

# Vaccine Cold Chain

[www.dulassolar.org](http://www.dulassolar.org)



# Keeping your Vaccines Safe

Our new range incorporates knowledge acquired over thousands of installations across the globe. We have considered every possible requirement to ensure our range is robust, easy to use and dependable.

## Solar Direct Drive (SDD)

All our SDD vaccine refrigerators work from solar panels without the need for batteries.

## Freeze-free® Technology

Dulas products have Grade A User-independent Freeze Protection (UIFP).

## Autonomy

With long lasting autonomy on all refrigerators, you can rely on Dulas products to keep your vaccines safe.

## WHO PQS accredited

Dulas SDD vaccine refrigerators exceed the stringent World Health Organisation PQS standards which mean you can rely on their performance, quality and safety.

## Temperature Stability

Our vaccine refrigerators are hot zone rated which means they will operate at a stable +2 °C to +8 °C in an extended ambient operating range of +5 °C to +43 °C.

## Plug and Play

All Dulas systems are designed for ease of use in challenging environments.

## British Made

Manufactured in our factory in Bognor Regis, we supply the only British made WHO accredited refrigerators available.

# Dulas Assurance

**10 Year Warranty** All Dulas products come with a three year manufacturer's warranty as standard. An extended ten year warranty is also available which offers all our customers long term assurance.

**Long Life Products** Renowned for their quality and reliability, the Dulas range of refrigerators are built to perform effectively in challenging environments over long periods of time.

**Total Cost of Ownership** Dulas' fully CCEOP compliant range of solar direct drive refrigerators and freezers are designed to be the most reliable vaccine and blood storage solutions available on the market today. They offer excellent total cost of ownership (TCO) and best in class waterpack freezing performance.

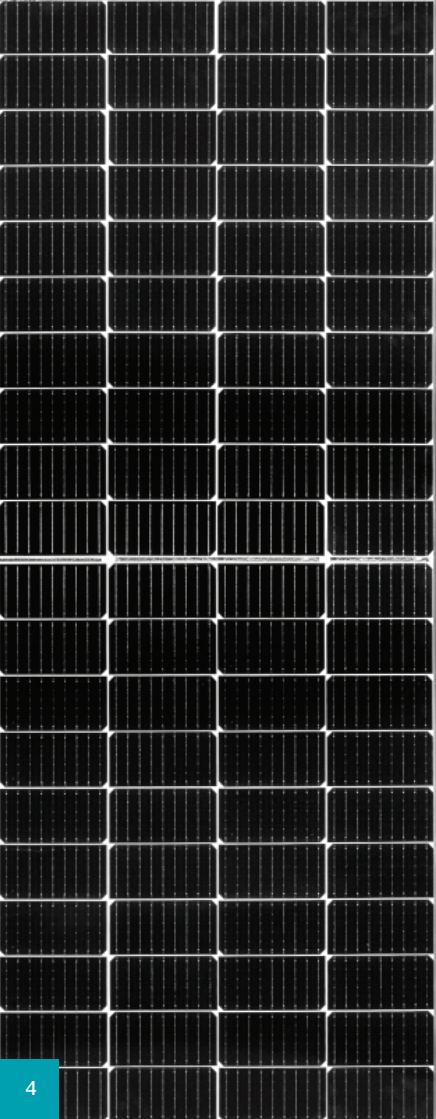
**365 Days of Cold** Dulas has designed the SDD range to be the most reliable providers of cold space possible. With the optimal balance between solar array size and refrigerator autonomy Dulas refrigerators are designed to deliver perfect vaccine storage conditions every day, every year, whatever the weather.

**Cold Chain Training** We provide excellent quality training for cold chain technicians ensuring they are confident and competent to use, maintain and install solar powered equipment.

**Partner Network** With fully trained and accredited partners around the world we can offer in-country support to deliver, install and maintain your life-saving projects.



A healthcare professional in Togo using the Dulas VC50SDD solar refrigerator for vaccine storage.



# Solar Direct Drive – Battery Free Innovation

## PCM energy store

Dulas refrigerators use an advanced non-corrosive phase change material (PCM) for the energy store. This unique liquid freezes and thaws at exactly +5 °C. With an almost infinite cycle life and no requirement for supercooling, it is an ideal PCM for the cold chain.

## 100% Battery-free

The internal PCM store cannot be damaged by over discharging or charging of the system. With its long cycle life there is no need to replace this energy store.

## Widest range of solar operating conditions

To provide the high level of performance our customers expect, Dulas has developed an all new intelligent variable speed controller. This allows a single compressor to start with less than 50 W of power available from the solar array. Using our standard 400 Wp array, the refrigerator will operate with just 125 W/m<sup>2</sup> of solar radiation available. Extensive computer modelling shows that using our controller significantly extends the usability window of our SDD refrigerators, making them much more resilient in low sun conditions.


**Using a PCM lining with a +5 °C phase change point ensures that no surface inside the vaccine compartment ever drops below freezing.**


# SDD Refrigerators


The Dulas Solar Direct Drive refrigerators use advanced phase change material (PCM) to maintain a constant vaccine storage temperature. When the sun shines, energy is stored in the PCM. At night or on cloudy days the PCM slowly melts, maintaining a stable temperature, perfect for storing vital vaccines.


Our British made SDD refrigerators guarantee 365 days of cold with a complete range of sizes available to meet your requirements.




 Grade A, Freeze-free®

 Plug and Play System

 Heavy duty Castors

 In-built handle with Lock

 R600a Refrigerant

**Dulas refrigerators now come with an integrated Beyond ICE3 device fitted at no additional cost. Applying RTM technology is a simple way to improve the reliability of cold chain equipment, enhance maintenance and ensure fewer vaccines are spoiled. Subscription can be activated at purchase, or switched on remotely at any point after commissioning the refrigerator.**

## VC50SDD:

- 52.5 litre Vaccine Storage
- E003/078: WHO PQS
- 1 Basket
- 74 h 15 min Autonomy
- 260 Wp min Solar Array

## VC88SDD:

- 88 litre Vaccine Storage
- E003/059: WHO PQS
- 4 Baskets
- 78 h 09 min Autonomy
- 400 Wp min Solar Array

## VC110SDD:

- 110 litre Vaccine Storage
- E003/058: WHO PQS
- 5 Baskets
- 78 h 09 min Autonomy
- 400 Wp min Solar Array

## VC200SDD:

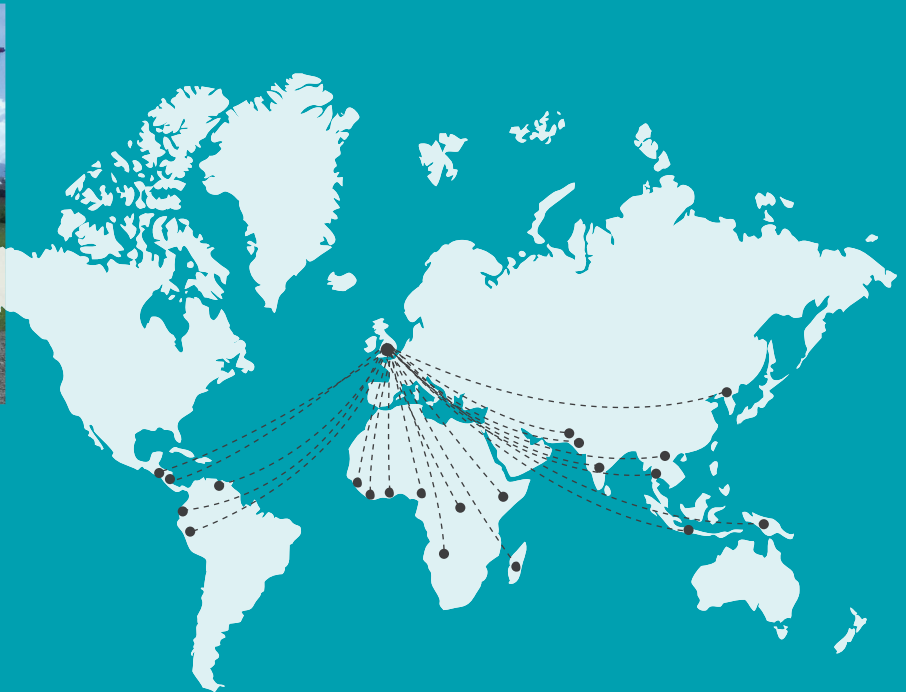
- 132 litre Vaccine Storage
- E003/040: WHO PQS
- 6 Baskets
- 79 h 29 min Autonomy
- 400 Wp min Solar Array





# Logistics Expertise

The logistics team at Dulas is committed to ensuring that your goods arrive on time and in perfect condition. Our experienced and friendly team will handle the processing and export logistics to any destination in the world. Personalised service ensures you will get frequent updates on your order progress and our carefully developed packaging system is specified and tested to protect your precious equipment against the rigours of transportation. Our team responds quickly to emergencies following in-country disasters.



“With a long history of working with Dulas, our expertise in export packing solutions gives you complete peace of mind that your precious cargo will arrive at its destination safely.”

**Operations Director,**  
Rowlinson Packaging Ltd

# SDD Combined Refrigerator/Freezers

Taking all the great features of the SDD refrigerator and adding a dedicated water pack freezer, our combined fridge/freezer models solve the outreach challenge.

Both the VC60SDD and VC150SDD are designed to deliver 4 x 0.6L fully frozen water packs every day, keeping them fully frozen overnight so that they are ready to use the next morning. For easy and reliable water pack freezing, simply add the water packs in the morning and by the end of the day they will be frozen.



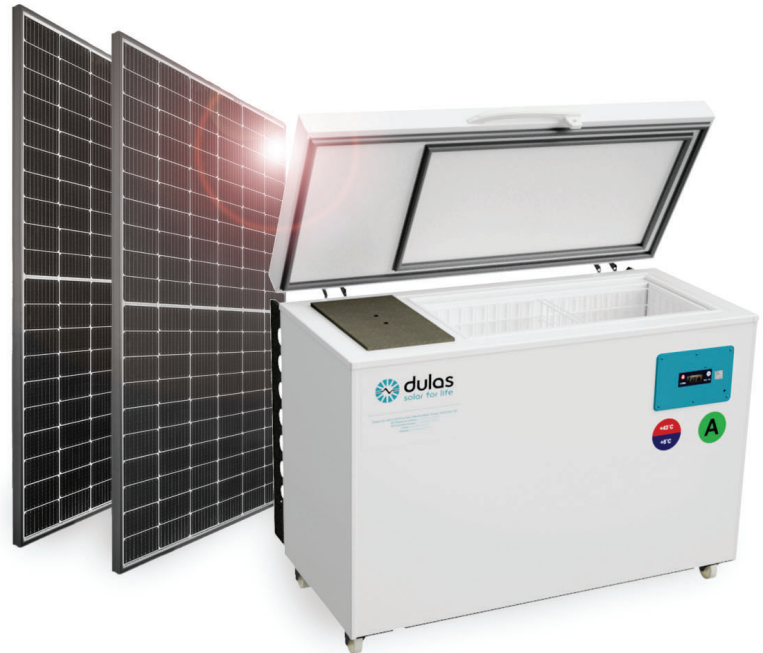
## VC60SDD:

- 57 litre Vaccine Storage
- 23 x 0.6 litre Water Pack
- E003/084: WHO PQS
- 4 Baskets
- 82 h 48 min Autonomy
- 600 Wp min Solar Array

## VC150SDD:

- 102 litre Vaccine Storage
- 20 x 0.6 litre Water Pack
- E003/048: WHO PQS
- 6 Baskets
- 77 h 57 min Autonomy
- 600 Wp min Solar Array

Independently verified to deliver fully frozen water packs even at +43 °C ambient, making it easier to plan outreach activities.





## Training

At Dulas, we equip our clients not only with the tools for success, but also the knowledge to sustain lasting change. We are committed to developing technology for use in remote regions across the globe, and to supporting those facing obstacles created by economic or political factors, natural disasters, or lack of existing infrastructure.

Our in-country and online solar refrigeration training covers the complete range of Dulas solar cold chain products. This commitment includes our work in technology transfer and building in-country capabilities.

## Global Partner Network

With fully trained and accredited partners around the world we can offer in-country support to deliver, install and maintain your life-saving products. By using our certified partner network, your project will be installed by knowledgeable, highly trained technicians who are committed to provide the best installation and customer service.







# Mains Powered ILR Refrigerator


Bringing Freeze-free® technology to mains powered refrigerators, our VC225ILR is the largest Hot Zone rated next generation 'icelined' refrigerator. With the water ice lining replaced with PCM we are able to offer an ILR with no vaccine freeze risk.

At 184.5 litres capacity the VC225ILR is ideal for larger health facilities and is supplied with a dedicated power regulator & voltage stabiliser.




 Grade A, Freeze-free®

 Plug and Play System

 Heavy duty Castors

 In-built handle with Lock

 R600a Refrigerant

A bespoke design for use in the cold chain - the result of over 40 years' experience in supplying refrigerators to the most remote corners of the earth.



## VC225ILR:

- 184.5 litre Vaccine Storage
- E003/072: WHO PQS Ref
- 6 Baskets
- 94 h Holdover



# Dulas Beyond Integrated Temperature Monitoring Device

Dulas refrigerators are now Beyond ready! With an integrated Beyond ICE3 temperature monitoring device fitted to all Dulas refrigerators at no additional cost.

- Alarm Indicators
- Temperature Display
- Easily readable LCD screen



- Scannable QR code for instant reports
- User Friendly dashboard



Dulas refrigerators are ready to seamlessly integrate into your existing cold chain monitoring strategy using one of the world's most advanced remote temperature monitoring devices.

## Optional Extra


Available as an annual subscription, the BeyondColdCloud™ provides real-time visibility of your entire cold chain in one easy to use portal. This cloud based cold chain management solution provides a constant view of your temperature sensitive assets installed anywhere around the globe. Sending critical alerts to the right people at the right time ensures that temperature deviations do not degrade or destroy temperature sensitive products.


# Bloodbank Refrigeration


Bringing Dulas's latest SDD innovation in cold chain refrigeration to the blood chain, the VC200SDD-B is a bespoke design suitable for storing blood products.


The high energy density of the PCM lining means rapid cooling and the ability to run in cloudy, low light conditions resulting in greater reliability than other battery free solutions.




 Grade A, Freeze-free®

 Plug and Play System

 Heavy duty Castors

 In-built handle with Lock

 R600a Refrigerant

The VC200SDD-B is fitted with integrated Beyond display with audible and visual alarm functions, 120 day local data storage and 30 day PDF reports via QR code.



## VC200SDD-B:

- 120 x 280ml Blood Bags
- 5 Baskets
- 400 Wp min Solar Array





# Cold Chain Experts since 1982

Dulas has provided solar powered solutions to remote and off-grid locations for four decades. Among many of the pioneering products developed in the early days was the innovative solar powered vaccine refrigerator, a product we continue to improve and export to thousands of locations worldwide. Over time, Dulas has worked closely with many UN organisations, Governments, charities and the World Health Organisation to develop products that meet stringent Performance, Quality and Safety standards (PQS).

Our work developing the very best systems for the global cold chain has helped to bring much needed energy and better standards of living to many communities across the world. We continue to innovate, developing and improving our portfolio of products, taking research from the field and adding to it a cocktail of experience and engineering expertise.

Today, our advanced solar power solutions are used to support medical and healthcare projects in the world's most remote regions, and with the support of our growing network of in-country partners we can offer an even more sustainable and secure cold chain.



## Dulas Ltd

Unit 1 Dyfi Eco Park,  
Machynlleth,  
Powys, SY20 8AX, UK

## Contact us

+44 (0)1654 705055  
[www.dulassolar.org](http://www.dulassolar.org)  
[solar@dulas.org.uk](mailto:solar@dulas.org.uk)