Solar food processing technology

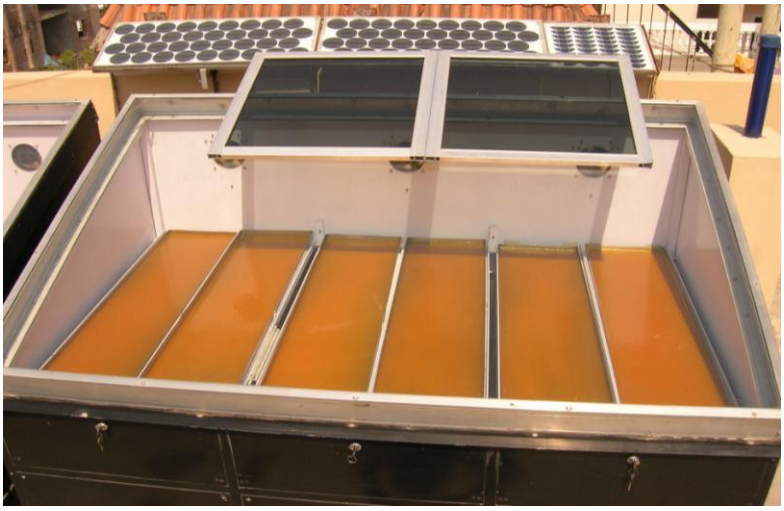
Solar food processing technology is of recent origin, even though open sun drying is an age-old practice in the country. The application of solar energy has started with food cooking by 'solar cookers' of variety of models starting from family cooker to community cooker for large scale operations. Then, the roof top solar flat collector drying system is in vogue on commercial scale for drying of cereals, pulses and tea etc., only drying process.

The advent of high efficient solar cabinet dryer by Society for Energy, Environment & Development (SEED) has opened a new chapter in food processing technology on commercial scale for value addition of many agri-horticulture produce and non-timber forest produce for preservation and long shelf life, on micro scale.

Innovative solar cabinet dryer

The SEED dryer employs a novel and unique innovative technology that is highly efficient concept of forced circulation using solar photovoltaic energy. Another novel feature in this dryer is the integration of solar thermal energy which generates high temperature in the cabinet because of greenhouse effect and with solar exhaust fans for forced circulation operated with solar photovoltaic power. This results in raising the cabinet temperature to 55–65 ^{0}C from ambient temperature 30–35 ^{0}C. This temperature is mainly required for dehydration process of fruits and vegetables.

Solar Dryer – SDM-50 Model



Special features of commercial solar cabinet dryer-SDM-50

The drying rate is synchronized with variable speed of solar fan, depending on the intensity of solar radiation and these regulate the moisture in the product.

A special filter called blue filter is provided to cut off UV radiation and thus reduce the solar intensity for the process, to simulate the condition of the shade drying of the product for better retention of vitamins and minerals.

The processed product is a clean and hygiene, meeting the specifications of international standards. It operates at zero energy cost and creates income generation and employment of the small farmers and women.

Innovative solar food processing technology

This new process is based on the integration of food science and technology such as pre-treatments and adding chemicals and additives for high quality products, adding preservatives for long shelf life, for the better retention of minerals and vitamins of the food products and with fast, hygienic, clean and safe solar drying of the product. This definition is termed as solar food processing in which the thermal energy for processing is supplied by non-polluted and clean energy from solar radiation with zero energy cost, in the form of greenhouse effect.

Solar dried products

Variety of processed foods

Mainly, the dehydration process 75 products of fruits, vegetables, and forest produce are subjected to in solar cabinet dryer with application of food and science technology. The variety of fruit bars/rolls such as mango, guava, sapodilla, tamarind, no sugar added mango bars are processed and preserved in attractive packing for market requirements.

The vegetables such as beetroot, carrot, ginger, coconut, curry leaves, wheat grass, are processed in the dryer and made them into powders and chunks and packed them attractively.

Another important application is non-timber forest produce for value addition by dehydration process of *Sterculia urens* (Gum karaya), *Asparagus racemosus* (Satavari), *Andrographis paniculata* (Nelavemmu), *Decalepsis hamiltonii* (Marredugaddulu), *Emblica officinalis* (Amla) and *Magnifera indica* (Amchur).

Quality control & training

All these products are value added products with good shelf life for preservation and income generation in addition to healthy, nutritious and clean products.

Quality assurance and control is ensured with all the tests such as physico-chemical analysis, nutritional parameters, microbial analysis and sensory properties, conducted in SEED laboratories on all the products.

Training programmes have been conducted from time to time transfer the know-how of variety of products for rural women and youth for skill development in solar food processing technology and for income generation.

Microenterprises

The solar food processing technology is introduced for the first time on commercial scale in the country and full-fledged technology has been developed for the self-help groups, rural youth, small scale enterprises, and rural entrepreneurs with small and affordable investment in the rural areas.

Besides the growth of large food industry, the rural entrepreneurs through micro enterprises can become stake holders in food processing industry and contribute to the growth of food industry in India. This role of micro enterprises is essential for rapid expansion of food industry in light of small holding agri-horticultural economy.

For more details, visit the website www.seedngo.com

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