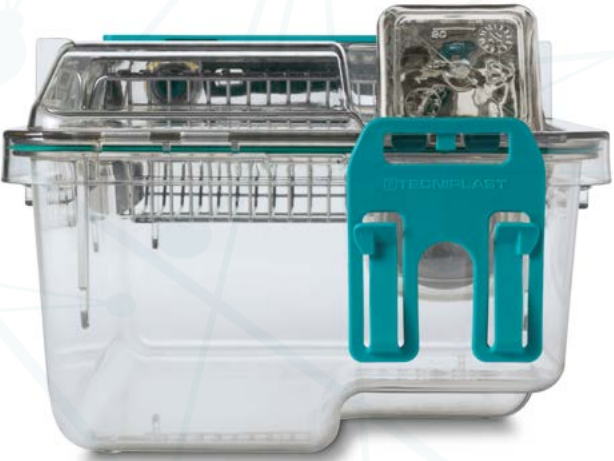




Emerald EM500 is the new, revolutionary, Individually Ventilated Cage. It provides leading performance for animal and operator protection, ergonomics and performance. Thanks to successful innovations such as Vision+, In-Richment, SmarTop and all-in-one-rack, EM500 brings housing standards to a higher level.



INNOVATION

▶ **VISION +**
100% CLEAR view to ease daily health check – PATENT PENDING.

Vision + allows full cage visibility, making the daily health check easier.

▶ **IN-RICHMENT**
A step forward in the animal welfare... in-bedded! – PATENTED.

In-Richment provides increased animal welfare and therefore more reliable scientific outcomes.

▶ **SMARTOP**
The Easiest, most Ergonomic and Safe way to access your animals – PATENTED.

SmarTop eases the access to cage inhabitants and streamlines the cage changing procedure, keeping contamination under control.

▶ **ALL-IN-ONE RACKS**
Capacity, Comfort or both: the choice is yours!

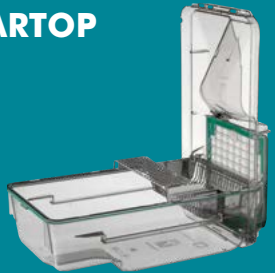
All-in-one-rack consists of three different rack sizes for any requirements: capacity, density or both.



VISION +



SMARTOP



IN-RICHMENT



ALL-IN-ONE RACKS



[▶ WATCH THE FULL VIDEO](#)



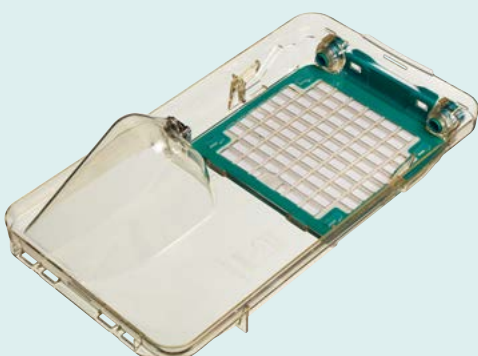
TECHNICAL FEATURES

► **CAGE DESIGN**

EM500 is available in H-TEMP (Polysulfone) and X-TEMP (Polyphenilsulfone).



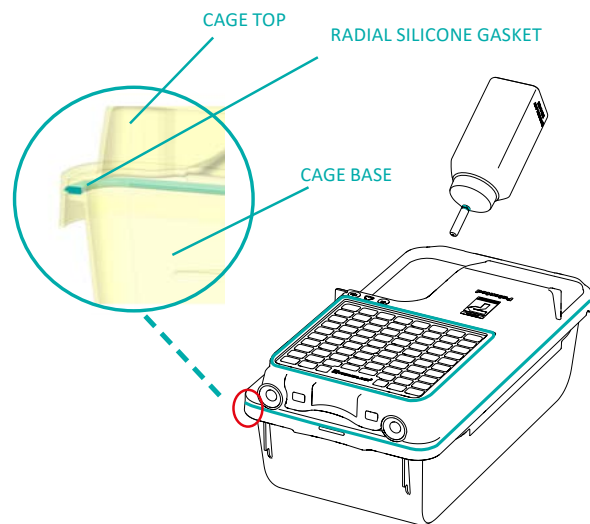
The **half length wire bar lid** has been designed to allow the easiest and quickest access to the cage occupants, speeding up the cage change procedures and maximizing the ergonomics. It is manufactured either from a high quality certified **AISI304 Stainless Steel** or a **super light weight special heat resistant thermoplastic polymer creating a complete cage of less than a kg!** The cage top features a large microbiological filter with an average certified **Virus Filtration Efficiency (VFE) of 99.97% and Bacteria Filtration Efficiency (BFE) of 99.99%**, this has been demonstrated to guarantee life support if the cage is mistakenly left off the rack or when power failure occurs. For mice the system guarantees a **minimum of 72 hours off the rack**. The microbiological filter installed ensures a **pressure differential can be maintained**. Furthermore it guarantees that **no biological agents or allergens** can pass through, contributing heavily towards the health status of animal colonies and the operators.



► **SEALING**

Emerald cages features a **PATENTED cage design**, consisting of a soft **silicone gasket that protrudes radially all around the cage base rim**: a perfect seal is achieved by placing the top on the cage body, through the radial connection between gasket and cage top. Consequently, the vertical compression (commonly provided by the use of latches) of the silicone gasket between cage base and top is not required:

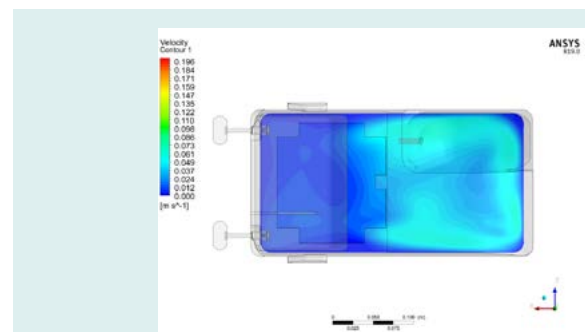
- no latches for the best ergonomics
- no need for latches to achieve excellent containment and high protection.



► **AIRFLOW PATTERN**

Air inlet and outlet valves are located in the top:

No air drafts at animal level, avoiding risk of stress and heat loss, as reported in the scientific literature.



AIR SPEED AT 25 MM OF HEIGHT

Cage air valves are protected by two silicone O-Rings in order to provide a good quality seal, when the cage is undocked from the rack and moved around.

Rack Air nozzles are not invasive to the cage: ensuring they do not get exposed to the cage environment preventing cross-contamination from operator allergen exposure.



► BOTTLE

The **external water bottle**, together with the self-centring bottle depression design, ensures easy and quick access to the bottle without the need to remove the cage from the rack.

The bottle has a **silicone gasket around the neck**, preventing any leakage and allowing an ergonomic decapping of the bottle itself.

The **bottle cap is made of AISI316 Stainless Steel**, completely **free from welding**, to not affect the quality of water and consequently the health of the animals. It features a **silicone O-ring on its sipper stem which creates** a perfect coupling with the top once the bottle is in position, providing maximum sealing and protection.

► CARD HOLDER

The **universal plastic card holder** is compatible with any label and can be easily flipped up: it is well respected due to its flexibility and ergonomics.



► RACK

The rack frame is made of **high quality AISI304 stainless steel** and features **special polyamide runners** for cage accommodation.

The racks are available in **10, 11 or 12 levels** in order to maximize accommodation density without compromising user ergonomics, giving the possibility to optimize the facility layout, saving space and increasing the overall cage capacity.



The vertical design of the air distribution plenums allows particles exhausted from the cage (food, bedding, hair, and debris, etc..) to fall by gravity into the removable horizontal exhaust plenum. The design also maximizes the washing performances of the rack especially automated procedures, performed in rack washers. **The demounting of the horizontal upper and lower plenums is totally tool-free and can be easily performed by a single operator.** The **automatic visual docking indicator** allows the clear and immediate indication of cages not properly docked, while the special design of the runners with the **self-locking system** keeps the cage in place, avoiding any accidental movement of the cage when it is docked on the rack.



The rack is equipped with **Polyphenylsulfone (X-TEMP) castors**. This plastic has outstanding mechanical properties, ensuring very long lifespan, perfectly withstanding many autoclave cycles. Moreover the very low force needed to enable/disable the brakes makes these castors very ergonomics. The connection between the racks and the Air Handling Unit is completed by a silicone, **flexible connection** and **autoclavable plastic components**. Connections have been designed to make the assembling and the connection/disconnection easy. Optional **magnetic connections** are available.





► AIR HANDLING UNIT

Wi Flow, Smart Flow, Easy Flow, Clima Flow and **Sky Flow** are microprocessor driven (automatic constant flow rate and filter load compensation), guaranteeing safety for animals, operators and the environment.

Tecniplast AHUs are equipped with **New DC Electronically Commuted Motors (ECM): 50% less power consumption and 90% less heat loss** than the previous generation of AHUs, guaranteeing a longer lifespan. **The multilinking feature allows up to 4 single sided-racks (or 2 double-sided racks) to be supplied from a single unit, reducing the maintenance and the consumables costs.**

Air is filtered by two **G4 pre-filters** and two **H14 HEPA filters**, one for the supply and for the exhaust: the HEPA filters have a **certified filtration efficiency of 99.995% at the most penetrating particle size** and are **DOP tested** once installed in the machine.

All the Air Handling Units are compatible with state-of-the-art technologies for remote monitoring and control:

- **ONE 2 ONE:** allows each and every AHU to be controlled via any portable device through a modern interface. One control device for all AHUs.
- **GUARDIAN:** the system allows all AHUs in the facility to be remotely monitored and controlled. You receive notifications in the event of an alarm and can record all environmental parameters. Guardian gives you global viewing and remote control of your AHUs.

CERTIFICATIONS

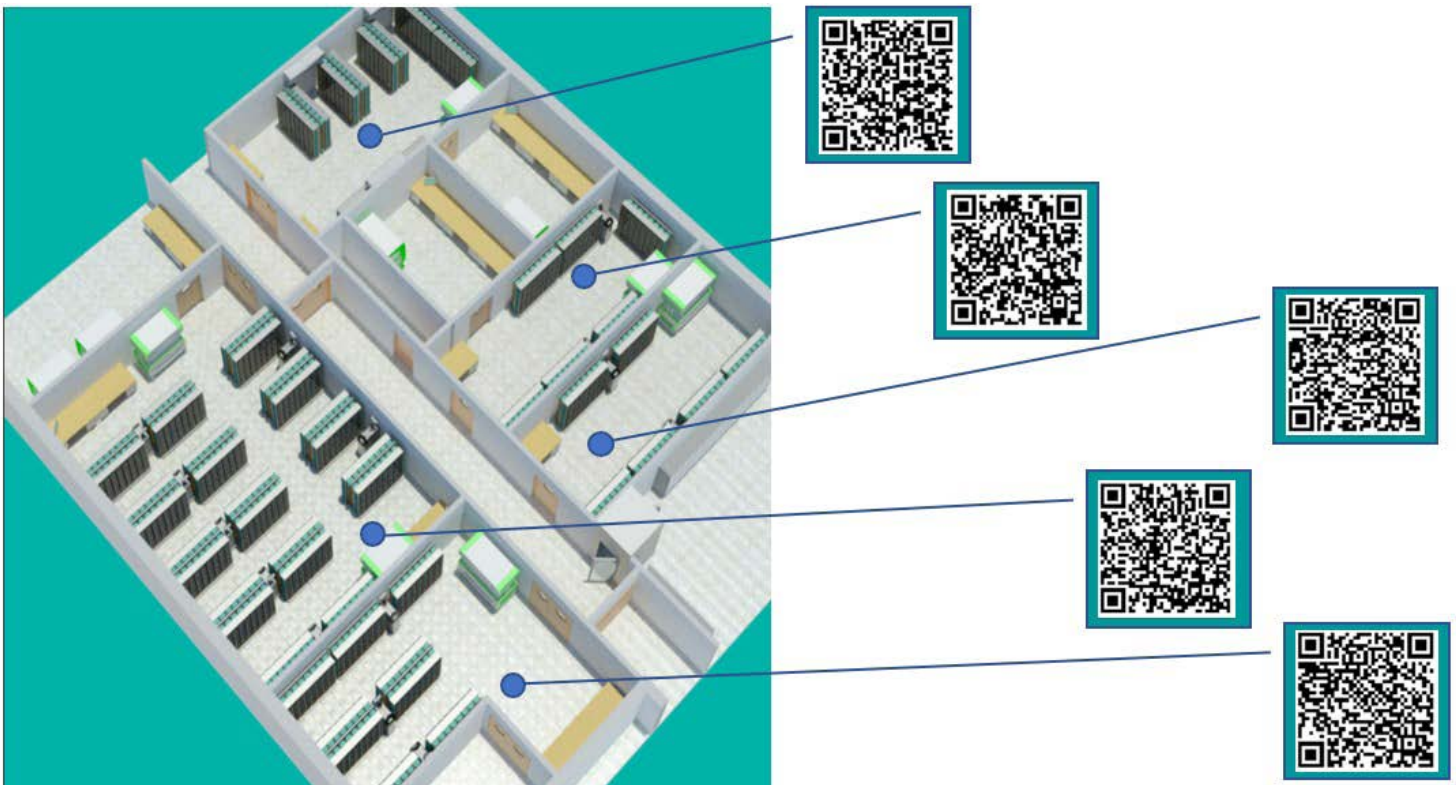
The standardization of the experimental condition is fundamental to minimize undesired variables that can affect the experiment, improving the reliability of the biomedical research outcomes. Tecniplast IVC systems have been designed in order to provide maximum standardization, and this has been confirmed by the **full compliance to the TIZ-BIFO protocol**, which has been certified by the worldwide recognized TUV certification:

- The variability of the intra-cage number of **ACH is within the range $\pm 15\%$ across the rack**, therefore the ventilation parameters are consistent across the system, even if cages are missing. This allows to have standardized intra-cage condition even when the rack is not fully occupied.
- The variability of the **intra-cage pressure** respects the TIZ-BIFO requirement (**$P_{mean} \geq 1.2 * (P_{max} - P_{min})$**), providing consistent intra-cage environment across the whole rack.
- **The pressure differential between the room and the cage is high enough to avoid contamination** and does not exceed 40 Pa, as stated by the TIZ-BIFO protocol.



**3D LAYOUT****▶ 3D RENDER VIEWS AVAILABLE**

Enjoy the 3D experience:
scan the QR CODE with your smartphone

**ENVIRONMENTAL SUSTAINABILITY: MINIMIZE IMPACT MAXIMIZING VALUE**

WHAT TECNIPLAST HAVE ACHIEVED TO BECOME A LEADER IN SUSTAINABILITY:

Company:

- Quality Management System Certification according to ISO 9001 and Environmental Management System
- Certification according to ISO 14001.
- Certified Environmental Report according to Eni Foundation Enrico Mattei Guidelines

Products:

- Life Cycle Assessment (LCA) according to ISO 14040 and ISO 14044.
- Carbon Footprint according to PAS 2050.
- Environmental Data Sheet according to ISO 14025.
- Contribution to credits under the LEED rating system


TECHNICAL DATA

RACK CONFIGURATIONS & DESIGNATIONS		
Code	Rack capacity	Overall Rack Dimensions (LxWxH)
Ergo		
EMM060X	60 cages (6W x 10H) - single sided	1350 x 500 x 1860 (1931*) mm 53,15 x 19,69 x 73,23 (76,03*) in
EMM070X	70 cages (7W x 10H) - single sided	1570 x 500 x 1860 (1931*) mm 61,81 x 19,69 x 73,23 (76,03*) in
EMM080X	80 cages (8W x 10H) - single sided	1790 x 500 x 1860 (1931*) mm 70,47 x 19,69 x 73,23 (76,03*) in
EMM120X	120 cages (6W x 10H) - double sided	1350 x 888 x 1860 (1947*) mm 53,15 x 34,96 x 73,23 (76,66*) in
EMM140X	140 cages (7W x 10H) - double sided	1570 x 888 x 1860 (1947*) mm 61,81 x 34,96 x 73,23 (76,66*) in
EMM160X	160 cages (8W x 10H) - double sided	1790 x 888 x 1860 (1947*) mm 70,47 x 34,96 x 73,23 (76,66*) in
Comfort		
EMM066X	66 cages (6W x 11H) - single sided	1350 x 500 x 1995 (2078*) mm 53,15 x 19,69 x 78,54 (81,80*) in
EMM077X	77 cages (7W x 11H) - single sided	1570 x 500 x 1995 (2078*) mm 61,81 x 19,69 x 78,54 (81,80*) in
EMM088X	88 cages (8W x 11H) - single sided	1790 x 500 x 1995 (2078*) mm 70,47 x 19,69 x 78,54 (81,80*) in
EMM132X	132 cages (6W x 11H) - double sided	1350 x 888 x 1995 (2092*) mm 53,15 x 34,96 x 78,54 (82,35*) in
EMM154X	154 cages (7W x 11H) - double sided	1570 x 888 x 1995 (2092*) mm 61,81 x 34,96 x 78,54 (82,35*) in
EMM176X	176 cages (8W x 11H) - double sided	1790 x 888 x 1995 (2092*) mm 70,47 x 34,96 x 78,54 (82,35*) in
HD		
EMM072X	72 cages (6W x 12H) - single sided	1350 x 500 x 2044 (2128*) mm 53,15 x 19,69 x 80,47 (83,76*) in
EMM084X	84 cages (7W x 12H) - single sided	1570 x 500 x 2044 (2128*) mm 61,81 x 19,69 x 80,47 (83,76*) in
EMM096X	96 cages (8W x 12H) - single sided	1790 x 500 x 2044 (2128*) mm 70,47 x 19,69 x 80,47 (83,76*) in
EMM144X	144 cages (6W x 12H) - double sided	1350 x 888 x 2044 (2142*) mm 53,15 x 34,96 x 80,47 (84,33*) in
EMM168X	168 cages (7W x 12H) - double sided	1570 x 888 x 2044 (2142*) mm 61,81 x 34,96 x 80,47 (84,33*) in
EMM192X	192 cages (8W x 12H) - double sided	1790 x 888 x 2044 (2142*) mm 70,47 x 34,96 x 80,47 (84,33*) in

* With easily removable supply plenum



TECHNICAL DATA

CAGE DATA						
Cage	Cage Size				Feeder Capacity	Water bottle capacity
Type	Width	Depth	Height	Floor Area		
Flat	384 mm (15,2 in)	207 mm (8,13 in)	with bottle: 155 mm (6,10 in) no bottle: 145 mm (5,71 in)	535 cm ² (83,93 in ²)	Plastic lid:0,55 L - 18,60 fl oz (US) -19,36 fl oz (UK) Stainless steel lid: 0,65 L - 21,98 fl oz (US) - 22,88 fl oz (UK)	260 ml - 8,80 oz (US) - 9,15 oz (UK)
Inrich	384 mm (15,2 in)	207 mm (8,13 in)	with bottle: 155 mm (6,10 in) no bottle: 145 mm (5,71 in)	512 cm ² (79,36 in ²)	Plastic lid:0,55 L - 18,60 fl oz (US) -19,36 fl oz (UK) Stainless steel lid: 0,65 L - 21,98 fl oz (US) - 22,88 fl oz (UK)	260 ml - 8,80 oz (US) - 9,15 oz (UK)

OPTIONS AND ACCESSORIES

► OPTIONS FOR CAGE

- Cage body with grommet, for auto watering
- Full length wire bar lid
- Flat top without bottle depression, for auto watering
- Top with depression for disposable water pouches
- Cage liners
- Vertical or Horizontal flip up plastic card holder

► ACCESSORIES

- Mouse House
- Mouse Pouch-Loft
- Running Wheel
- LEDDY wireless lighting control system

► OPTIONS FOR RACK

- Rack with automatic watering system
- Quick disconnecting magnetic joints (connecting AHU to rack or rack to rack)
- Flexible hoses (available in several lengths)
- Thimble for HVAC integration

DOCUMENTS AVAILABLE

► TEST REPORTS

- Performance test – Airborne noise conditions inside cages
- Performance test – Light Intensity inside cages
- Performance test – Airflow velocity inside cages
- Performance test – Consistency of relative pressure and ACH with only one cage mounted on the IVC rack
- Performance test – Distribution of relative pressure and ACH across IVC racks
- Performance test – Noise emitted inside the room
- Performance test – Breakaway force for rack movement

► WHITE PAPERS

- Allergens containment test
- Monitoring of environmental conditions in Emerald EM500 Individually Ventilated Cage
- Environmental parameters in EM500 Individually Ventilated Cage under static condition

► FILTER CERTIFICATIONS

- Microbiological filter Viral Filtration Efficiency (VFE) evaluation
- Microbiological filter Bacterial Filtration Efficiency (BFE) evaluation