

► COLD LINE

Retarder/proofer cabinets



The retarder/proofer cabinet: an important work-planning support

Created substantially as a work-planning support, the Polin retarder/proofer cabinet allows to plan the work during daytime hours and thus improve the quality of life of sector operators, reducing or completely eliminating night work, as well as reducing personnel costs, increasing company profitability and essentially improving product quality by returning to natural leavening.



Avant Model
2 doors

In order to meet the variety of customers' needs, Polin produces three product ranges:

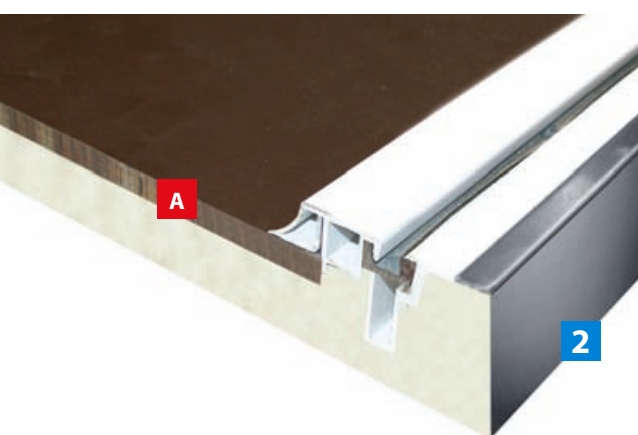
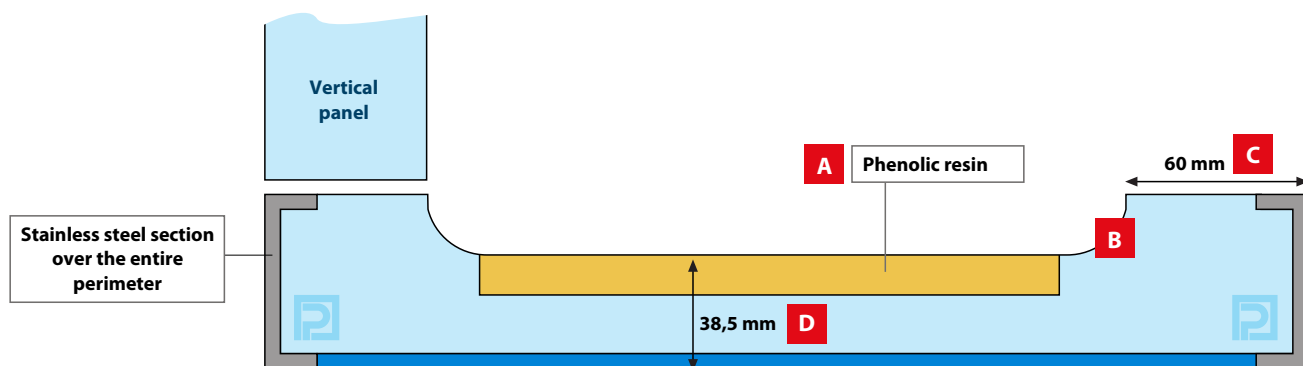
Avant, which is distinguished by the stainless steel front and interior, a colour touch screen, software that manages the 4-phase cycle (progressive or Nordic) in addition to the classic functions and an electronic humidifier

Classic Pro, with a white structure, black-and-white touch screen and electronic humidifier

- Bravo, specific for pastry and/or small products with a white structure, LCD display and mechanical humidifier



Avant Model
1 door



► TECHNICAL SOLUTIONS

The monobloc basin floor: no more water stagnation and infiltration!

The floor of the Polin retarder/proofer is made of 28 mm-thick polyurethane foam with upper reinforcement in 10mm-thick, non-slip phenolic material.

The phenolic resin **A** is a non-deformable material with high insulation index and outstanding mechanical strength, for a long-lasting dry, smooth-running floor.

The rounded section **B** is an integral part of the floor structure, thus preventing infiltrations, leakages and stagnation, the major causes of poor hygienic conditions and unpleasant odours.

The internal radius also prevents the accumulation of stubborn, foul-smelling residues.

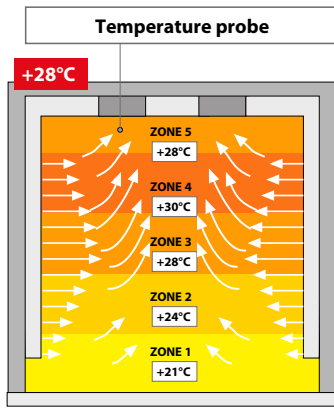
The floor has a variable section:

60mm on the vertical panel fastening base **C**

38.5mm on the walking surface **D**

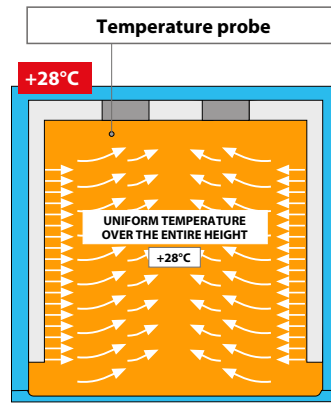
This exclusive constructional technique allows to have a shorter and less steep access ramp **1**

The external perimeter base section **2** in AISI 304 stainless steel guarantees the integrity of the cabinet structure, protecting the base from corrosive agents such as water, detergents, etc.



4

Cabinet with stratified air temperature distributed by conventional air ducts.



5

Polin cabinet with air temperature uniformly distributed by equalized air ducts.

TECHNICAL SOLUTIONS

The equalized air duct: the ideal solution for air distribution

Detailed laboratory tests and trials have led to the creation of an innovative system for the air distribution which ensures a uniform and delicate treatment.

The system is based on a new air duct concept, the equalized air duct . 3

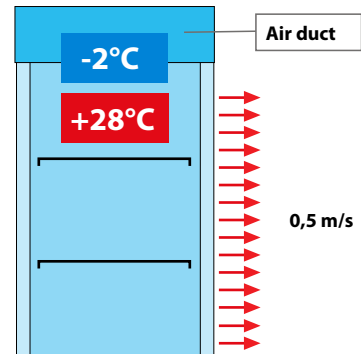
The air arriving from the evaporator accumulates in zones A and B which, once saturated, begin to supply the equalized air ducts located at their ends.

These mini-ducts, once the pressure is reached, distribute the air in the chamber over the entire height, at the same temperature and the same speed, 0.5 m/s.

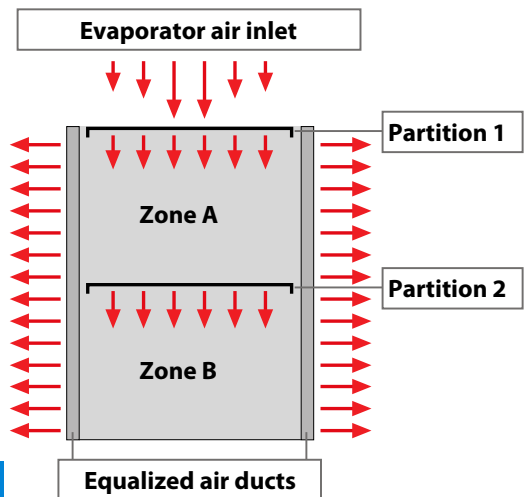
This application has overcome all the technological problems such as skins, bubbles and different leavening stages commonly found in products being proofed.

The ideal distribution produced by the air duct ensures a uniform temperature inside the cabinet, thus avoiding stratifications 4 5

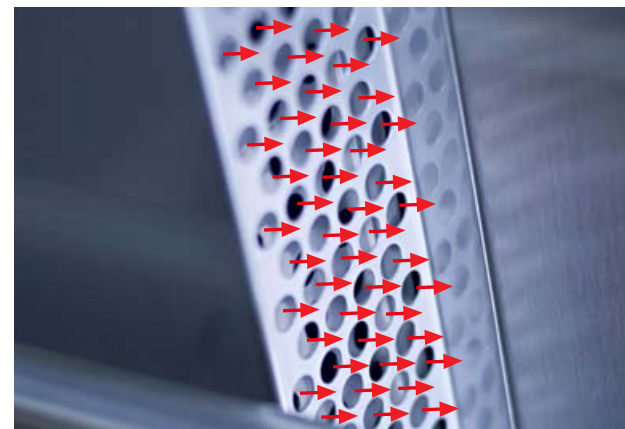
The result is a uniform, homogeneous and high-quality product!



In Polin cabinets, regardless of the temperature, the equalized air duct distributes the air over the entire height at a constant speed of 0.5 m/s.



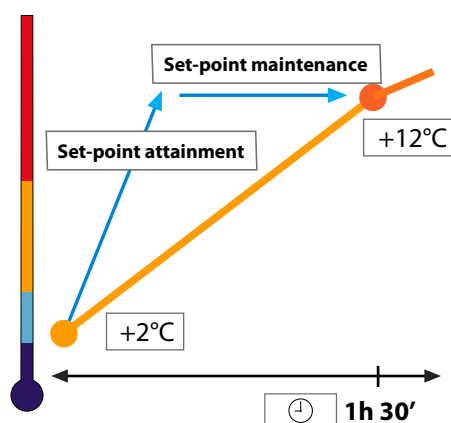
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Colour display
Avant Model



Traditional operating logic for reaching the set-point



6

Simulating a warm rising phase that goes from +2°C to +12°C (example), it can be seen that the machine, turning on the heating elements, reaches the required temperature (set-point attainment) in less time and then maintains it for the entire duration of the phase.

THE OPERATING LOGIC

Polin experience has led to the development of an exclusive software for retarder/proofer cabinets.

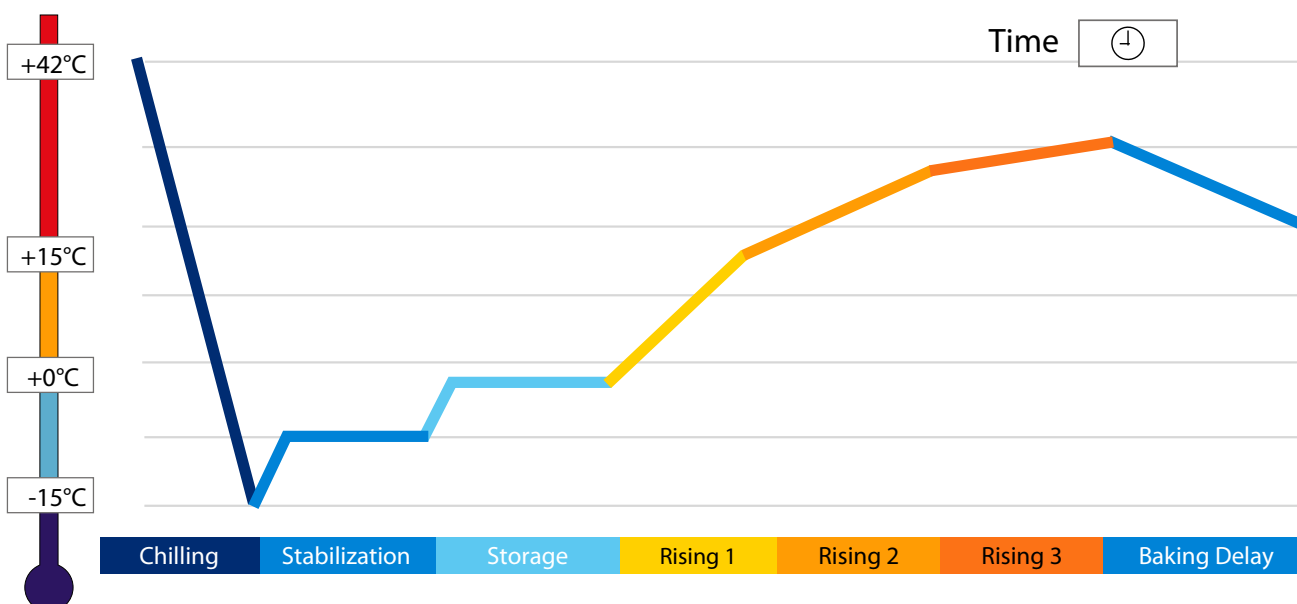
In addition to being able to manage the cabinet in Cool Manual Mode (where only the compressor operates), Warm Manual Mode (only the heating elements and humidifier operate) and Climate-Controlled Manual Mode (depending on the temperature, either the compressor or heating elements or humidifier operate), the customer can also use the 6+1-phase cycle (Avant, Classic Pro and Bravo) and a 4-phase cycle, either progressive or Nordic (Avant).

In all the manual functions and all the proofing cycle phases, the speed of the fans can be adjusted electronically.

6 + 1 Phase cycle (baking delay)

This is the standard cycle for using the retarder/proofer which operates with the set-point (set temperature) attainment logic **6**

The first three phases are cool: Chilling while empty, Stabilization (cabinet loading time) and Storage. These are followed by three warm rising phases. Finally there's the optional baking delay phase.



Colour display
Avant Model



4-Phase cycle (progressive or Nordic)

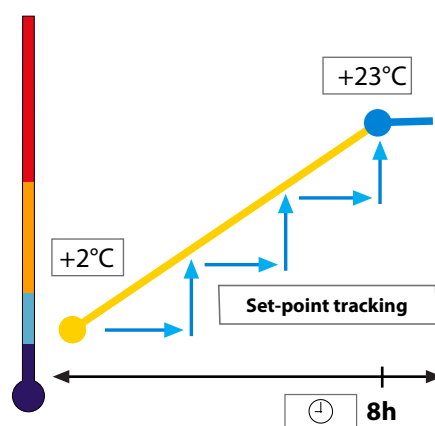
Only the Avant series provides an additional 4-phase cycle (progressive or Nordic) which, unlike the 6+1 phase cycle, uses set-point (set temperature) tracking logic **7**

The first two phases are cool: Chilling while empty and Storage. These are followed by two warm phases - the first is Rising and the second is Holding.

The slow and progressive rising allows to manage inside the same environment different types of product, differing in size, percentage of water or type of flour (soft or durum wheat).

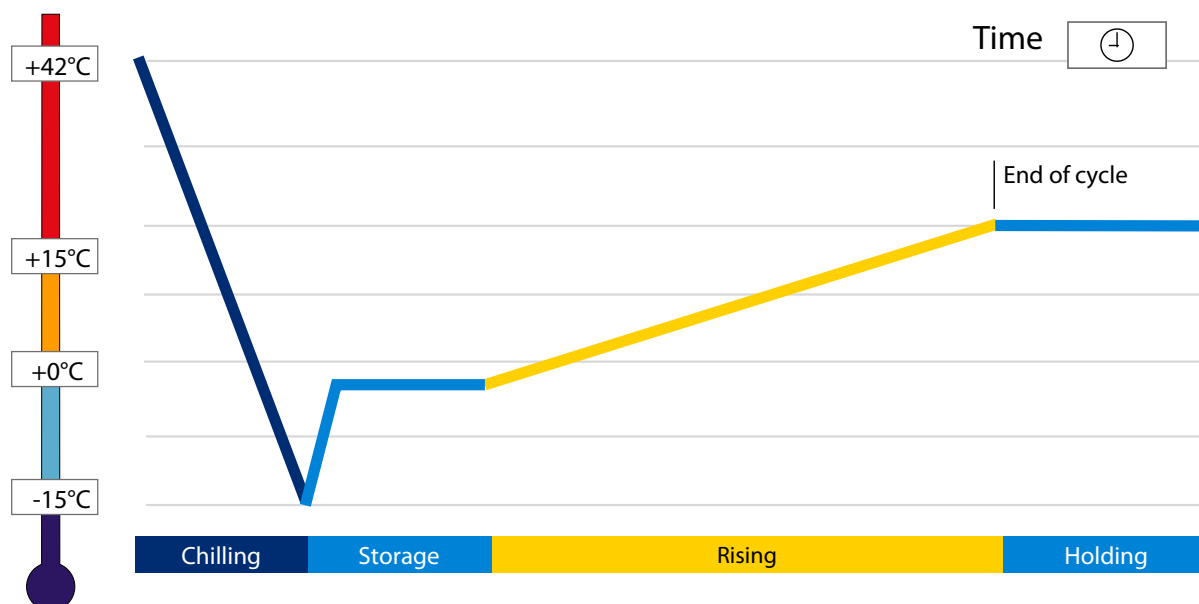
In addition to reaching the end of the rising at relatively low temperatures, it is also possible to significantly increase the useful time for unloading the cabinet.

The innovative operating logic for set-point tracking



7

Simulating the 3 rising phases from +2°C to +23°C (example) it can be seen that the machine, based on the duration of the phase (8 hours), tracks the set-point progressively, changing the temperature of regular time intervals (example 1°C every 20 minutes), thus obtaining a progressive rising at a relatively low temperature.





Door closure
Avant Model



9

► FUNCTIONAL GUARANTEES

Cooling and heating capacities

The Avant and Classic Pro series have the same cooling and heating capacities with an operating range from -15°C to $+42^{\circ}\text{C}$.

The Bravo series has an operating range from -10°C to $+42^{\circ}\text{C}$, and is thus designed for small products with short cycles.

► FINISHES

FLOOR

Thanks to the floor which is lowered to 38.5mm, the access ramp is reduced to only 150mm making the entrance of the trolleys even more convenient.

PANELS 8

The panels of the cabinet are white (Classic Pro and Bravo) or stainless steel (Avant), with an insulating core in high-density polyurethane foam, vacuum-injected, to guarantee excellent thermal insulation.

RETAINERS

To favour the thermal insulation and perfect adhesion between the panels, mechanical eccentric retainers are used. Applied along the entire perimeter of the panels, all the parts forming the structure adapt precisely with maximum sealing.





Buffer handle
Avant Model

HINGES **9**

The self-lifting hinges prevent rubbing against the lower gaskets in order to ensure a long-lasting seal.

They can be adjusted along the three axes for perfect adaptation of the door to the structure. The hinges are painted with plasticized covers (Classic Pro and Bravo) or chromium-plated (Avant).

INTERNAL **10** AND EXTERNAL **11** BUFFERS

Made of oval tubing in AISI 304 stainless steel, the buffers protect both the vertical panels and the air distribution ducts inside the cabinet from accidental impacts of the trolleys. These buffers also guarantee a minimum distance of the trolley from the air ducts in order to favour the correct circulation of the air. The buffers located outside on the front protect the door. These buffers are made of engineering polymer (Classic Pro and Bravo) and AISI 304 stainless steel tubing (Avant).

HANDLES **12**

With an ergonomic grip, the handles act as external buffers and are available in the engineering polymer (Classic Pro and Bravo) and steel (Avant) versions.

CONDENSING UNIT **13**

The unit is supplied standard with a tropicalized condenser to work at its best even in high-temperature environments (+42° C). The standard condenser is air-cooled (water-cooled on request).

The compressor is a single-stage hermetic compressor which is self-cooled by the aspirated gas. The coolant used is TR404A (an ecological gas). In areas which are climatically better suited, the single condenser can also be remoted in order to enhance the performance of the cooling system.



Internal buffers in AISI 304 oval tubing



Standard condensing unit



Sound-proofed condensing unit



SOUND-PROOFED CONDENSING UNIT (optional) 14

These units are completely shrouded and guarantee outstanding levels of sound insulation. They are also in conformity with the current regulations.

EVAPORATORS 15

The evaporator is composed of one or two copper tube banks with high-efficiency aluminium fins 16

The modularity of the evaporator unit guarantees that it is correctly matched with the size of the cabinet selected, obtaining optimized efficiency and better air distribution. The speed of the fans can be adjusted to optimize the program phase by phase, ensuring all the products have the most appropriate treatment. Armoured heating elements are applied to the evaporating tube bank for defrosting the tube bank and heating the cabinet.

The condensation that forms in the evaporator is collected by the fairing made of aluminium (in order to avoid problems due to thermal expansion) and drained outside the cabinet by means of PVC pipes.

FANS 17

The fans located in the evaporator distribute the air in the cabinet in two modes:

Monodirectional (for one-door cabinets)

Bidirectional (for two-door cabinets)

The ceiling ducts are made of AISI 304 stainless steel.

The vertical distribution of the air occurs through equalized AISI 304 stainless steel ducts which ensure uniformity of flow and temperature and a low air speed (about 0.5 m/s).



ELECTRONIC HUMIDIFIER (Avant - Classic Pro) **18**

The correct degree of humidity in the cabinet is guaranteed by an immersed-electrode steam generator which exploits conductive salts present in the water.

In comparison with the solution using immersed heating elements, the immersed-electrode solution has the advantage of low electricity consumption due to greater precision of the quantity of steam to be produced.

Maintenance is also easier. In fact, it is sufficient to regenerate or replace the boiling tank cylinder once it becomes saturated with limescale.

The ambient humidity is controlled by means of a probe with electronic sensor **19** characterized by high precision and reliability.

The operating values of the steam generator (the conductivity) and the state of the boiling chamber cylinder can be displayed on the control panel in real time.

MECHANICAL HUMIDIFIER (Bravo) **20**

The humidity is produced by armoured heating elements immersed in water contained in a cast-aluminium container.

With easy maintenance, the mechanical humidifier requires periodic cleaning of all the parts which are subject to limescale attacks.

DEHUMIDIFIER

The dehumidification occurs through the combined action of an extraction fan positioned on the roof of the cabinet and compensation valves assembled on the structure.



Electronic humidifier



Mechanical humidifier



► MODELS

A wide range of models for every type of need

Today the Polin range provides the customer with a complete series of one-door and two-door retarder/proofer cabinet models.

The one-door fronts are available in versions with the following widths: 970 mm, 1150 mm, 1350 mm, 1550 mm.

The two-door fronts are available in versions with the following widths: 1750 mm, 2150 mm, 2550 mm, 2950 mm.

All the machines (Avant and Classic Pro) can be extended in length, from a minimum of 1350 mm, by adding 200mm modules until reaching the desired length.

For the Bravo series the range is indicated in the price list.

		C	External length B					up to 6150
		Useful width of the door	1350	1550	1750	1950	2150	
External length A	n.1 door	970	690	970x1350	970x1550	970x1750	970x1950	970x2150
		1150	790	1150x1350	1150x1550	1150x1750	1150x1950	1150x2150
		1350	950	1350x1350	1350x1550	1350x1750	1350x1950	1350x2150
		1550	1120	1550x1350	1550x1550	1550x1750	1550x1950	1550x2150
	n.2 doors	1750	1400	1750x1350	1750x1550	1750x1750	1750x1950	1750x2150
		2150	790	2150x1350	2150x1550	2150x1750	2150x1950	2150x2150
		2550	950	2550x1350	2550x1550	2550x1750	2550x1950	2550x2150
		2950	1120	2950x1350	2950x1550	2950x1750	2950x1950	2950x2150

