

**dulas**  
solar for life

Cold Chain Experts since 1982



Vaccine  
**Cold Chain**

# Keeping your Vaccines Safe



Our development team understands the **challenging environments** that vaccine refrigerators experience. 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 approved**

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 two 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.



# 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 50W of power available from the solar array. Using our standard 400W array, the refrigerator will operate with just 125W/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.

## Freeze-free® Technology

Using a PCM lining with a +5°C phase change point ensures that no surface inside the vaccine compartment ever gets 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:**



## VC30SDD:

- 25.5 litre Vaccine Storage
- WHO PQS Ref: E003/O85
- 1 Basket
- 72hr 09min Autonomy
- 260Wp min Solar Array

## VC50SDD:

- 52.5 litre Vaccine Storage
- WHO PQS Ref: E003/O78
- 1 Basket
- 74hr 15min Autonomy
- 260Wp min Solar Array

## VC88SDD:

- 88 litre Vaccine Storage
- WHO PQS Ref: E003/O59
- 4 Baskets
- 78hr 09min Autonomy
- 400Wp min Solar Array

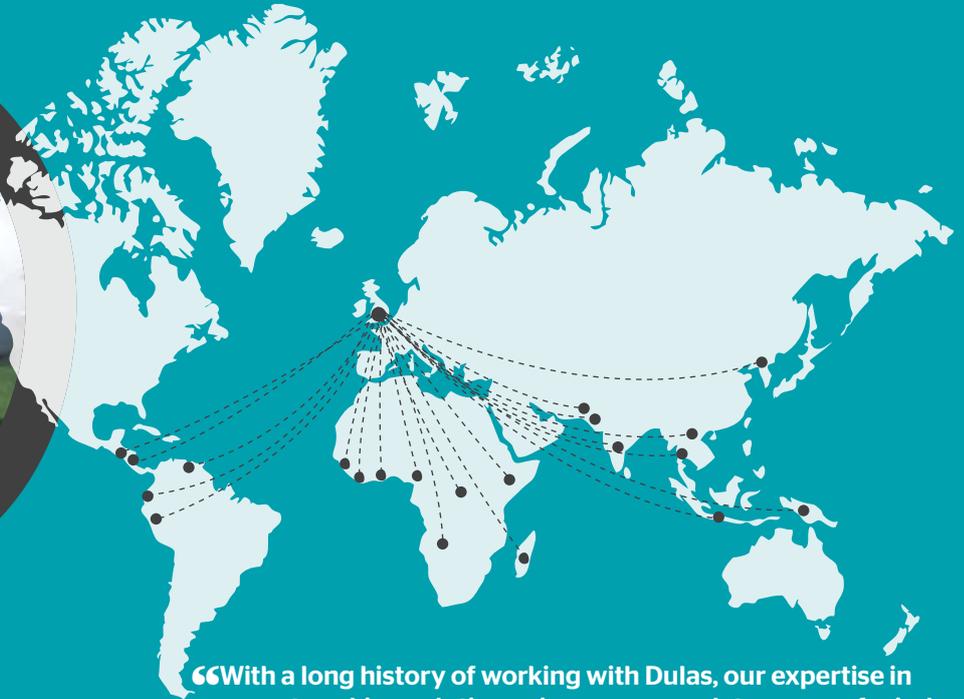
## VC110SDD:

- 110 litre Vaccine Storage
- WHO PQS Ref: E003/O58
- 5 Baskets
- 78hr 09min Autonomy
- 400Wp min Solar Array

## VC200SDD:

- 132 litre Vaccine Storage
- WHO PQS Ref: E003/O40
- 6 Baskets
- 79hr 29min Autonomy
- 400Wp min Solar Array





“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

## 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.

# 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 and keeping those water packs 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
- WHO PQS Ref: E003/084
- 4 Baskets
- 82hr 48min Autonomy
- 600Wp min Solar Array



## VC150SDD:

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



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



# Vaccine Guard<sup>®</sup> - Remote Temperature Monitoring

The Dulas Vaccine Guard is a self-contained, wireless device used to record and report the temperature inside vaccine refrigerators, sending information to a simple dashboard that you can monitor. Vaccine Guard automatically measures and records the temperature of your cold chain equipment. If the temperature varies from the specified range, the Vaccine Guard immediately alerts you via SMS and/or email.

All Dulas Refrigerators are available with integrated Vaccine Guard Remote Temperature Monitoring Devices



## Key Features:

- Integrates with all cold chain equipment for automatic cloud based real-time monitoring
- 24/7 visibility and secure data access via a web portal to monitor your cold chain performance
- Real-time alerts by SMS and/or email enable immediate action to avoid vaccine wastage
- Automated reports delivered by email
- Simple, secure and robust data collection
- Fixed price, low cost temperature monitoring solution
- Guards your vaccines and saves lives



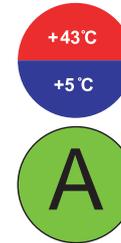
Temperature records are securely stored online and are accessible via the Vaccine Guard dashboard. Applying this technology to vaccine storage is a simple way to improve the reliability of cold chain equipment, facilitate maintenance and ensure fewer vaccines are spoiled.

# 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.**

**A bespoke design for use in the cold chain - the result of over 35 years' experience gained in supplying refrigerators to the most remote corners of the earth.**



## VC225ILR:

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



Grade A,  
Freeze-free®



Plug and Play  
System



Heavy duty  
Castors



In-built handle  
with Lock



R600a  
Refrigerant

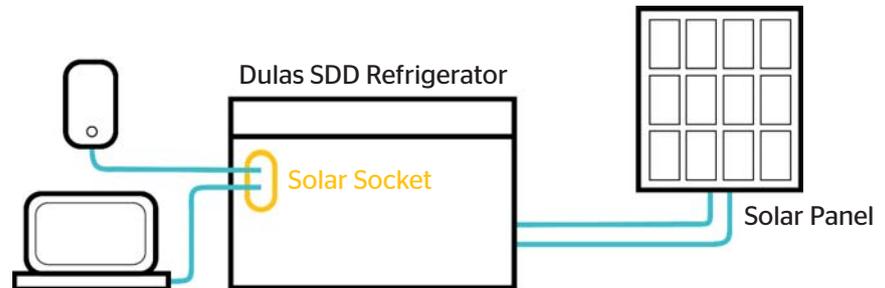


# Solar Socket - Energy Harvesting Device

The Dulas Solar Socket allows you to make the most of your vaccine refrigerator's photovoltaic array by accessing energy not needed by the refrigerator. Our intelligent control system continuously varies the amount of energy available to the socket, at all times prioritising vaccine storage, but still giving up to 100W of useful power. Charge phones and electrical devices from your Dulas Solar Direct Drive refrigerator, with absolutely no impact on its vaccine storage performance.

## Key Features:

- Can provide enough energy to charge laptops, phones, solar lights, radios etc
- Prioritises the refrigerator at all times and has no impact on the performance of the product
- Robustness designed in: over temperature, overcurrent & reverse polarity protected
- Promotes user engagement in the refrigerator care and maintenance
- 1 x USB 5v/1A, 1 x USB 5v/2.1A and 1 x 12V Socket



# Bloodbank Refrigeration

Bringing Dulas' 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.**

**The VC200SDD-B is fitted with a dedicated chart recorder to enable the safe monitoring and recording of temperatures.**

## VC200SDD-B:

- 120 x 280ml Blood Bags
- WHO PQS Ref: E003/O40
- 5 Baskets
- 400Wp min Solar Array



**Grade A,  
Freeze-free®**



**Plug and Play  
System**



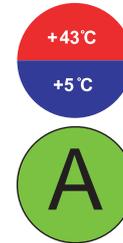
**Heavy duty  
Castors**



**In-built handle  
with Lock**



**R600a  
Refrigerant**





## Developed over 3 decades

When Guy Watson, Head of International Operations at Dulas, set off for Africa in 1984 on a sabbatical to help the famine crisis, little did he know he was starting a journey with Dulas that would be continuing over three decades later. This first experience of working in a make-shift, camouflaged ship-container hospital fuelled a desire in him to help find sustainable solutions to very real needs.

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.



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