SECOP

AC/DC COMPRESSORS FOR MEDICAL COLD CHAIN

SUSTAINABLE COOLING SOLUTIONS

Developed with you, customized for you.

Secop is your expert partner for advanced hermetic compressors, electronic controls, AC light commercial installations, DC mobile applications, and medical cold chain solutions.

Together with our customers, we develop high performance stationary and mobile cooling solutions, customized according to individual needs.

GREEN IS COOL

A complete range of sustainable and efficient cooling solutions

Designed to reduce energy consumption and carbon dioxide (CO_2) emissions, Secop solutions use state-of-the-art technology, such as variable speed compressors, as well as natural refrigerants (hydrocarbons – HC) to minimize the environmental and economic impact of commercial refrigeration.

A PARTNER YOU CAN TRUST

Robust design for commercial applications and proven track records of premium quality

Secop is committed to delivering advanced refrigeration compressors and controls, offering customers tailored sustainable solutions for light commercial, battery-driven, special cooling applications, and medical cold chain.

TOGETHER TO GET THERE

Application knowledge to support customers in system design and optimization with worldwide testing capabilities

Secop strives to be the first choice for partners seeking leading-edge refrigeration solutions and a premium customer experience. Our Sales and Application Team is always at hand to support customers in designing and engineering new, innovative solutions.

A PRESENCE MAKING THE DIFFERENCE

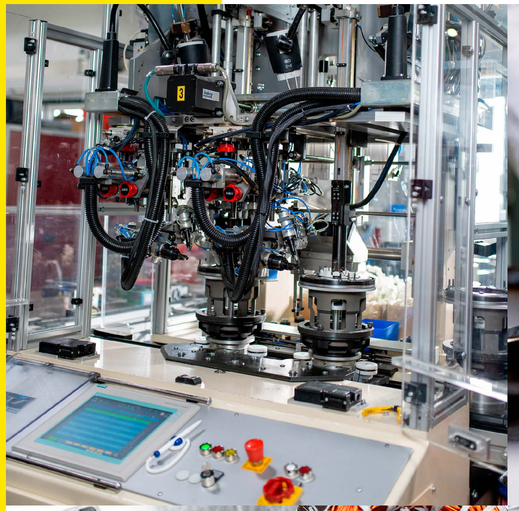
Sales and Customer Service team close to customers in every region

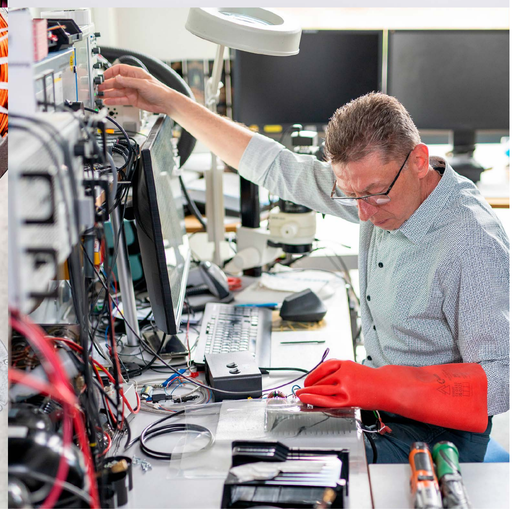
You will never work alone: our Sales and Customer Service team is ready to assist you from order to delivery, and to manage and quickly solve any problem may occur. Wherever you are, whatever you do.

BEYOND THE PRODUCT, BEYOND THE STANDARDS

We do it better because we do it together

At Secop, cooperation in designing, engineering, and testing the solution with the partner is the standard.
A proven combination of top quality and robust design guarantees reliable solutions.
A network of 33 specialized laboratories continuously researches and tests new solutions.
Our dedication to innovation, sustainability, and quality is recognized by prestigious international awards.





Committed to Quality Products

- Robust design with early risk control
- Capable, controlled manufacturing processes
- Comprehensive testing and validation excellence
- Traceable, qualified supply chain
- Closed-loop continuous improvement

Engineering & Design Excellence

- Extensive engineering know-how in the integrated design of mechanical, electrical, and thermodynamic systems
- Specialized R&D teams with a proven track record in developing high-performance stationary, mobile and medical cooling solutions

Leading-Edge Application Engineering

- Testing for customer's appliances
- Advanced trouble shooting
- System optimization support
- Support conversions to HC refrigerants
- System knowledge to support the introduction of variable-speed solutions

Advanced Electronics & Control Systems

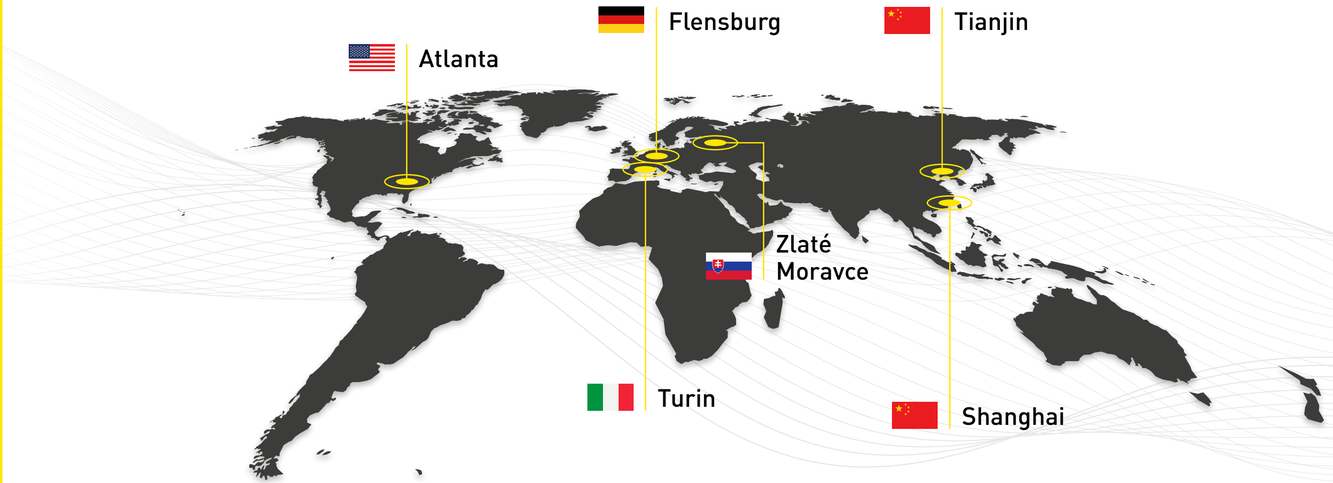
- Engineering mastery in motor design and advanced variable-speed control architectures
- In-house development of specialized inverter electronics and multi-voltage controllers
- Advanced simulation tools and data-driven design systems to support system reliability

International partners for advanced developments	Laboratories located in Germany, Slovakia, China, U.S.A., and Turkey	R&D engineers and technicians	Patents globally	Countries with customer support
12	33	150+	400+	50+

PREMIUM CUSTOMER SUPPORT

Sales team close to customers.
Support in 50+ countries.
Customer service in 10+ languages.
Application engineering local support.
Worldwide Distribution Network.

SECOP GROUP: AROUND THE WORLD



Flensburg: Sales, Application and R&D
Turin: Sales, Application and Marketing
Atlanta: Sales, Application and Logistics

Zlaté Moravce: R&D, Logistics, and Manufacturing
Tianjin: Sales, Application, R&D, Logistics, and Manufacturing
Shanghai: Sales, Application and Marketing

ENGINEERED MEDICAL COLD CHAIN SOLUTIONS

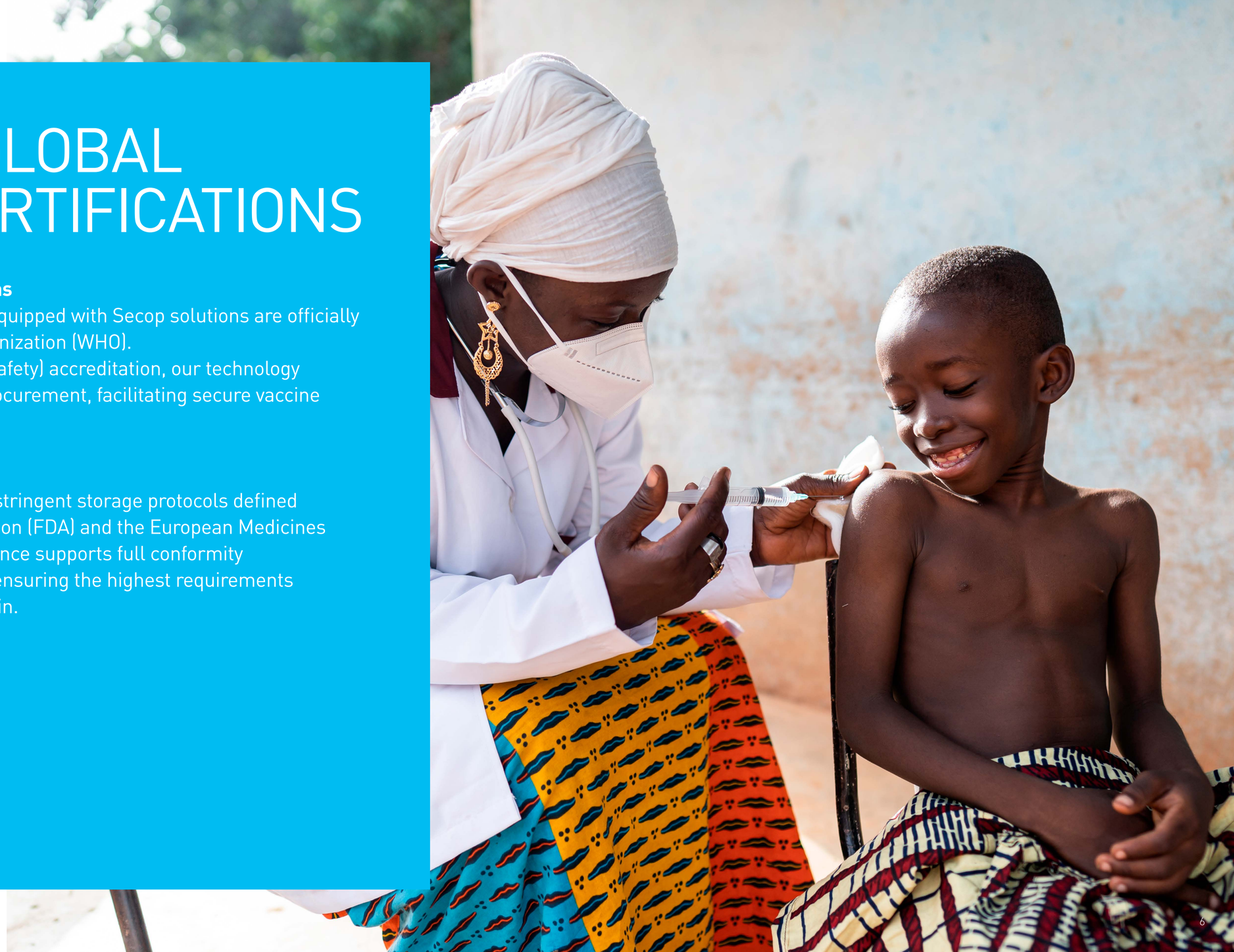
We provide a specialized portfolio developed and validated for medical applications, supporting partners with consolidated expertise in complex cold chain projects.

Our dedicated team assists customers worldwide in optimizing medical solutions for maximum efficiency, sustainability, and robustness in both stationary and mobile units.

ENABLING GLOBAL MEDICAL CERTIFICATIONS

Supporting WHO PQS certified systems
A wide range of medical applications equipped with Secop solutions are officially pre-qualified by the World Health Organization (WHO).
With PQS (Performance, Quality, and Safety) accreditation, our technology is validated for United Nations (UN) procurement, facilitating secure vaccine distribution worldwide.

International regulatory alignment
Our technology is engineered to meet stringent storage protocols defined by the U.S. Food and Drug Administration (FDA) and the European Medicines Agency (EMA). This validated performance supports full conformity with international medical standards, ensuring the highest requirements for safety and reliability in the cold chain.



DEDICATED DESIGN FOR ULTRA LOW TEMPERATURE

Uncompromising robustness
Engineered with specialized materials and refrigerants to support reliable operation under the extraordinary compression ratios required for temperatures down to -86°C.

Thermal stability
Advanced variable-speed controls minimize temperature fluctuations and reduce cycling stress, supporting the integrity of sensitive samples while extending the system's lifespan and lowering TCO.

SOLAR DIRECT DRIVE: OFF-GRID RELIABILITY

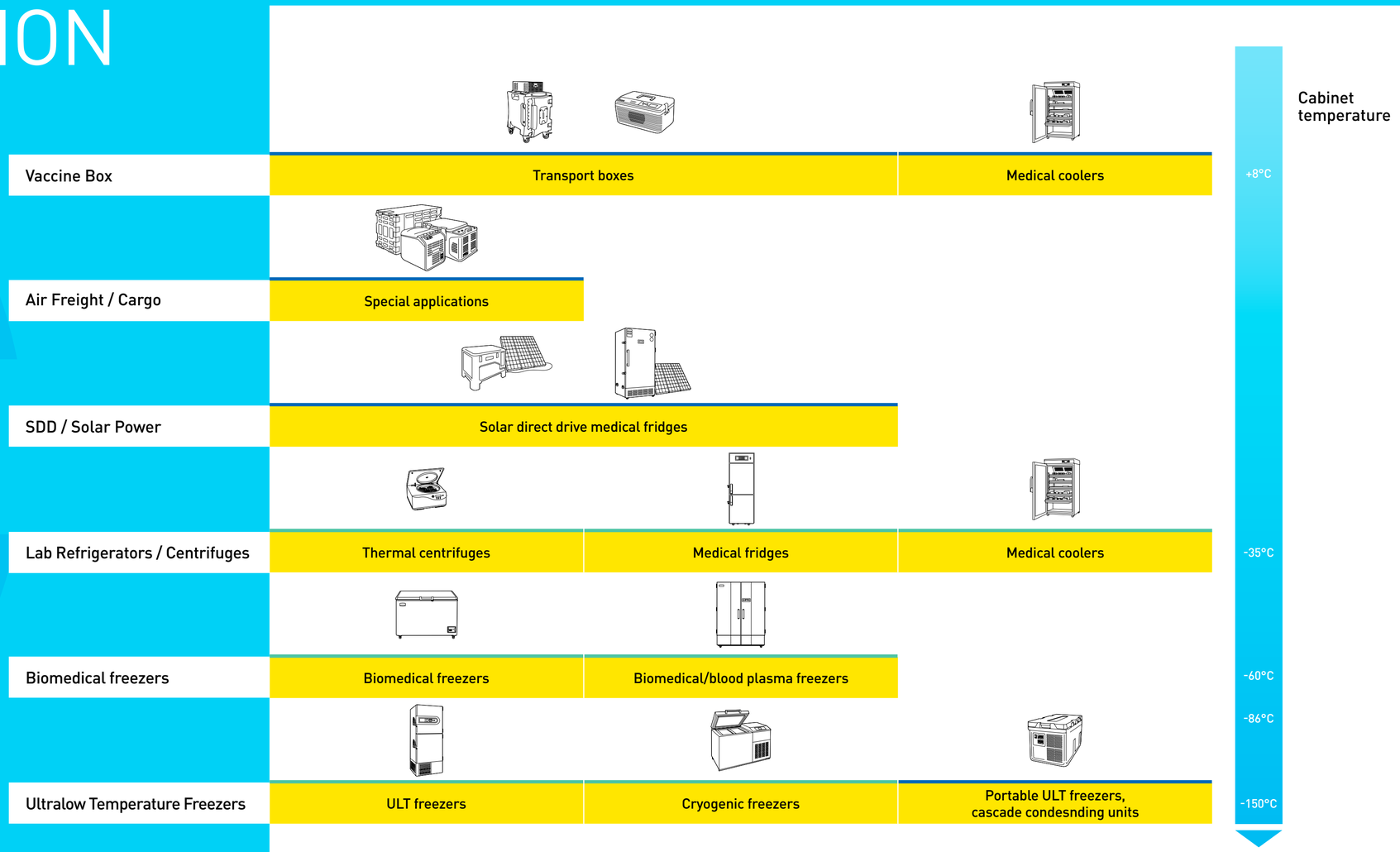
Battery-free innovation
Solar Direct Drive (SDD) technology utilizes solar energy directly, eliminating expensive battery components and providing a reliable solution for remote areas with unstable grid access.

Advanced energy control
Integrating Maximum Power Point Tracking (MPPT) and intelligent speed control, the SDD module maximizes solar harvest to ensure consistent cooling, even in severe ambient conditions.

Dual power versatility
The system natively supports dual DC/AC power functionality, providing seamless energy management and extreme reliability for off-grid and hybrid medical applications.

WHO prequalified immunization device
The Solar Direct Drive (SDD) Power Management Module has been granted WHO PQS prequalification by the World Health Organization.

APPLICATION MAP



PRODUCT PORTFOLIO

Cabinet temperature

+8°C -35°C -60°C -86°C

	Active cooling		Air Freight / Cargo	Battery Driven / Solar powered		Lab Refrigerators / Centrifuges			Biomedical freezers		Mobile ULT	Stationary ULT	
MP UV			■	■	■						■		
MB CKV	■	■		■	■								
KLF						■	■	■	■				
MN U/UV							■	■	■	■		■	
MS U/UV								■		■		■	■
MC CU* ULT											■		
SC CU* ULT												■	■

*CU: Condensing Unit

PRODUCT PORTFOLIO

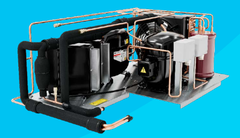
Medical Compressors for Biomedical and ULT Freezers.

MB

MP

MN U

MS



Storage CU* ULT

Transport CU* ULT

Sub Platform	Applications Evap. Temp. Range	Displacement (cm³)	Cooling Capacity (W)	Test Conditions	Refrigerants
		0 35	0 1000		HC
MB CKV	Solar Powered Vaccine Refrigerators **-30 to 5 °C**	2.6	66 - 131	ASHRAE MBP	R600a
MN U	Biomedical Freezers **-30 to -60 °C**	11.15 - 12.55	245 - 538	EN 12900 LBP	R290
MS U	Biomedical Freezers **-30 to -60 °C**	17.69 - 20.95	316 - 657	EN 12900 LBP	R290
MP UV	Ultra-Low Temperature Freezers **-60 to -90 °C**	2	26.7 - 47	pe=-90° DC=-35° Tsuc= 20° Tlio=-35° Tamb=32.2°	R170 R290 R1270
MN UV	Ultra-Low Temperature Freezers **-60 to -90 °C**	11.15 - 12.55	182 - 397	De=-90° Dc=-35° Tsuc=20° Tlig=-35° Tamb= 32. 2°	R170 R290 R1270
MS UV	Ultra-Low Temperature Freezers **-60 to -90 °C**	17.69	234 – 477	De=-90° Dc=-35° Tsuc=20° Tlig=-35° Tamb= 32. 2°	R170 R290 R1270
Transport CU* ULT	Ultra-Low Temperature Freezers **-60 to -90 °C**	2	26.7 – 47	De=-90° Dc=-35° Tsuc=20° Tlig=-35° Tamb= 32. 2°	R170 R290 R1270
Storage CU* ULT	Ultra-Low Temperature Freezers **-60 to -90 °C**	17.69	234 – 477	De=-90° Dc=-35° Tsuc=20° Tlig=-35° Tamb= 32. 2°	R170 R290 R1270

*CU: Condensing Unit

MEDICAL DC RANGE

BD Compressors: Safe, solar medical transport, low CO_2 emission, prevents waste.

Reliable global DC transport
Secure transport of sensitive biomedical goods, ensuring reliability for critical applications in movement.

Universal AC/DC flexibility
Dual AC/DC operation for flexibility across mobile transport and stationary clinical storage.

Solar Direct Drive (SDD) ready
Direct solar-powered cooling via integrated controls for operations in areas without stable electricity grids.

Sustainable active cooling
Reduces vaccine waste and CO_2 emissions by replacing dry ice with active compressor cooling.

ULT mobile cooling
The MP2UVULTM utilizes R170 and variable-speed technology for Ultra-Low Temperatures in portable units.

Advanced cascade system integration
Supports two-stage, speed-controlled cascade systems for the lowest temperature ranges in medical transport.

Sub Platform	Applications Evap. Temp. Range	Displacement (cm³)	Cooling Capacity (W)	Test Conditions	Refrigerants	
	0 10	0 300	0 500		HC/HFO	HFC
MB CKV	1.42 - 2.6	28 - 69	62 - 131		R600a	
MP UV	Ultra-Low Temperature Freezers **-60 to -90 °C**	2	26.7 - 47	pe=-90° DC=-35° Tsuc= 20° Tlio=-35° Tamb=32.2°	R170 R290	

Applications

Air Freight / Cargo | Battery Driven / Solar powered | Mobile ULT

Designed for

Natural Refrigerantes | Electronically controlled | Ultra low temperatures

SOLAR DIRECT DRIVE MODULE

Tailored for Vaccine Refrigerators to WHO PQS Specifications

WHO PQS compliance
Meets WHO PQS E007/VS0 1.6 specifications for voltage stabilization. Supports standard requirements for global vaccine refrigerator manufacturing.

Solar optimization (MPPT)
Integrated MPPT algorithm adjusts compressor speed based on solar intensity to optimize energy yield from PV panels.

Dual Power & Weak Grid
Manages direct DC (solar) and unstable AC (85 V – 264 V). Wide operating range eliminates the need for external voltage stabilizers.

Protection & robustness
IP60 housing and EMI shielding. Integrated safeguards protect against AC voltage fluctuations and electrical component damage.

System integration
Single compressor solution for both AC and solar applications. Reduces design complexity and accelerates time-to-market.

Auxiliary output
Dedicated 24 V DC output for data loggers and monitoring systems. Fulfils cold chain requirements for data tracking.

Sub Platform	Applications Evap. Temp. Range	Displacement (cm³)	Cooling Capacity (W)	Test Conditions	Refrigerants
		0 35	0 1000		HC
MB CKV	Solar Powered Vaccine Refrigerators **-30 to 5 °C**	2.6	66 - 131	ASHRAE MBP	R600a

Applications

Active cooling

Battery Driven / Solar powered

Designed for

Photovoltaic power supply

WHO

MEDICAL FSD AC RANGE

Hermetic Refrigeration Compressors for AC Voltage

- Fixed-speed variants
- Ultra-low temperature models available

Medical cold chain robustness
Proven design for reliable cooling equipment operation.
Facilitates the integrity of stored assets in hospital and laboratory environments.

Temperature stability
Precise temperature control for the preservation of vaccines and medical goods across various ranges (from 2°C down to -86°C).

WHO Certified Applications
Integrated into WHO prequalified equipment.
Aids the development of global ULT supply chains for vaccines and medical samples.

Long Lifecycle & Low Tco
Engineered for reliable, long-lasting systems.
Contributes to reduced maintenance requirements and lower Total Cost of Ownership (TCO).

Sub Platform	Applications Evap. Temp. Range	Displacement (cm³)	Cooling Capacity (W)	Test Conditions	Refrigerants
		0 – 35	0 – 1000		HC
KL-Series	Vaccine Refrigerators **-30 to 5 °C**	2.6	66 - 131	ASHRAE MBP	R290
MN U Series	Biomedical Freezers **-30 to -60 °C**	11.15 - 12.55	245 - 538	EN 12900 LBP	R290
MS U Series	Biomedical Freezers **-30 to -60 °C**	17.69 - 20.95	316 - 657	EN 12900 LBP	R290

Applications

Lab Refrigerators / Centrifuges | Biomedical freezers | Stationary ULT

Designed for

Natural Refrigerantes | Electronically controlled | Ultra low temperatures

MEDICAL VSD AC RANGE

Hermetic Refrigeration Compressors for AC Voltage

- Variable-speed variants available
- Ultra-low temperature models available

Variable-speed control

Modulates capacity to achieve flexible cooling and energy savings. Reduces frequent on/off cycling, limiting the primary cause of wear in traditional fixed-speed systems.

Advanced safety electronics

Features fire-proof IP54 housing, PCB coating, and galvanic isolated I/Os. Includes Adaptive Energy Optimization (AEO) to improve energy efficiency.

Universal electronic platform

Multi-voltage controllers support global requirements (90–270 V, 50–60 Hz). A single electronic variant simplifies product development, logistics, and inventory.

GFCI compatibility

Low touch current design ensures compatibility with Ground Fault Circuit Interrupter (GFCI) systems. Meets North American safety standards for medical environments.

Sub Platform	Applications Evap. Temp. Range	Displacement (cm³)	Cooling Capacity (W)	Test Conditions	Refrigerants
		0 – 35	0 – 1000		HC
MN UV Series	Ultra-Low Temperature Freezers **-60 to -90 °C**	11.15 - 12.55	182 - 397	De=-90° Dc=-35° Tsuc=20° Tlig=-35° Tamb= 32. 2°	R170 R290 R1270
MS UV Series	Ultra-Low Temperature Freezers **-60 to -90 °C**	17.69	234 – 477	De=-90° Dc=-35° Tsuc=20° Tlig=-35° Tamb= 32. 2°	R170 R290 R1270

Applications

Lab Refrigerators / Centrifuges | Biomedical freezers | Stationary ULT

Designed for

Electronically controlled | Ultra low temperatures

ULT STORAGE AND TRANSPORTATION

Condensing units engineered to reach ULT temperatures even in extreme conditions.

Cascade CU* for green refrigerants
Two-stage solution with MS18UVULTM compressors (R170/R290). Supports stationary ULT performance with optimized energy consumption.

Layout and component design
Baseplate arrangement facilitates cooling of compressors and controllers. Supports operational loads in elevated ambient temperatures.

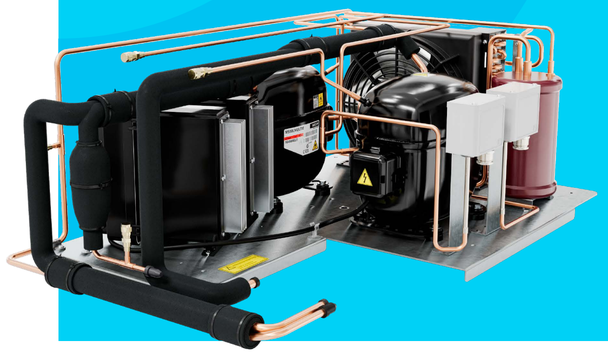
Multi-voltage & sustainability
Utilizes Ethane (R170) and Propane (R290) for performance and regulatory compliance across multiple voltages.

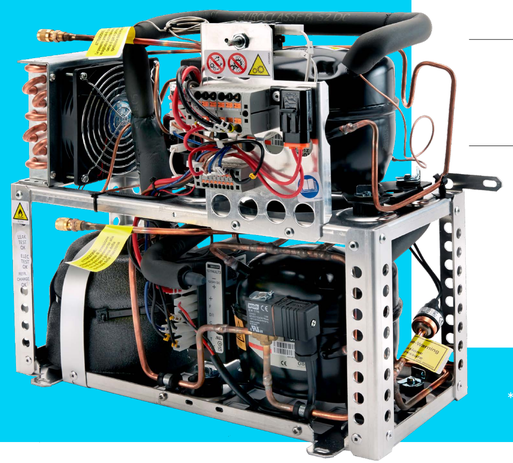
Automated active mobile solution
Battery-powered, two-stage speed-controlled cascade. Designed for independent transport and storage applications.

Extreme performance
Supports -20°C to -86°C range. Designed for mobile operation in challenging environments, including tropical conditions (43°C).

Sustainable dry ice alternative
Active systems replace the need for dry ice and are reusable. Contributes to lower vaccine waste and CO_2 emissions versus passive solutions.

Sub Platform	Applications Evap. Temp. Range	Displacement (cm^3)	Cooling Capacity (W)	Test Conditions	Refrigerants
		0 – 35	0 – 1000		HC
Transport CU* ULT	Ultra-Low Temperature Freezers **-60 to -90 °C**	2	26.7 – 47	De=-90° Dc=-35° Tsuc=20° Tlig=-35° Tamb= 32. 2°	R170 R290 R1270
Storage CU* ULT	Ultra-Low Temperature Freezers **-60 to -90 °C**	17.69	234 – 477	De=-90° Dc=-35° Tsuc=20° Tlig=-35° Tamb= 32. 2°	R170 R290 R1270





Applications

Mobile ULT | Stationary ULT

Designed for

Natural Refrigerantes | Electronically controlled | Ultra low temperatures

*CU: Condensing Unit

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