurations. Higher throughputs can be achieved with custom solutions.



Loading/Unloading Conveyors



Full Cart Handling

1/Introduction

PEGASUS system is designed for those facilities performing **partial cage change** procedures and utilizing **tunnel washers**.

Perfect for existing or new medium-large size vivaria, with an amount of **6000 to over 12000 cages** to be processed a week. Pegasus takes care of the entire process, from dirty side tasks through washing to clean side operations for a system autonomy which can last up to 90 minutes, leaving the operators free to perform further activities.

The consistency and high throughput of this automated solution will bring the efficiency of the washing area to a superior level.

2/Modularity & Flexibility

Modern animal facilities require by definition a **high flexibility** which is translated in the Pegasus system: a universal gripper and a tunnel washer chain **capable to process any standard rodent cages** available in the market coming from different vendors. The logistics is automatically processed by the system as well, so to grant a constant flow from dirty to clean side. Besides, miscellaneous baskets allow the washing of IVC tops and various items in an automatic way. Pegasus maximizes modularity as well: starting from the IWT Tunnel GP the dirty side and/or clean side robotic cells can be easily added later in the project without any structural modification to the washing machine. You just need to add the robotic cells themselves and a roll conveyor at the end of the tunnel.

3/Integration

The IWT Bedding Handling System and the IWT Tunnel GP are completing the integrated solution providing you a real **single source responsibility**. Otherwise Pegasus can be easily integrated with any vendor bedding system and a **really cost effective configuration** is the **dirty side Pegasus** only, which can be integrated with any tunnel washer from any vendor in the market to enhance the most hazardous environment in a washing area. Manual usage of both washers and bedding systems is granted by the design itself of the Pegasus.

4/Footprint Configurations

Pegasus is available in two different configurations, **XS and XT**. Pegasus XS, featuring a medium size robot, features a **high throughput despite the compactness of the robotic cells**, around 15m² (160ft²). Pegasus XT, featuring a large size robot, **grants the highest throughput in the market** with an outstanding buffer capacity, everything in a robotic cell of about 25m² (270ft²).

5/Operator Safety

Operators simply have to push in and pull out from the conveyors the transport trolleys and controlling the unit by means of the graphic interface, while robots take care of all the unpleasant operations: no more stretching/bending for cage stacking/unstacking, no more allergens and dust exposure during cage dumping/refilling, no more repetitive and fatiguing activities such as scraping and washing machine loading/unloading: the **perfect solution to maximize operator safety and ergonomics**.

Introduction **1**



Modularity & Flexibility **2**



Full Cart Handling



Cage Re-aligning System

Integration **3**



In-line Dumping Station

THROUGHPUT

	Pegasus XS	Pegasus XT
Type III	Up to 400 cages/hour	Up to 510 cages/hour
Type III	Up to 270 cages/hour	Up to 360 cages/hour
Type IV	Up to 130 cages/hour	Up to 130 cages/hour

* Indicative throughputs based on standard machines configurations. Higher throughputs can be achieved with custom solutions.

Footprint & Configuration **4**



Operator Safety **5**



Operator Interface



Trolley Solutions



Loading Conveyor

1/Introduction

APOLLO system is a patented automation system designed for those vivaria performing an **integral cage change procedure** and utilizing a rack washer. Designed for **small-medium size animal facilities**, existing or new, with an amount of **2000 to 6000 integral cages** to be processed a week. Apollo has been the first automated system in the industry to take care of the IVC cages in their integral setup, cage base, wire bar lid and top. The robot can disassemble the cage, dump the waste diet and bedding and prepare all the items on a dedicated presentation rack for the washing phase.

2/Modularity & Flexibility

Apollo is mainly designed to **automatize the soil side of the washing area where the most hazardous tasks are performed**. The system is capable to handle rodent cages, in particular type IIL and type III latch free IVC cages produced by multiple vendors in the industry. An automatic gripper change system allows the robot to select the correct end effector to handle the different cage sizes.

Apollo is completed by a disassembling bench, part of the patent, earth of the cage break down procedure. Apollo can be set in an **hybrid configuration capable to handle both integral cages or cage bases only**, allowing modern animal facilities to embrace different procedures for different areas without losing the benefits of the automated washing area.

3/Integration

The robotic cell can be completed with an **IWT bedding handling system** or can be easily integrated with any bedding handling system available in the market.

The presentation rack where cage components are positioned for the washing phase is fully tailor-made around the specific cage and rack washer selected, either IWT's or third party ones. The bedding handling system and rack washer can be both brand new or existing, Apollo can be **easily adapted to any scenario**.

4/Footprint Configurations

Apollo is available in two possible standard configurations, BB or ST: the first features a small size robot and the second a medium size one.

The main difference in footprint is given by the presentation rack dimensions and the area required by the turning table device to spin the rack itself to present to the robot both sides: the system goes from 10m² (107ft²) to 20m² (215ft²). **No extra space needed** but a small footprint comparable with the one normally required by manual operations.

5/Operator Safety

The biggest advantage given by the **integral cage change procedure is the allergen containment** all along the facility loop, in the washing areas. But in cases of manual operations scenario, the weak link of the process, allergen containment-wise, is the cage disassembling operations, during which an operator is forced to open the IVC cage manually. Thanks to Apollo now this activity is fully automated leaving robot doing the dirty job and keeping **operators far away from any allergen exposure and not ergonomic operations**: technicians will just handle transport trolleys and presentation racks!

Introduction **1**



Modularity & Flexibility **2**



Full Cage Handling

Integration **3**



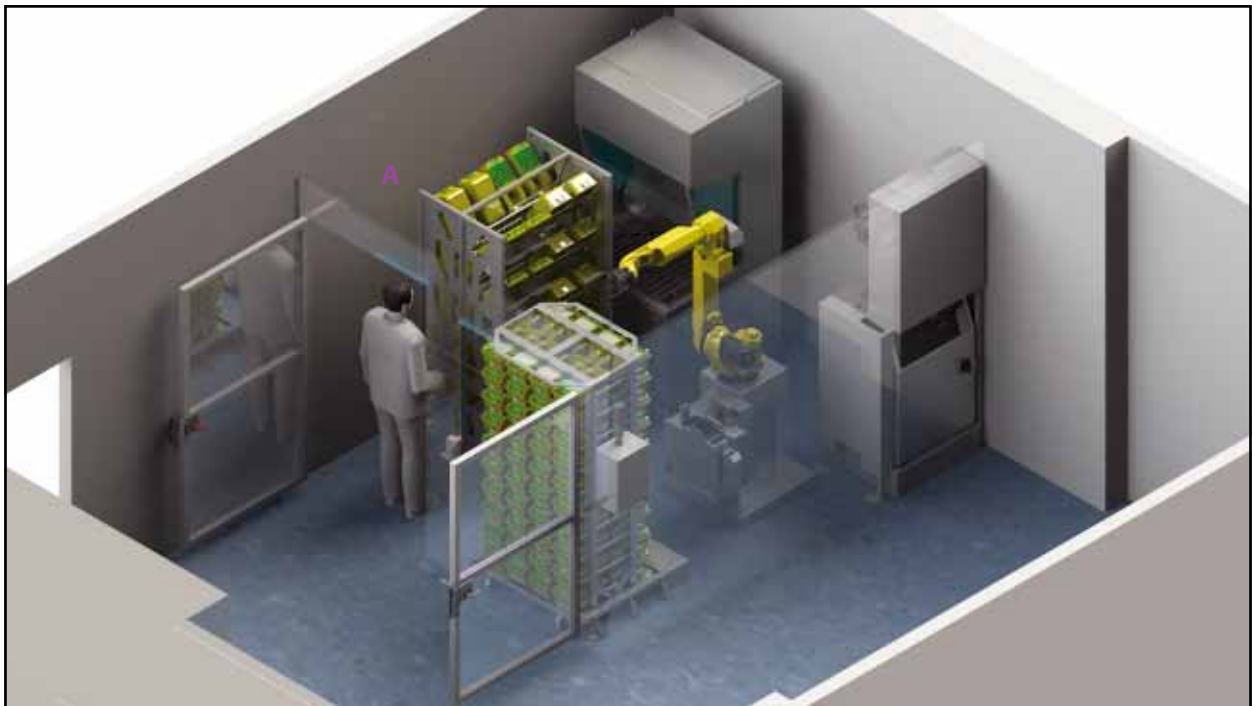
Trolley Solution

THROUGHPUT

	Apollo BB	Apollo ST
Type III	Up to 120 cages/hour (360 items/h)	Up to 150 cages/hour (450 items/h)
Type III	Up to 80 cages/hour (240 items/h)	Up to 100 cages/hour (300 items/h)

* Indicative throughputs based on standard machines configurations. Higher throughputs can be achieved with custom solutions.

Footprint & Configuration **4**



Operator Safety **5**



Presentation Rack



Disassembling Bench



1/Introduction

COSMOS system, the latest born to complete the IWT automation family, is a **patented full automation system for tunnel washers application** in those facilities where integral cage change is performed. Designed for medium-large size animal facilities, with an amount of 8000 to over 12000 integral cages to be processed a week. The system is capable to manage IVC cages in their integral setup covering all the tasks needed both on soil or clean side of the washing area, allowing operators to just feed the system with transport trolleys and to recollect a full clean trolley as an output. A total of 4 anthropomorphic robots are cooperating to disassemble and reassemble integral cages, to load and unload the single components to and from the washing machine.

2/Modularity & Flexibility

Cosmos is designed to handle all IVC latch-free cages, regardless of the manufacturer. The system can be just dirty side or dirty plus clean sides, integrated since the beginning or retrofitted later on in the project. In the full system, among the 4 robots, two are handling the cage bases via an universal gripper while the tops and wire lids are managed by the other two robots equipped with an automatic gripper change device which allows to select the right end effector associated to the specific cage to process. All the cage components are loaded onto the presentation tray for the washing phase in order to properly present the items and avoid any water pooling and to guarantee that the clean side robots can recollect the components on the clean side in a safe way. **Cosmos can be selected with a Hybrid configuration which allows to process automatically also stacks of cage bases, allowing for the great flexibility to embrace both integral cage and partial cage change procedures in different areas of modern animal facilities.**

3/Integration

The IWT bedding handling system for soil and clean bedding, together with the IWT Tunnel GP complete the solution for a real integrated system with a clear single source of responsibility. Anyhow **Cosmos can be easily integrate with any existing bedding handling system** and in case of dirty-side system-only it can be integrated with any existing tunnel washer available in the market, both existing or new.

4/Footprint Configurations

Cosmos, in its standard configuration, requires a robotic cell footprint which range around 25m² (270ft²): a very small space if considering the flexibility and multi-tasking capability of this unique automation system.

5/Operator Safety

Cosmos can be undoubtedly be marked as the **safest system available in the industry**. Operators handle transport trolleys with integral IVC cages, which means top level allergen containment, leaving robots to perform all the stressful operations associated to cage disassembling/reassembling and cage dumping/refilling. The full process is monitored via the user-friendly interface.



COSMOS

INTEGRAL CAGE AUTOMATION

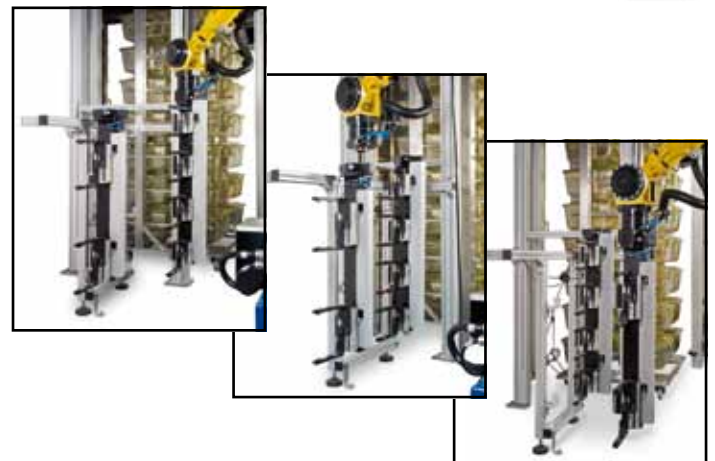
Solutions for Integral Cage Change and Tunnel Washer

Introduction



A

Modularity & Flexibility



Automatic Gripper Change



Washer Presentation Pallet

Integration **3**



B



THROUGHPUT

Cosmos	
Type III	Up to 330 cages/hour (990 items/h)
Type III	Up to 160 cages/hour (480 items/h)

* Indicative throughputs based on standard machines configurations. Higher throughputs can be achieved with custom solutions.

Footprint & Configuration **4**



Operator Safety **5**



Operator Interface



Disassembling/Reassembling Bench

Related Products

To maximise operational efficiency and learn more about these products contact your local representative.



900 GP Series Rack Washer: designed specifically to meet the throughput needs of medium to large size facilities, these machines will live up to your highest expectations in terms of maximum cleaning efficiency, safety, environmental impact and quality construction.



Tunnel Washer GP: lowest water and energy consumption in the industry, high throughput and environment-friendly.



BHS: highly reliable automated system using a combination of proven technologies to ensure totally smooth and simple material disposal and dispensing operations, cutting operator exposure and effort to a minimum.



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