Air Solar
SOLUTIONS
AN AIRWELL GROUP BRAND

SOLARFROST

The autonomous solar powered cold room

FRENCH BRAND

innovation

made in France by Airwell

YOUR FRENCH REFERENCE

for over 75 years

Airwell, a French thermal equipment manufacturer committed to the energy transition

A French referenced brand for professionals

As an expert and creator of climate and thermal solutions, Airwell's mission is to create and cultivate well-being. Airwell is committed to:

Reinventing
uses

→ To limit our environmental footprint.

Optimising
consumption

→ To consume less and better.

Promoting
solar energy

→ To preserve natural resources.

Historical French manufacturer

1947 — **Creation of the Airwell Group**, the French pioneer in heat pumps.

1970 — Airwell becomes **the leading European** heat pump manufacturer. Leader in Europe and Africa.

2008 — Industrial disengagement and restructuring of the Airwell Group.

2014 — Launch of the **Airwell 2.0** strategic project (the transformation from a heat pump manufacturer to a solution provider).

2020 — Launch of our offer for private customers: **Hybrid house**.

2021 — **Airwell becomes Airwell Group** following the acquisition of Airwell Residential by Airwell Distribution.

GROUPE AIRWELL

2022 — Integration of the **CSR approach** into the strategy and award of the **"Innovative Company" label** by BPI France. Launch of our Renewable Energy offer.

2023 — Airwell Group acquires Amzair Industrie and sets up its **Airwell Industrie** production site in Brittany to enrich the Group's ecosystem in the design and manufacture of **100% French and connected heat pumps.**

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AFTER-SALES AND QUALITY SERVICE

Our interactive voice server (IVR) has been redesigned in order to provide a more efficient and effective customer service. Our responsiveness and professionalism provide a benchmark level of service.

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TECHNICAL SUPPORT

sav@airwell.com

ORDER SPARE PARTS

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About the

AIRSOLAR SOLUTIONS SOLARFROST

On a planet where post-harvest losses are high and where the cold chain is essential to better feed and care for people, Airwell delivers a unique solution to ensure the longevity of perishable goods.
At Airwell, we understand the essential role of a robust and durable cold store in preserving the quality of sensitive products.

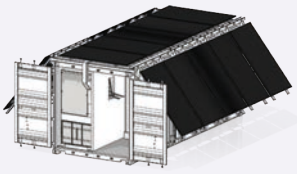
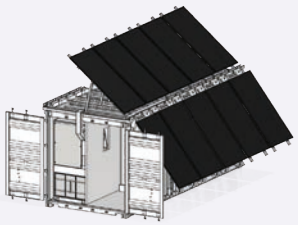
SolarFrost is an autonomous solar powered cold room solution the size of a container that can be rapidly deployed to meet the need to preserve sensitive foodstuffs and medicine using solar energy. Its energy block enables it to operate independently and maximise self-consumption.

Would you like to reduce your logistics costs with a local cold store? Limit your post-harvest losses or loss of valuable goods? Reduce your dependence on fossil fuels or the electricity grid? Then SolarFrost is the right walk-in cold room for you.

Equipped with efficient AirSolar Solutions photovoltaic panels, SolarFrost has demonstrated its ability to maintain a stable temperature despite extreme outdoor conditions.

SolarFrost is a sustainable product that can be adapted to local sunlight conditions through a variety of possible installation configurations.

PV INSTALLATION CONFIGURATION

CONFIGURATION	EAST AND WEST	SOUTH OR NORTH
	3 rows of 5 solar panels	
Organization of rows	Mounted 3 rows	Mounted 2 rows + 1 detachable row on ground
Solar exposition	 E W	 S N
Illustration		

+ PRODUCT

- Bifacial photovoltaic panels
- Inclination adaptable to any location and season
- Technical room: energy storage and cold production zone
- Stable temperature between 0°C and 15°C
- 16 m3 of storage

MARITIME TRANSPORT

Solar panels are stored inside for shipping

Easy assembly from the manual

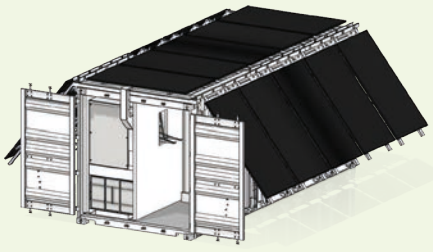
LAND TRANSPORTATION

Solar panels are installed on the roof for ground transportation

Easy deployment and start-up

AIRSOLAR SOLARFROST READY FOR USE

A simple mechanical system allows the deployment of solar panels in 10 minutes

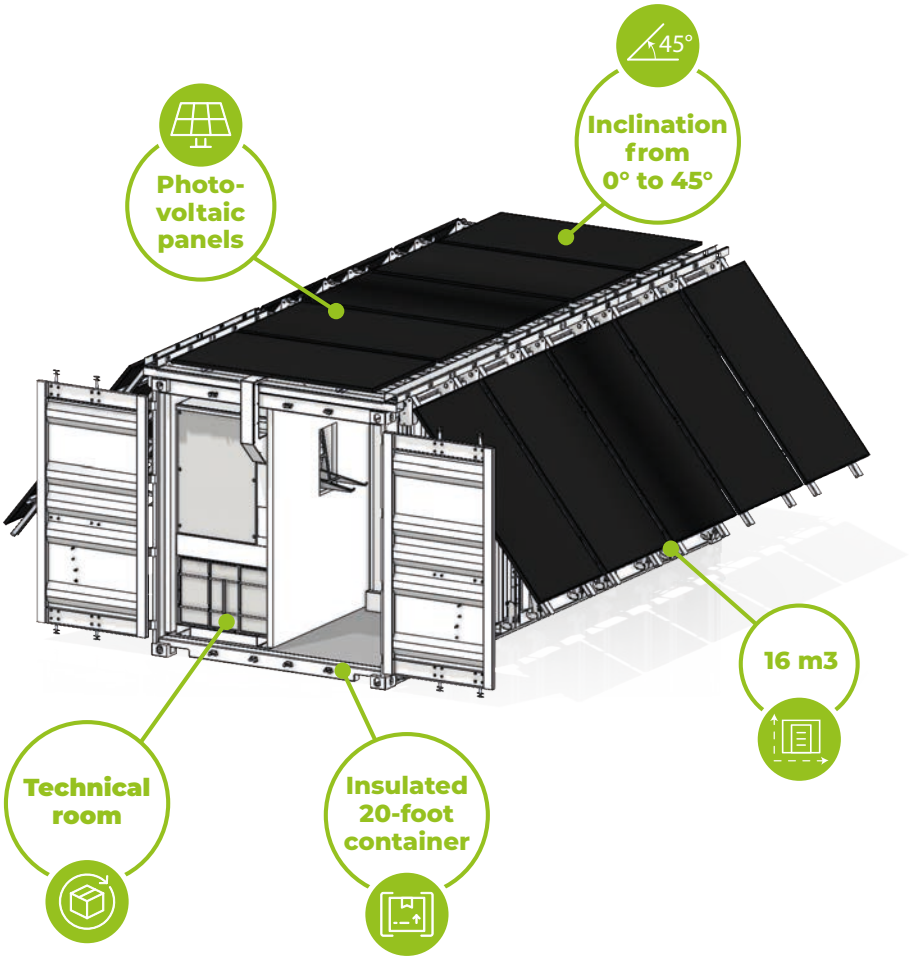


INSTALLATION MANUAL

Click or flash

SOLARFROST

The autonomous solar powered cold room



A ROBUST, TURNKEY SOLUTION

- Built around a container approved for sea transport.
- Can be transported anywhere by the sea, land and air.
- A 'all-in-one' solution delivered in kit.

MODULARITY AND MOBILITY

- Various installation options.
- Solar panels can be tilted according to the season.
- Simple mechanism for storing and deploying solar panels for transport and extreme conditions.

EASY MAINTENANCE

- Advanced monitoring system.
- Easy access to components.
- Clear documentation and procedures.

PROVEN ENERGY EFFICIENCY AND AUTONOMY

- Up to 48 hours autonomy without sun. Self-sufficient in most situations.
- Devices configurations for maximum energy efficiency.
- Compatible with external power supply (generator or electricity grid).

See drawings p.15

TECHNICAL DATA

OVERALL CHARACTERISTICS		CFSA-020X-XXXX (SEE P.15)
Product number on demand		**2CFXXXXXX**
Container	ft	Dry 20'
Total unloaded weight	kg	5 500
Panel insulation material		Polyisocyanurate for cold room and rockwool for power unit
Photovoltaic panels inclination	°	Ajustable between 0° et 45° on the top of the container and between 90° and 30° on the side
Transportation options		Flatbed crane truck on road, Container carrier at sea and helicopter in the air
Cold room size	m3	16
Outside temperature operating range	°C	From -10 to 55
Solar peak power	Wp	9 000 (extra power in option, see p.9)
Coldroom temperature setpoint range	°C	0 to 15
CFSA dimensions folded (LxWxH)	cm	620x273x279
CFSA dimensions unfolded at 30° PV inclination (LxWxH)	cm	620x683x379
ELECTRICAL INSTALLATION		
Nominal power of each photovoltaic panel	Wp	600
Number of solar panels		15 (extra power in option, see p.9)
Additional peak power thanks to bifaciality of solar panels	%	Up to +30%
Battery type		Lead acid OPzV
Battery capacity	Wh	46 080
Autonomy	h	From 36h to 48h without any irradiation
AC-in Connection		Single-phase AC grid or generator set
Compatible backup power or generator characteristics		230 VAC / 50 Hz / 20 A min 32 A max 10 kVA generator recommended
AC-out connection		230 VAC electrical socket to maximise energy use for additional electricity needs
System intelligence		Monitoring of energy production and consumption, maintenance alarms
Phase		1
Frequency	Hz	50
Electrical socket power output	W	3 500
DC Voltage	V	48
Easy cut out system		Yes
CONFORMITY AND CERTIFICATIONS		
For PV installation with battery		NF C15-100, UTE C15-712-2/3
For maritime transportation		CSC
Solar Panels		IEC, CE, SOREN

CHOSE YOUR SOLARFROST COLOUR (see p.15)

- **0** ARCTIC WHITE
- **1** ARMY GREEN
- **2** SANDY DESERT
- **?** OTHER on demand

COMBINATION

SOLARFROST

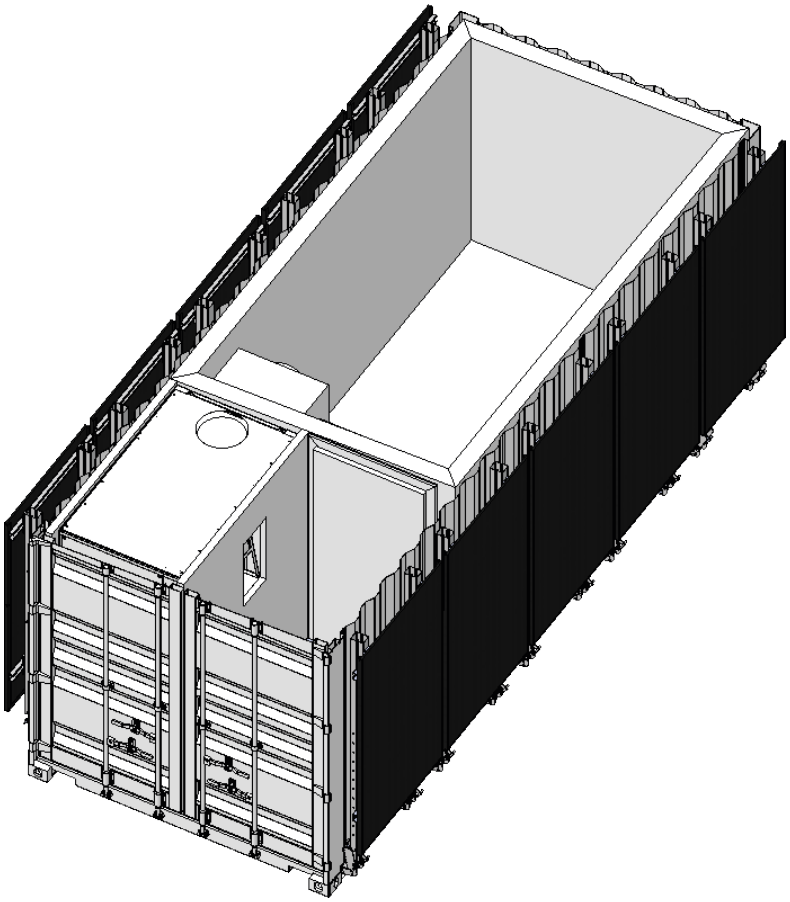
COMPATIBLE WITH

- *Compatible with solar kits **Power 1** and **Power 2***
- *See p.9*

The cold room

The cold room features airtight construction with walls insulated using rigid polyisocyanurate (PIR) foam, ensuring superior thermal efficiency. The cold room meets fire safety standards with a B-s1 d0 rating, offering a secure environment for temperature-sensitive storage needs.

SolarFrost works up to 55°C ambient temperature. You can choose for a refrigeration unit adapted for T1, T2 or T3 climate.



TECHNICAL DATA

COLD ROOM CHARACTERISTICS		
Cold room floor a ea	8 m²	
Available internal cold room dimensions (LxWxH)	381 cm x 201 cm x 207 cm	
Cold room insulation	140 mm thick polyisocyanurate (PIR)	
	Thermal resistance : R	6.85 m².K/W
	Fire resistance class	EI30
Technical room and entrance insulation	60 mm thick rock wool	
	Fire resistance class	EI60
Floor panel finis	Wear resistant (AC4) and slip-resistant (R10)	
Useful doorway	80 x 200 cm	
Strip curtain	Yes	
Conformity for sandwich panels	FM approved, CE	
REFRIGERATION UNIT		
Refrigerant	R513a	
Outdoor climate compatible options	Class T1, T2 or T3	
Defrost	Hot gas auto-defrost	
Type of compressor	hermetic Tecumseh	
Certificatio	CE	
Conformity	2006/42/CE Machinery Directive, 2014/35/EU Low Voltage Directive, 2014/30/EU EMC Electromagnetic Compatibility Directive, 2014/68/UE PED Directive	

Additionnal photovoltaïc kit for maximum power output

To best adapt to local climatic conditions and your energy needs, we suggest to add one of the following solar kits with solar panels on ground. Our technical team will be happy to help you configure your installation.

ADDITIONAL SOLAR POWER KIT SUPPLY (9 000 Wp included with a SolarFrost)			KIT POWER 1 : additional 1 800 Wp	KIT POWER 2 : additional 3 000 Wp
			2KTCF000001	2KTCF000002
MODEL	**Code**	**View**	**Quantity**	
PVMX-600M-XX	On demand		3	5
CS+ Console	520075-K		4	5
Console extension rail	460196		4	5
Kit Power 1 Associated wiring	2ACCF0001		1	
Kit Power 2 Associated wiring	2ACCF0002			1

PRODUCT LEAFLET

SolarFrost:

Click or Flash

Applications

Food&Beverage: SolarFrost is suitable for a wide range of applications including agriculture, horticulture, pisciculture, breeding event, restoration, distribution and other food and beverage needs. It offers precise temperature control tailored to the requirements of each crop, ensuring optimal storage conditions. With a flexible «pay as you store» model, users can rent cooling space on a daily basis, making it adaptable and cost-effective for varying storage needs.

VEGETABLES

FRUITS

FISH

MEAT

DAIRY PRODUCTS

BEVERAGES

Other possible applications

Pharmaceutical: SolarFrost can be used in pharmaceutical applications, particularly for storing medicines, vaccines, and other sensitive products. It can be deployed in remote areas, providing a reliable solution to preserve the quality of essential medical products.

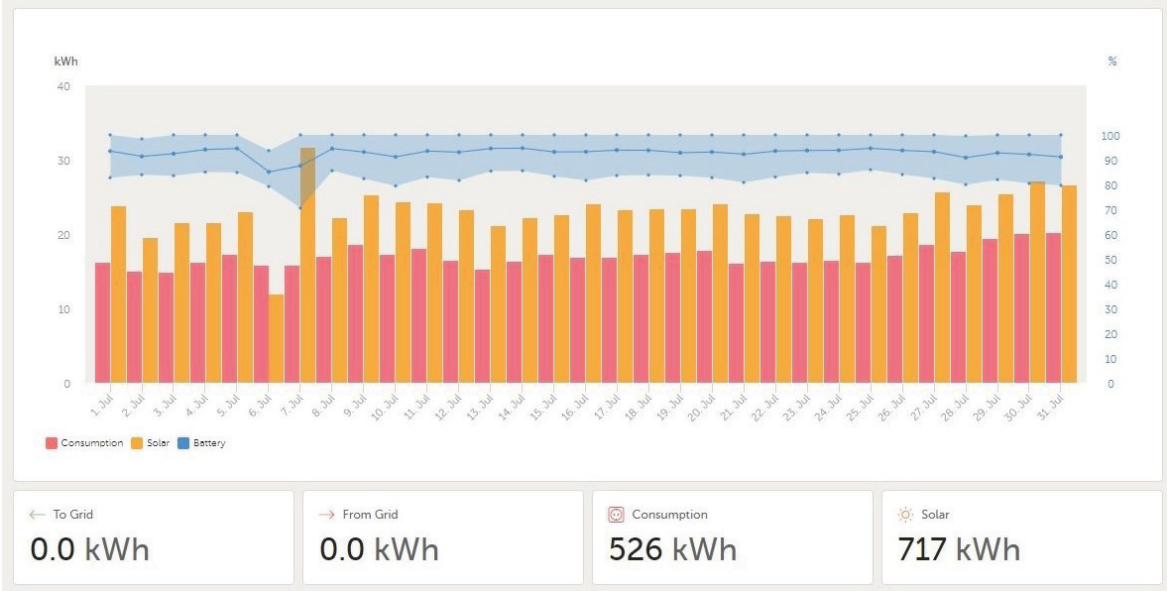
Military: Capable of maintaining precise temperatures to store both food and medicine as well as equipment, SolarFrost is ideal for military base camps. Its autonomous functionality allows it to operate effectively across diverse climate conditions, ensuring reliability in various military settings.

Humanitarian aid: SolarFrost is highly versatile, capable of rapid deployment for disaster relief, facilitating immediate storage of food and pharmaceuticals during floods, earthquakes, military conflicts, and other humanitarian crises. Its robust reliability ensures consistent performance, while its easy and fast transportability enhances its readiness for urgent deployment.

Connectivity and monitoring

Autonomy: SolarFrost can maintain the required temperature without the use of external power for approximately 42 hours, ensuring the preservation of stored goods at the required temperature.

Remote monitoring allows real-time oversight and management of the storage room's temperature and system performance from any location, providing timely alerts and data analysis. These features enhance the reliability and efficiency of the cold room, ensuring optimal storage conditions under varying circumstances.



For the design of the cold store, Airwell carefully applied a temperature mapping methodology. It involves systematically measuring and recording the temperature at various points within the storage space to ensure uniform cooling. This process identifies temperature variations and potential hotspots, ensuring that all areas maintain the desired temperature range for optimal storage conditions. Accurate temperature mapping is crucial for preserving the quality and safety of perishable goods stored within the facility.

PARTNERS & SUPPORTS

CEA Liten is a major European research and technology organization. Over the past two decades, they have become a key stakeholder in R&D for energy and the environment. Their research focuses on energy efficiency and the circular economy, addressing solar energy, batteries, hydrogen, and sustainable chemicals.

Made in Auvergne Rhône Alpes, SolarFrost is supported by its region through creation of partnerships and invitations to agricultural trade fairs in France, Morocco and the Ivory Coast.

Attached to the French Ministry of the Economy, Finance and Digital Sovereignty the General Treasury has awarded Airwell a grant to set up an autonomous solar powered cold room in Iraq and implement its Colling as a Service solution.

As a competitive cluster in the energy sector, Tenerrdis is creating relevant partnerships for Airwell to develop the project.

Cooling as a Service (CaaS)

The demand for cooling is rising. While you might consider opting for an inexpensive cooling system, these often come with hidden costs: higher operation expenses, increased electricity consumption, frequent breakdowns, and the need for repairs. In contrast, modern cooling technology is more cost-effective over its lifecycle due to its lower total cost of ownership. Additionally, innovative cooling systems provide higher indoor air quality and improved productivity.

How can you access a high-quality cooling system without straining your budget? It's simple: use cooling as a service ! In this model, the investor remain the owners of the equipment, and you only pay a usage fee based on your cooling needs. This fee includes maintenance, repairs, and running costs, so you only pay for your actual use. It's in the provider's best interest to install the most efficient technology and optimize operations and maintenance.

This approach, identified as the "Pay as You Store» model, fosters productive collaboration between providers, investors, and users of cooling systems. And the best part? You'll be contributing to a greener planet!

Partner

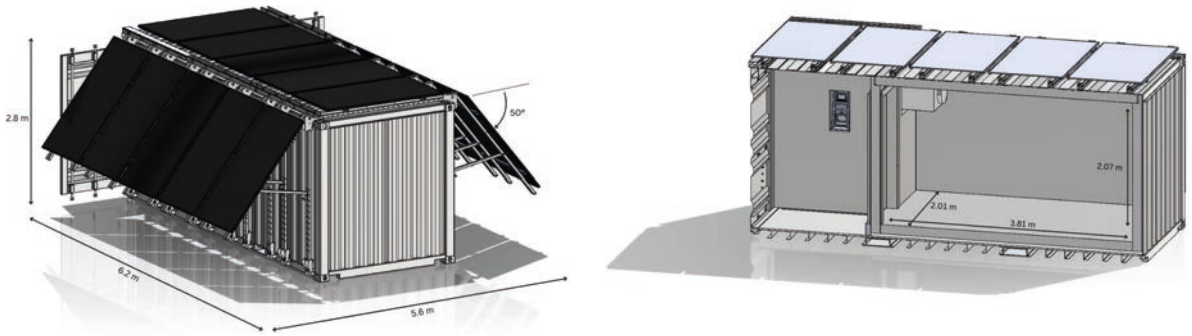
The **Basel Agency for Sustainable Energy** (BASE) combines expertise in technology, markets, economics, finance, and business development to deliver effective project solutions. BASE designed the application **Coldtivate**, an indispensable tool to settle a CaaS business model.

BASE

Coldtivate™

TOOL BOX

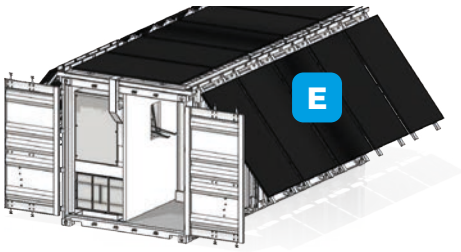
DIMENSIONS



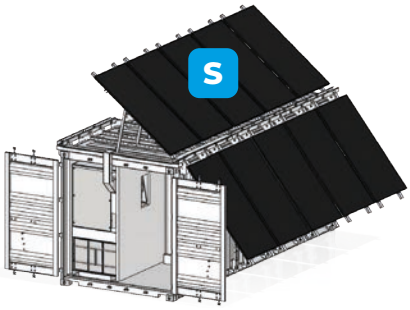
COMPOSE YOUR SOLARFROST

1 SELECT YOUR INITIAL ORIENTATION CHOICE (see p.5)

East & West
solar configu ation



South/North
solar configu ation



2 SELECT YOUR REFRIGERATION UNIT CLIMATE CLASS

Be aware that an oversized refrigeration unit (S selected for a T climate for exemple) will consume more energy and may lose autonomy.

Outdoor temperature range :

N	T	S
NORMAL Up to 38°C	**TROPICS** Up to 43°C	**SUPERTROPICS** Up to 50°C

3 SELECT YOUR COLOUR

0	1	2	?
ARCTIC WHITE	ARMY GREEN	SANDY DESERT	OTHER on demand

4 SOLARFROST DESIGNATION EXAMPLE

CFSA-020E-T004

Product number on demand : **2CFXXXXXX**

YOUR AFTER-SALES, TECHNICAL SUPPORT, ORDER SPARE PARTS CONTACT

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