MetaFridge®
VACCINE REFRIGERATION

Mains and Solar Direct Drive Vaccine Refrigerators

Manufactured with MetaFridge technology to provide reliable performance in a wide range of power conditions

MetaFridge Technology

MetaFridge mains powered and solar direct drive refrigerators combine several new innovations to provide safe vaccine storage and multi-day holdover in every type of environment. From urban areas with reliable or unstable mains power to remote and off-grid locations where only solar power is available, MetaFridge delivers dependable performance in clinic and hospital settings all over the world.

The MetaFridge CFD-50 and CFD-50 SDD models and integrated technologies are PQS prequalified by the World Health Organization (WHO).

30 DTR Display and Holdover
Shows the storage temperature and the estimated number of days the unit will stay cold without power.

Vaccine Storage Chamber
The front-opening 50 L vaccine storage chamber comes equipped with adjustable racks and vaccine trays.

CFD-50 SDD Power Outlets
Enable health workers to utilize extra power generated by solar panels to charge phones and operate lights and other equipment.

COLDSAFE™ TECHNOLOGY

Maintains stable storage temperature and multi-day cold holdover with minimal power utilization, keeping vaccines safe during power outages and cloudy periods.

- Uses a novel, patented thermosyphon to provide passive and uniform cooling
- Keeps vaccine chamber temperatures stable between 2 and 8 °C
- Provides 5+ days of holdover at sustained ambient temperatures of 43 °C, and longer at lower ambient temperatures
- Never exposes vaccines to freezing temperatures

CONTINUOUS MONITORING, REPORTING AND ALERTS

An integrated electronic monitoring system tracks and records performance data, enabling health workers, technicians, and supervisors to make informed decisions about maintenance and operational issues.

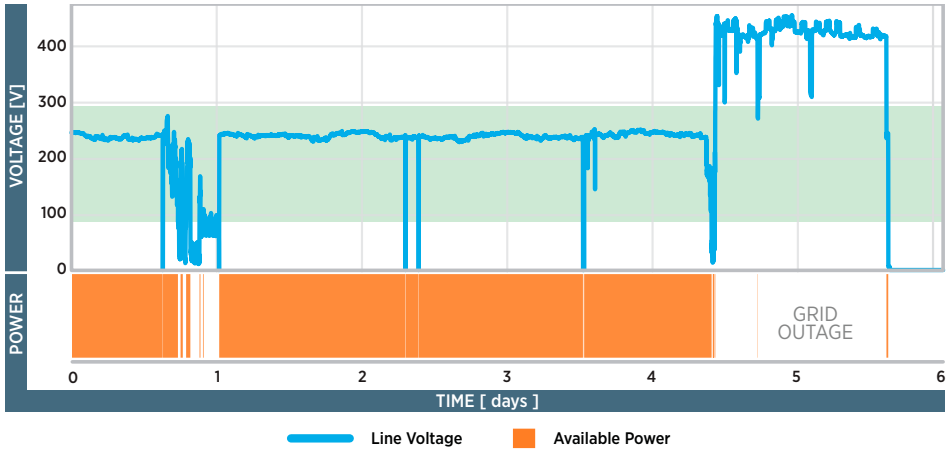
- Provides visual and audible alarms for temperature excursions, improperly closed doors and low holdover time
- Integrated sensors enable smart control to maximize holdover and self-diagnoses of issues
- Integrated 30 DTR records and displays 30-day temperature logs and alarm history
- Optional remote performance monitoring module enables cloud-based web dashboard and can send email or SMS alerts

SMART PHYSICAL DESIGN

- Front opening for easy access
- Includes vaccine trays
- Robust structure protects internal components
- Sturdy handles allow for easy transport
- Integrated plastic base prevents corrosion
- Tough grating prevents damage caused by rodents

INTEGRATED POWERMINDER™ PROTECTION

- Disconnects from power spikes and rapidly fluctuating voltage before damage can occur
- Accepts a wide range of input voltages
- Eliminates dependence on separately purchased external power protection and voltage stabilization devices



For more information visit www.metafridge.org

Mains Powered

RELIABLE REFRIGERATION IN UNRELIABLE POWER CONDITIONS

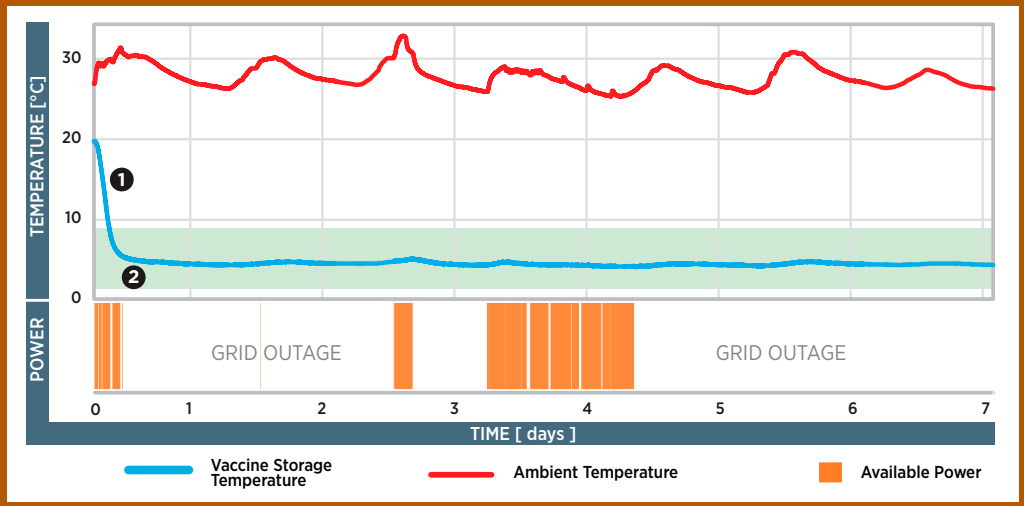
COLDSAFE TECHNOLOGY FOR MAINS POWERED ENVIRONMENTS

- Keeps vaccines at stable 2 to 8 °C with minimal power use (0.57 kWh/day at 43 °C ambient, 0.30 kWh/day at 25 °C ambient)
- Cools down to stable storage temperature and builds up 2 days of holdover after 6 hours of continuous power
- Operates normally on 3 hours of power per day at 43 °C; less at lower ambient temperatures

INTEGRATED POWERMINDER PROTECTION AND VOLTAGE STABILIZATION

- Accepts voltages from 82-290 V, 50/60 Hz
- Detects when line voltage is outside the compressor's operating range and converts to a safe and efficient voltage

STABLE TEMPERATURE DURING INTERMITTENT POWER



1 Vaccine chamber temperature reached 2-8°C within 4 hours of installation.

2 After 6 hours of power, unit built up multiple days of holdover and continued to operate within range despite multiple power outages over subsequent days.

MetaFridge CFD-50 units are currently installed in several African countries, providing reliable vaccine storage in health facilities that experience erratic voltage supply and extended power outages. Early units have all been equipped with remote performance monitoring.

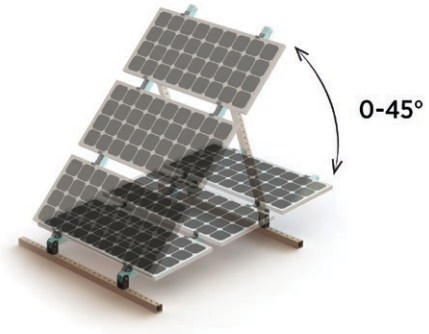
- Units are operating in both urban and remote areas
- Units operating in moderate ambient temperatures in East Africa averaged 1 hr/day of compressor run time and consumed 0.25 kWh/day of power
- Units frequently maintain holdover through 5- to 7-day power outages, and in some cases have exceeded 10 days of holdover without power

Solar Direct Drive

UNIVERSAL REFRIGERATION

DESIGNED FOR RELIABILITY AND FLEXIBILITY

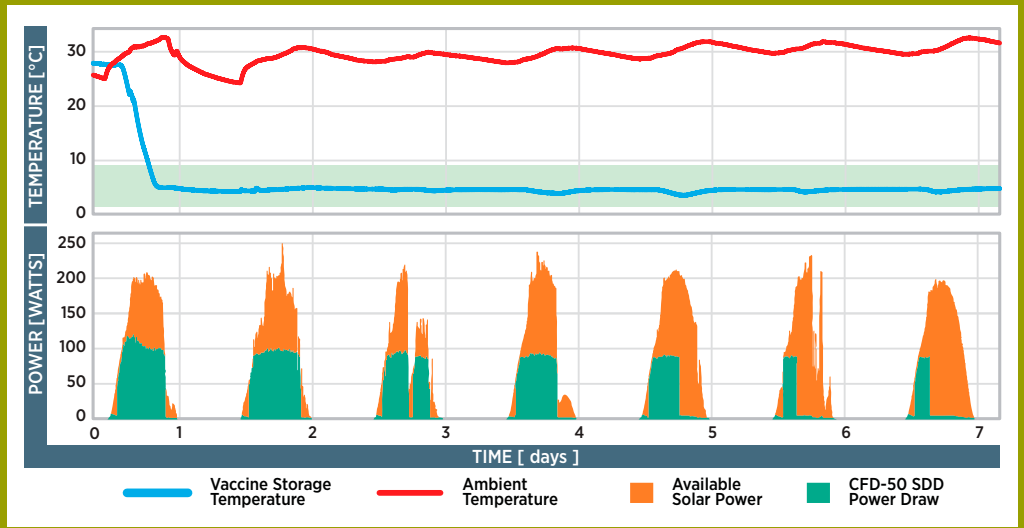
- Provides reliable solar-powered vaccine storage for health facilities without reliable mains power
- Includes integrated AC input with PowerMinder protection and voltage stabilization (input range 90-290 V) for complete power flexibility
  - Solar input is prioritized when both solar and AC are connected
- Universal PV mounting kit includes 3x100 W PV modules and universal (roof, pole, or ground) PV mounting rack and hardware with 20 m cable and 1.5 m ground rod
- Integrated energy-harvesting capability uses extra solar energy to supply power to accessories
  - Outputs include 12 V (2 A), 2x5 V USB (1 A), and 3-18 V (8 A) defined load output



COLDSAFE TECHNOLOGY FOR SOLAR DIRECT DRIVE ENVIRONMENTS

- Offers 5+ days of holdover during periods of inadequate or no sunlight
- Efficient design allows reliable operation with only 300 W PV panels

SIX-HOUR COOL DOWN AND ENERGY HARVESTING



In good solar conditions, CFD-50 SDD vaccine storage temperature cooled to <8° C within 6 hours of installation, and reached full holdover after 5 days. Orange-shaded areas show extra energy that is available through the energy harvesting power outlets.

MetaFridge CFD-50: Mains Powered

MetaFridge CFD-50 SDD: Solar Direct Drive

The first two MetaFridge products are the 50 L mains powered CFD-50 and solar direct drive CFD-50 SDD. Both CFD-50 models are manufactured by Qingdao Aucma Global Medical Co., Ltd.

MetaFridge CFD-50, CFD-50 SDD, 30 DTR, voltage stabilizer, and energy harvesting systems are all PQS prequalified by the World Health Organization (WHO).

For more information about MetaFridge Technologies, visit metafridge.org or contact info@metafridge.org.

Expanding Access to Healthcare Technology

Global Health Labs (GH Labs) is a nonprofit organization. We build tools and technologies to address unmet needs in primary healthcare centers and last-mile service delivery in low- and middle-income countries around the world. The development of MetaFridge vaccine refrigeration technology is supported by GH Labs.

GH+ Labs

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