

**CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE
MYSORE – 570 020**

**COMBINED INFRARED AND HOT AIR HEATING SYSTEM FOR FOOD
PROCESSING**

Introduction

It is a combined heating system having both convective and infrared heating facility. The system can be operated under three different modes viz, infrared, convective and combined infrared and convective. In the combined convective and infrared heating mode the heat and mass transfer rates are much higher to convective heating, resulting in reduced processing cost. The system is rugged and economical and can easily replace the existing batch or continuous convective heating system. The system is easy to operate with all the processing parameters controlled through different controllers. The system can be used for various operations such as blanching, drying, roasting and baking of food materials.

Market

There are about 200 small and medium scale dehydration units in the country. Besides this about 10 to 15 new units are coming-up every year. Most of them are presently using batch type tray dryers. Normally the drying period is fixed based on experience. Batch type dryers require more time due to high product handling with lower productivity. They need huge investments to change over completely automatic units to modernize their units, by importing sophisticated dryers. Alternatively, these units can adopt Infrared drying, for uniform drying, with better organoleptic properties. Assuming a conservative production of 10 units per year at a sale price of Rs.7,20,000/- each, a net profit of Rs.5.31 Lakh could be achieved at a Return On Investment of 21.24%.

Materials and Process

Raw materials: SS Conveyor, Drums with 4 sprockets, Blower, Temperature Controller, Sheet Metal Ducting, Sheet Metal Covers, Wheels and Bearings, Tubes, Motor, Heater, Conveyor Speed Controller, Insulation Material, MS Angels, Electrical Accessories with Panel & Wiring.

Plants and Machinery

Principal equipments: Welding shop, Sheet Metal shop, Assembly shop & Electrical Assembly shop

**Project cost – Fixed Cost – Working Capital (in Rs.'000)
(estimate for a model project)**

a. Land and building	1000.00
b. Plant and machinery	1000.00
Total fixed cost	2000.00
Working capital margin	500.00
Total project cost	2500.00

Production Capacity – (estimate)

10 units / year

Technology / Manufacturing Process – availability

CFTRI has standardized the technology and general methods of processing of combined infrared and hot air heating system for food processing. Apart from this procedure for quality control, packaging and packaging material specifications, the institute also provides equipment details.