



SOLARCHILL



SolarChill - Development, Testing and Technology Transfer

SolarChill Project Background

Over 1 billion people live in regions without reliable electrical supply. In those regions maintaining a secure "cold chain" for preserving vaccines, medicines and food supplies is extremely challenging. Lack of reliable refrigeration results in extensive food, medicine and vaccine spoilage.

The SolarChill project was launched in 2001 by a unique consortium of several major international organizations to develop and deliver affordable, technically reliable, climate friendly, solar powered and lead acid battery free refrigeration to regions with insufficient electricity.

The SolarChill project partners today include: Danish Technological Institute (DTI), German Government Development Agency (GIZ) GmbH, Global Environment Facility (GEF), Greenpeace International, HEAT GmbH, Programs for Appropriate Technologies in Health (PATH), Swiss Resource Centre and Consultancies for Development (SKAT), United Nations Environment Programme (UNEP), United Nations Children's Fund (UNICEF) and the World Health Organization (WHO).

The SolarChill project partners have no commercial interest in the Project. Their sole mandate is to develop this public domain technology, make it freely available to interested manufacturers worldwide, and promote its uptake internationally. This long-lasting partnership of diverse organizations has collectively guided the project along since its inception.

Solar Chill Direct Drive (SDD) Technology

The SolarChill project successfully pioneered the development of solar direct drive (SDD) technology.

Solar power from solar panels run a direct drive compressor. The compressor runs the refrigerant cycle which in turn produces an ice bank that maintains the required temperature in the cabinet. The power of the sun is essentially stored in an "ice battery". It is basically a contemporary solar version of the old-fashioned ice box.

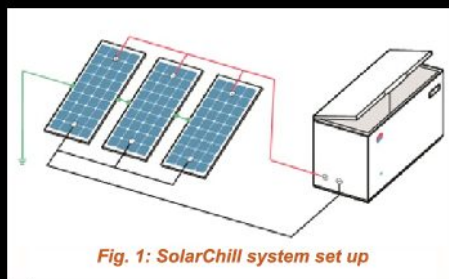


Fig. 1: SolarChill system set up

A thermostat maintains the units at the required temperatures. The mandatory temperature range for vaccines is between 2 and 8° Centigrade, day and night. The optimum temperature range for perishable food storage is 3 to 5° C.

In low-sun situations, or with power completely disrupted, the thick insulation of the cabinet maintains acceptable temperatures for more than 75 hours. The thickness of the insulation varies according to the ambient temperature for which the specific SolarChill units are designed.

Environmental benefits of SolarChill

SolarChill addresses four environmental challenges: (a) harnessing renewable solar energy to meet human needs; (b) eliminating ozone depleting and potent global warming substances, specifically HCFCs and HFCs; (c) eliminating reliance on fossil fuels such as kerosene; and (d) eliminating the use of toxic lead acid batteries.

Commercialization of SolarChill SolarChill Vaccine and Medicine Coolers (SolarChill A)

Currently, in 2017, there are approximately 15,000 to 20,000 SolarChill vaccine coolers installed in health facilities around the world (Africa, Asia, Latin America, Caribbean).

SolarChill A units are also used in human made and natural disaster areas: such as war-zones, areas hit by earthquakes and tsunamis. For example, SolarChill A units have been installed in refugee camps in Chad and Sudan, and earthquake damaged zones in Haiti.

The SDD vaccine coolers are proving to be more reliable and cost effective than other off-grid vaccine cooler technologies, and solar direct drive vaccine coolers are rapidly becoming the technology of choice of Ministries of Health.



Fig. 2: SolarChill Type A



Fig. 3: SolarChill Type B

SolarChill Food Refrigerator (SolarChill B)

SolarChill food refrigerator, for domestic and small commercial refrigeration, is not yet on the market. It is to be laboratory and field tested in 2018, with the intention of it being commercialized soon after.

The SDD food refrigerator has vast market potential as it can be used for domestic and small commercial applications in developing countries, as well as for off the grid recreational purposes in developed countries.

Project Partners and
Implementing Agencies



GREENPEACE

HEAT

DANISH
TECHNOLOGICAL
INSTITUTE



PATH

unicef

skat
Swiss Resource Centre and
Consultancies for Development

giz
Technische Zusammenarbeit
Internationale
Gesellschaft für Internationale
Zusammenarbeit

Description:

Dimensions: x