

Automated Freezers
Smartfreezer® Series



Ultra low temperature, ultra high security.

→ **Biological samples are useful as long as they are identified and stored reliably, without deterioration, protected from accidental and intentional physical damage.**



Angelantoni Life Science (ALS), a sub-holding fully owned by Angelantoni Industrie, is one of the leading international companies in the supply of refrigerating equipment and the design of technological solutions in the biomedical industry, with a constant commitment to biological and environmental innovation and safety.

Research centers, hospitals, laboratories, universities and industrial companies in the pharmaceutical and chemical industry are the recipients of ALS production, which covers all the needs for refrigeration, infection control and microbiological safety with a wide range of standard and special products. With its agents and distributors in over 40 countries, Angelantoni Life Science is the ideal partner in the healthcare sector and scientific research.

Our strength comes from the skills of our engineers and the experience they have gained in design, from the professionalism of our technicians in production and service and the coordination of experienced managers supporting our staff.

Each team member contributes their enthusiasm and scientific and industrial knowledge to a work environment that stimulates innovation and development. Angelantoni Life Science invests more than 10% of its turnover in Research and Development, involving a multidisciplinary team of technicians and researchers.

Founded in 1932, Angelantoni Industrie is an industrial group with 4 plants and over 500 employees. It is one of the world's leading companies in the production of environmental and space simulation chambers (ATT Angelantoni Test Technologies), cold technology applications in pharmaceutical and hospital research (ALS Angelantoni Life Science), Energy Efficiency (Turboalgor) and Solar Thermodynamic Energy (Archimede Solar Energy receiver tubes).



Angelantoni Plants



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Smartfreezer® Series



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Fully automated storage and retrieval of vials at cryogenic temperatures

→ Get rid of human errors and preserve the value of your biorepository using the most advanced robotic system for storage and retrieval of biological samples at -180 °C in Liquid Nitrogen Vapor.

- Avoid samples freezing and thawing
- Prevent vials cross contamination
- Avoid outbreak test-tube
- Prevent samples mix-ups and losses

Technical features



Fully Automated Retrieval

- Robotic load retrieval of the desired sample
- Individual sample retrieval
- Available for 1.0 ml, 2.0 ml, 3 ml and 4.5 ml vials

Temperature Control

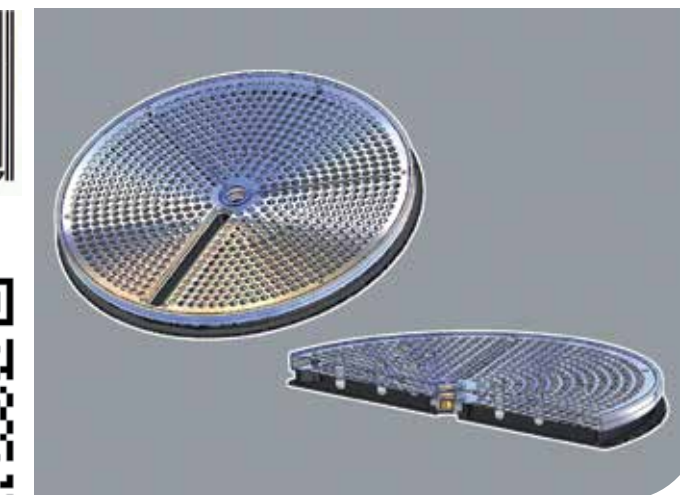
- LN₂ vapor phase
- Standard stainless steel tank
- The samples, are not dipped in liquid nitrogen
- Liquid nitrogen amount controlled by dedicated control board
- Optional rack for loading/unloading of up to five vials

Ice Formation Prevention

The robotic arm stores and retrieves samples in a sealed area with controlled humidity

Access Control

- Only authorized people are allowed to store and retrieve samples.
- User access to samples is always tracked.



Operator And Sample Protection

- Access through robotic arm prevents any accidental or intentional physical damage of samples.
- Operator is protected from exposure to ultra low temperature.

Sample Tracking

A dedicated software running on an on board touch screen PC guarantees:

- Complete history of storage operations and temperature conditions.
- Samples always identified by 2D and linear barcodes reader.
- Built in match between inventory data and physical sample locations.

Technical specifications

Model	SMARTFREEZER®			
	V 180.10	V 180.20	V 180.30	V 180.45
Storage capacity (n°)	14.470	8.410	6.006	5.046
Type of vial (ml)	1	2	3	4.5
Vial identification	Bar Code / Dot Code			
Speed to load and un-load (s/vial)	20			
External dimension (mm)	1400x890x1960 ⁽¹⁾			
Working temperature (°C)	-180			
Dry System	Yes ⁽²⁾			
Refrigeration plant	Liquid nitrogen			
Supply voltage (V)	230V +6% -10% / 1 / 50 Hz			
Absorbed Power (W)	500			
LN ₂ consumption (lt/day)	15 to 20 ⁽³⁾			
Temperature backup	Auto-backup ⁽⁴⁾			
Uninterruptible power supply	Yes			
Pneumatic backup system	Yes			
Remote alarm	Yes ⁽⁵⁾			
Ports	Ethernet			

- Illustration, description and technical data may be changed without notice.
 (1) Cover on the top of the machine for external automation needed at installation. Height after installation: 2.660 mm for V180.45 version, 2.610 mm all the others.
 (2) It is a device that produces dry air with a very low dew point.
 (3) This consumption value is related only to Smartfreezer itself and doesn't take into consideration LN₂ losses due to customer pipeline or mobile cylinder sometimes used to refill Smartfreezer.
 (4) Temperature can be kept for 48 hours without supplying liquid nitrogen.
 (5) ON/OFF.