

# 1. Solar Plant for Drying of Fruits, Vegetables and Fish

## **Preamble:**

The project entitled “INDUSTRIAL SCALE DEHYDRATION OF AGRICULTURAL AND MARINE FOOD PRODUCTS: VALUE ADDITION TO FARM PRODUCTS” financially supported by Rajiv Gandhi Science and Technology Commission (RGSTC), Govt. of Maharashtra to aid technology development was successfully executed at demonstration level by Professor B. N. Thorat, (C. E. Department, Institute of Chemical Technology (ICT) Matunga Mumbai 400019). The technology is now ready for business venture for Industries to deploy this at village levels via CSR mode. Solar Cabinet Drying of Agricultural and Marine Fish products is a market driven technology developed by Advanced Drying Laboratory of Institute of Chemical Technology (ICT) in collaboration with Rajiv Gandhi Commission for Science and Technology, Government of Maharashtra. Solar cabinet drying in its most economic way has been developed to overcome unhygienic conditions of traditional/conventional open sun drying. The value addition (hygienic and quality products) through this technology is immense to an extent to be called as the successful foray into the use of solar cabinet dryer. In this technology, solar energy a renewable source of energy and abundantly available for more than 270 days of the year, has been the focal point of generating hot air that is required for drying. As an alternative to solar energy, air can also be heated with the help of LPG, NG (natural gas) or biomass as a fuel, the choice of which depends on the local availability of the supplementary source of back up energy. In order to demonstrate the technology two pilot scale dehydration units are setup at two different locations, viz. Tarapur (Konkan Region) for fish drying and other at Nasik for dehydration of agricultural products. After initial successful trials and testing, both these plants are handed over to local farmer and fisherman and they are commercially running the plant.

## **Objectives of the project:**

- After successfully demonstrating the pilot plants, solar drying technology is expected to proliferate throughout India benefiting the larger population of farmers and fishermen by augmenting their meager income by selling good quality dehydrated products.

## Project Description:

In this proposal two different dehydration units are proposed.

<b>SOLAR CABINET DRYER FOR</b>	<b>AGRICULTURAL PRODUCTS</b>	<b>MARINE PRODUCTS (DRIED FISH)</b>
Product Tested	(Green peas, onion, garlic, ginger, bitter gourd, fenugreek, curry leaves, and so on depending on seasonal availability)	(Bombay duck, silver prawns, mandeli, mackerel, jawala, surmai and so on depending on seasonal availability)
Drying Capacity	200 kg/day (Wet)	200 kg/day (Wet)
Solar Collector Area	80 m <sup>2</sup>	80 m <sup>2</sup>
No. of Batches per day	1 or 2 depending on product	1 or 2 depending on product
Dried Material	40 Kg. (Dry) considering ratio of wet to dry weight as 5:1	40-80 Kg. (Dry) considering ratio of wet to dry weight as 5:1
Payback Period (2013)	2 years	1.5 years

### Summary:

Solar cabinet drying technology will have multiple facets attached to it such as better earnings for the farmers and fishermen, value addition to their produce and overall creating a win-win situation for everyone including society.

### EQUIPMENT REQUIRED FOR PLANT SETUP AND PRODUCTION:

- **Dryers:** Solar Cabinet Dryer
- **Supporting equipments:** Spray washer, Slicer, Shredder, Peeler, Blancher, Spin dryer, Pulverizer, Powder Blender, Packaging unit (depending on the products to be processed).
- **Business Plan is ready.**

## SOLAR DRYING PLANT



## Sample Products developed under the project:



Dehydrated Chickoo (Manilkara sapota) Extrudes and Noodles



Dehydrated Bitter Gourd (Momordica charantia)



Dehydrated Prawns