



SOLAR TUNNEL DRYER

Product Catalogue - 2013

Prepared by MicroEnergy International GmbH



EUROPEAN
MICROFINANCE
PLATFORM

NETWORKING WITH THE SOUTH

e-MFP ACTION GROUP
ON MICROFINANCE
AND ENVIRONMENT

Description and Working Principle

Solar tunnel dryers utilize the energy of the sun and wind to dry agricultural products, preparing them for proper storage, processing and export. The crop is spread in an even layer on tables or drying racks inside the tunnel. The air below the semi-transparent collector is heated by the sun and spreads throughout the tunnel. The increased temperature decreases the relative humidity of the air, thereby allowing the air to more efficiently dry the crop.

Technical Characteristics

Size	4m x 8m x 1.7m
Usual weight	120 – 200 kg
Fuel type needed	Solar insulation
Usual temperature range	Up to 60 °C
Product life time	10 years
Capacity	250 kg

Ease of Distribution, Installation and Maintenance

Considering the volume of the system, transportation vehicles are usually needed. However, the modularity of the system allows it to be packed in batches and transported with smaller vehicles. A solar tunnel dryer is usually characterized as maximizing drying capacity while minimizing physical footprint, and they are relatively easy to install and disassemble so that the land remains usable. Drying racks can be built by the users themselves. However, locally trained craftsmen usually build the drying racks and conduct the installation of the solar tunnel dryers. A solar tunnel dryer will work without any major supervision and requires only a small amount of maintenance, which can generally be conducted by the end user.

Typical maintenance work:

- Proper storage of semi-transparent collector
- Digging of canals to prevent water ingress
- Periodic replacement of collector
- Cleaning of collector

Technology Options

The product is easily adaptable to the local environment and locally produced crops, such as varying the dimensions of the dryer, particularly height, and to add different types of plastic foils to simulate multiple drying effects when the product requires it. It is also possible to use a fan to induce forced convection when required.



Price Range

These systems require semi-transparent collectors, and metallic and wooden structures. A complete set-up cost starts from around USD \$700. However, according to the type of crop drying and the scale of the project, it can vary according to the specifications required, reaching a cost around USD \$1500.

Type of Loan

Microfinance loans are provided to both individual farmers and to farmer cooperatives depending on the magnitude of the project. Accordingly, the collateral for the loan can vary from the equipment itself to the land of the farmers.

Economic and Social Impacts for End-users

Solar tunnel dryers offer an improved drying method for small and medium holder farmers. A typical solar tunnel dryer reduces the time required to dry the products from 1 to 5 days depending on the crop, can increase the productivity of the harvest by reducing the amount of product lost to moisture and reduces the amount of labor involved in drying products.

Solar tunnel dryers change the process of drying crops compared to the traditional open-air method. High economic benefits of the dryers result from improved efficiency and a decrease in required labor. As a technology aimed at productive uses, the payback period is related to the seasonability of the product harvested which can vary from 1.5 to 5 years.

Benefits for the MFI

Savings on labor and increased harvest income enable reliable loan repayments. The microcredit needs of these target groups can be reached much more effectively by involving the services of intermediaries such as farmer cooperatives, who can assess the needs, demand and local situations. Also, new clients can be attracted through microfinancing schemes, particularly by involving farmer cooperatives as clients.

Environmental Benefits

Solar tunnel dryers require a smaller area to dry the crops, resulting in a reduced physical footprint that is particularly important in areas with high biodiversity. Additionally, the use of solar tunnel dryers eliminates the need for fossil fuels when using a mechanical dryer, hence reducing the emission of CO₂.



Photo: MicroEnergy International

European Microfinance Platform

The European Microfinance Platform [e-MFP] was founded formally in 2006. e-MFP is a growing network of 140 organisations and individuals active in the area of microfinance. Its principal objective is to promote co-operation amongst European microfinance bodies working in developing countries, by facilitating communication and the exchange of information. It is a multi-stakeholder organisation representative of the European microfinance community. e-MFP members include banks, financial institutions, government agencies, NGOs, consultancy firms, researchers and universities.

e-MFP's vision is to become the microfinance focal point in Europe linking with the South through its members.

e-MFP Microfinance and Environment Action Group

e-MFP Action Groups facilitate synergies among e-MFP members and encourage them to implement activities together, thus contributing to the advancement of the microfinance sector.

The aim of the e-MFP Microfinance and Environment Action Group is to bring together microfinance practitioners to discuss and exchange experiences in dealing with environmental issues and to create new practical tools to advance environmental microfinance. The Action Group is also intended to act as a think tank that disseminates its results among e-MFP members and the microfinance sector at large with a view to increasing the awareness of and commitment to act on these issues. It is meant both as an internal knowledge-sharing and external awareness-raising platform that serves as a reference in the microfinance sector.

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