



Dulas

Leading designer and manufacturer of renewable energy systems Dulas, based in Machynlleth, has revolutionised the way lifesaving vaccines can be stored, exporting its products to countries worldwide in the fight against infectious diseases.

Dulas have been manufacturing and supplying solar vaccine refrigerator systems across the world to communities in remote areas for over 30 years. However, existing solar powered refrigerators relied on large, heavy batteries for storing the energy that runs the fridges after dark. These batteries have a limited life, especially in hot countries and are prone to damage or misuse, representing the biggest source of unreliability in conventional solar refrigerators. Failing batteries also create a significant challenge for aid funding streams. With this in mind, Dulas identified a gap in the market for battery free solar fridges.

Using Welsh Government innovation funding, backed by EU funds, Dulas designed and manufactured the VC200SDD vaccine refrigerators. The fridges are lined with a special 'phase change' material (PCM) which freezes and thaws at +5 degrees. This PCM is frozen when the sun is out and at night it slowly melts, maintaining a stable +5C inside the refrigerator. For vaccines to remain potent they must always

be stored between +2C and +8C so Dulas' +5C refrigerator is perfect for this task. As well as avoiding batteries, the +5C PCM lining has the added advantage of removing any sub-zero temperatures inside the refrigerator. Once frozen many vaccines are no longer usable so this makes the Dulas technology very attractive for sensitive vaccines. The development has significantly changed the way vaccines are stored in the world's most remote locations, many of which have limited access to a constant supply of electricity.

Funding from the Welsh Government also supported one new full time research engineer role at Dulas, and safeguarded current jobs at the same time. Moreover the product has generated £1.5 million additional new sales, in a world market worth



£50 million. Dulas' new fridges have been exported already to Nigeria, South Sudan, Yemen, Afghanistan and Honduras. They have also been used in Sierra Leone in the fight against Ebola.

David Elliot, Senior Engineer, Dulas Ltd. said: "Welsh Government support for this project has been essential to Dulas. It has allowed us to develop a revolutionary new vaccine refrigeration product range, safeguarding jobs in Machynlleth and saving lives in some of the least developed countries in the world."

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