

# RESEARCH AND DEVELOPMENT FUND PROJECT SPOTLIGHT

## Productive Solar Solutions

High Efficiency AC Permanent Magnet Motors Driving Agri-Machinery for Off- and Weak-Grid Areas

### Project Summary

This project will develop and deploy high-efficiency Permanent Magnet Synchronous Motors (PMSMs) to power agricultural machinery in off- and weak-grid areas. The aim is to improve efficiency and reduce startup power surge.

### Project Description

Productive Solar Solutions (PSS) is leading research and development to innovate and deploy PMSMs for small-scale agricultural machinery in off- and weak-grid areas. Currently predominately using AC induction motors, PSS recognises their energy inefficiency and high inrush currents. PSS has successfully deployed Brushless DC (BLDC) motors for off-grid scenarios but recognises the need for AC-enabled PMSMs to meet the growing demand for efficient machinery in both off-grid and on-grid areas.

The project aims to produce 14 PMSMs with matched drivers, designed to reduce inrush currents and enhance operational efficiency. These motors will be integrated into 20 different agricultural and food processing machines to demonstrate practical functionality. The initiative supports Efficiency for Access' objectives by improving the availability, affordability, and performance of off- and weak-grid appliances. By addressing high inrush currents, the project promotes sustainable energy use, lowers system costs, and boosts food system productivity.

In collaboration with local and international partners, the project seeks to transform agricultural practices, support rural development, and promote gender and social inclusion.



### R&D Partner

Productive Solar Solutions

### Organisation Founded

August 2021

### Technology

Agricultural processing

### Project Location

China, Kenya, Malawi,  
Tanzania and Uganda

