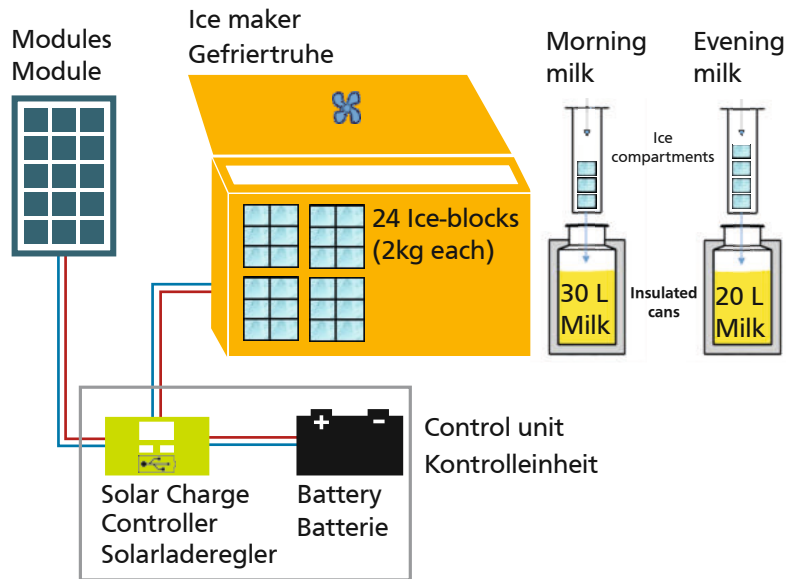


Fact Sheet  
**BOSS Milk Cooling Kit**



# BOSS Milk Cooling Kit Concept



## Definition :

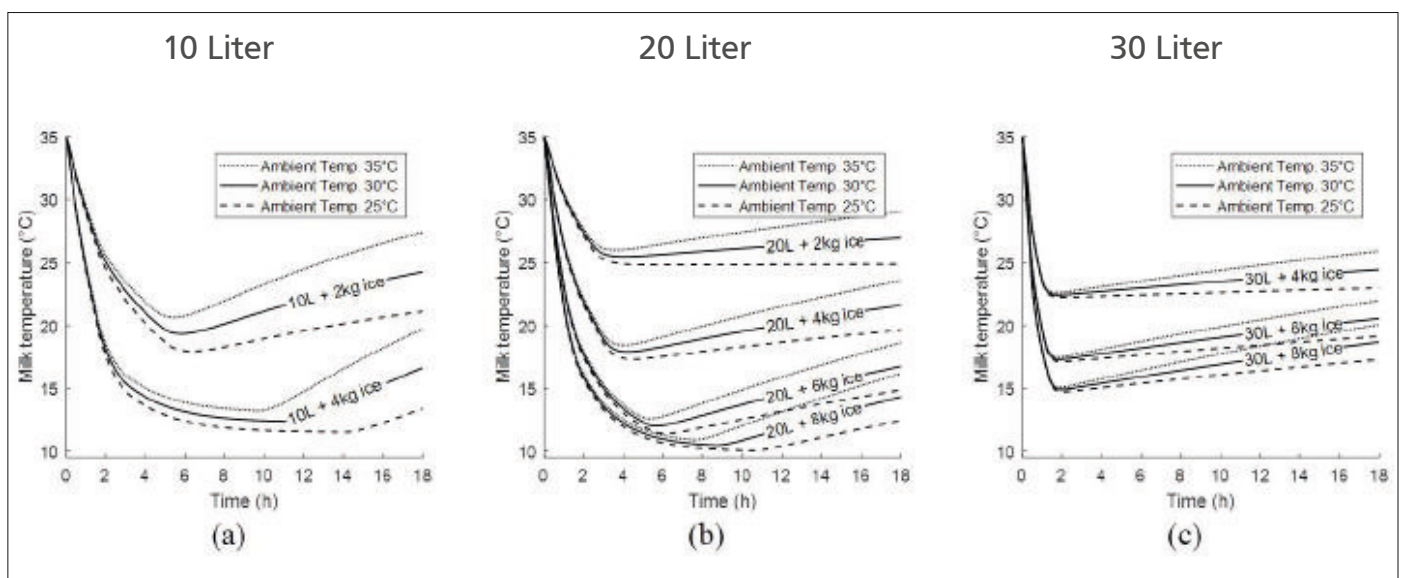
Phaesun and the University of Hohenheim have developed an insulated can to be applied for on-farm milk cooling. The milk is cooled through ice which is produced by solar energy with a smart ice-maker. 2-kilogram-ice-blocks are placed into the ice-compartment right after milking. After it, the milk-can is covered with an insulation to assure milk quality during storage or transportation to the collecting center.

## Where ?

- Milk has to be transported to the dairy plant
- Distances are rather big and the growth of bacteria is fast because of the heat
- More farms are on the same route of the collecting vehicle

## Why ?

- The system prevents bacteria growth during on-farm storage and transport to collecting center
- Price premium due to higher milk quality
- Increase of milk production due to regular milking times, storage of evening milk and less milk rejection



# BOSS Milk Cooling Kit

## Ice producing with solar energy

### Potential and Possibilities

Phaesun and the University of Hohenheim have developed an ice-maker based on a commercially available DC freezer which is equipped with an adaptive control unit. This means, the production of ice is made in dependence of the availability of solar energy. The smart ice-maker has a volume of 160l and is capable of producing up to 23 kg ice per day. One system includes 25 reusable plastic blocks of 2 kg capacity, an integrated fan and a control panel.

The innovative adaptive control unit allows an intensive and reliable production of ice all over the year. The smart solar ice-maker is equipped with following features:

- Variable compressor speed in dependence of solar radiation and state of charge of the batteries.
- Operation of a fan in the inner chamber in order to increase freezing rate.
- Energy saving mode during night and rainy days.
- Use of batteries to increase daily ice production up to 30%.
- Storage of 50 kg ice blocks to assure an autonomy of at least 5 days under low radiation or high ambient temperatures.

### Questions to be answered

What is the expected daily ice production?

- It depends on solar irradiation and mean ambient temperature. Depending on the location and the desired ice-output.

Which goals do you want to achieve:

- Get milk with reduced bacteria
- Increase the milk production
- Safe storage of milk
- Increase price for cold milk

Design questions :

- How many farms are in the designing area for collecting the milk for the dairy process
- How is the infrastructure and how is the collection of the milk organized

### Business plan for investment

Milk cooling cost around 0.06 €/l for a payback period of 3 years.

Cooling capacity: 60l/day

Total cost around 3.500 € (Recommended retail price without VAT, customs duty and freight)

### Phaesun Strategy

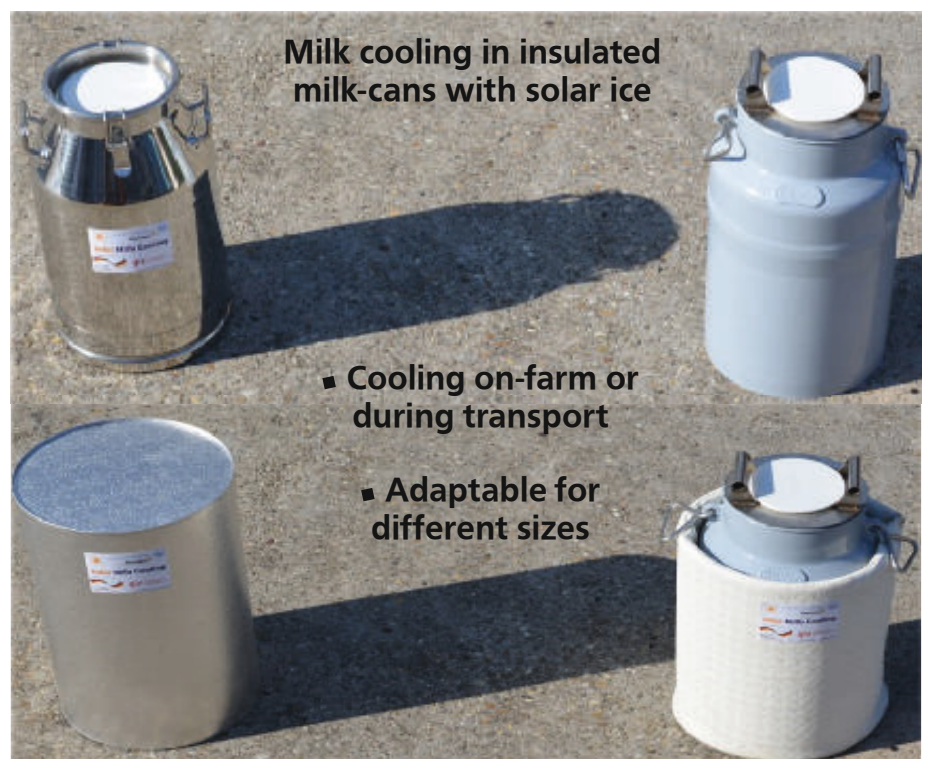
Phaesun has been specialising in the sales, service and installation of Off-Grid PV and wind energy systems since the foundation in 2001.

We view Off-Grid PV as one of the keys to economic, ecological and social development in many countries of this world. We believe that Off-Grid PV is the most economical and ecological alternative for bringing not only electricity but also independence to remote regions.

Because of the expertise and experience of our team, we can support you from project planning to system design and implementation in all technical and project management levels.

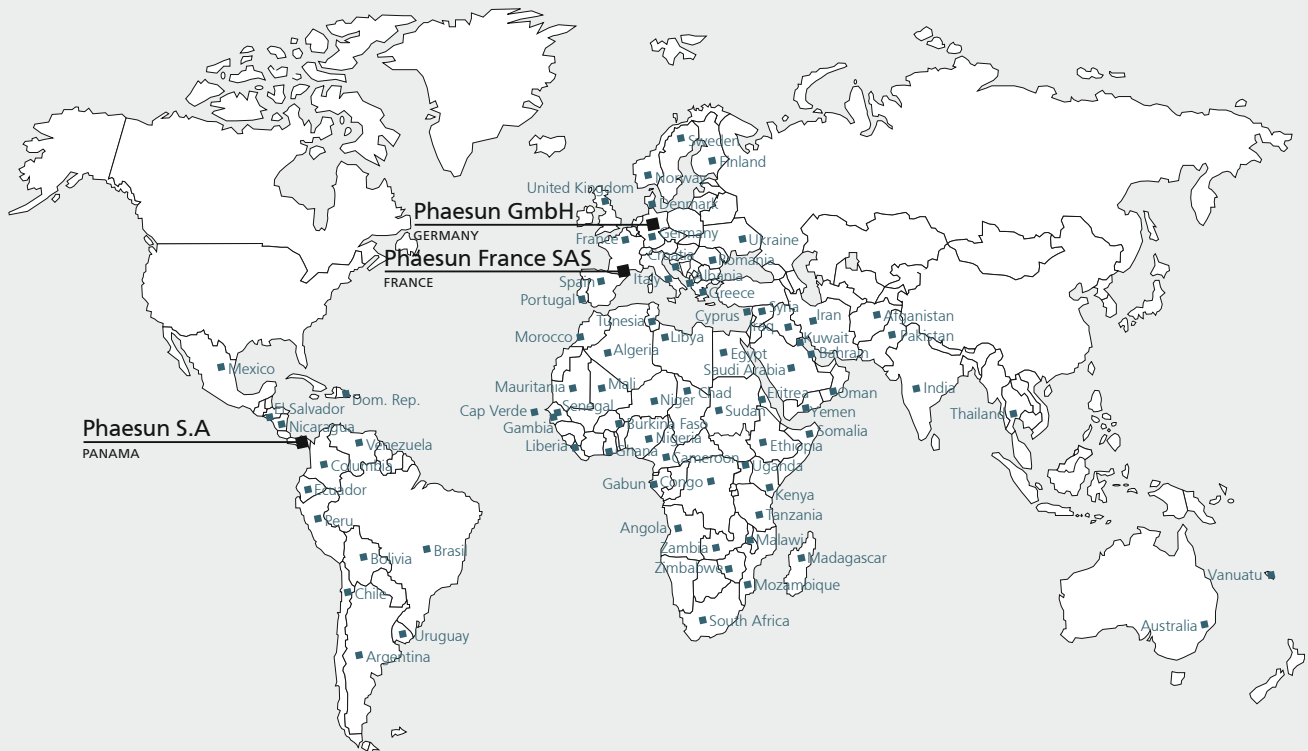
Due to our high-quality manufacturers of solar modules, electronics, batteries and installation material, we can offer you a solar power system that meets the highest quality requirements. This guarantees the highest system reliability and user satisfaction.

Developed by:





## Around the world:

Through the members of the Phaesun Group and our network of associated companies we have successfully supplied and managed hundreds of sustainable energy projects in more than 60 countries worldwide.



Phaesun's range of integrated services includes complete customized Off-Grid systems in the field of rural electrification, health care, telecommunications, education and water supply. We also have an extensive range of pre-configured kits. When designing our solar systems we always focus on ease of installation, minimal maintenance and long operating life. Systems are designed around readily available components, energy efficient loads, appliances and equipment. Local sourcing is our priority whenever it is possible.

-  Countries in which Phaesun has successfully realised projects
-  Phaesun and associated companies

**Phaesun GmbH**  
 Brühlweg 9  
 87700 Memmingen  
 Germany  
 Phone +49 (8331) 990 42 0  
 Fax +49 (8331) 990 42 12  
 info@phaesun.com

**Phaesun France SAS**  
 145, rue de la Marbrerie Boîte aux lettres n°4  
 34740 Vendargues / Frankreich  
 Phone +33 (0) 4 67 04 38 40  
 info@phaesun.fr

Winner of:

