



**Designação do projecto** | OFF-GRID REFRIGERATOR - Design and Development of Super-Efficient Refrigerator with Phase Change Materials (PCMs)

**Entidade beneficiária** | Instituto de Sistemas e Robótica

**Data de Início** | 14/11/2019

**Data de conclusão** | 30-04-2021

**Apoio financeiro** | EforA – Efficiency for Access - £121.727,70

## **Abstract:**

One of the most basic needs in life is to keep food in adequate conditions, and for that a refrigerator is needed. In this project two types of refrigerators (vertical and horizontal) will be developed. The outer shells are based on low-cost efficient AC refrigerators available in the market (at least A+ energy class) and we will make the necessary modifications (inclusion of PCMs and fittings to allow flexible load control, a variable speed compressor, a smart controller to manage the “on-time” or charge time). A test chamber will be used to simulate the conditions (temperature and humidity) in most African countries. The refrigerator prototypes will have additional fixtures, such as ability to handle voltage spikes (thunderstorms are very frequent in Africa), two temperature-differentiated areas of cold storage (temperature layering made by using PCMs with different phase change temperatures). In order to help people with disabilities to reach every item inside the refrigerator a metallized thin film non-condensation mirror on the inside cover door and special picking handles will be used, especially useful in the horizontal model. The main purpose is to develop an affordable super-efficient refrigerator for off-grid systems, powered by a PV system and the charging periods will be managed by the smart controller developed in the project.

Link do Projecto:

<https://efficiencyforaccess.org/updates/r-d-cooling-call-winners>

Note: The project does not have a website, the link above is from EforA and presents the call winners (ISR included)