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

**Shelf-stable & Ready-to-eat foods Thermo-processed in retort pouches (both Vegetarian & Non-vegetarian foods)**

## INTRODUCTION

Recent developments in plastic materials and thermal processing technologies have made it possible for the many lip-smacking Indian dishes to be available in ready-to-eat form. Vegetable Biryani, Navarathan Kurma, Bisibele Bhath, Palak Paneer, Sweet Pongal – you name and Indian ethnic dish and your have it literally on the platter. No need to depend on the grandma or a gourmet chef. All that one has to do is pick up the product packed in retort pouch or tray, heat in boiling water for 5 minutes, cut open the pack and serve. One can as well use a microwave oven instead of boiling it in water.

## MARKET POTENTIAL

These "heat & eat" products owe their success to the ultimate convenience they offer to the consumer. They are shelf stable, which means they can be stored at room temperature without requiring refrigeration and in their packed form, remain fresh for over one year. And all this without any added preservatives. Singles' house-holds, on-the-run professionals, double income families and harried housewives form an instant market for these products, especially in the metros. Besides, there are huge export markets waiting to be tapped.

## ADVANTAGES

Retort pouches and trays offer many advantages compared to canned and frozen foods. The pouch/tray with its thin cross-sectional profile compared to can requires about 25-50% less process time. The rates of destruction of sensory and nutritional factors being greater than that of microorganisms at lower temperatures, quick heat penetration in pouches/trays helps in better quality retention. Because of the shorter process times, many of the delicate Indian dishes can be processed without losing colour, flavour and texture.

Know-how has been developed by CFTRI for a variety of ready-to-eat Indian foods – both vegetarian and non-vegetarian products that include Vegetable Palao, Tomato Rice, Puliogere (Tamarind Rice), Bisibele Bhath (Sambar Rice), Plain Rice, Ghee Rice, Vegetable Kurma, Aloo Mutter, Channa Masala, Dhal Fry, Methi Dhal, Palak Paneer, Navarathan Kurma, Shahi Paneer, Shahi Rajma, Sambar, Sweet Pongal, Coconut Chutney, Chicken Biryani, Chicken Curry and Mutton chops.

## PROCESS DESCRIPTION

Product Preparation → Pouch Filling → Pouch Sealing → Visual Inspection → Racking and Retort Loading → Retorting → Retort Unloading → Drying of Pouches → Cartoning & Casing

## RAW MATERIALS

Cereal grains, Pulses & legumes, Green leafy vegetable, Roots & tubers, Fruits, Nuts & Oil seeds, Condiments & spices, Milk & milk products, Fats/Oils, Sugars, Salt & Saffron

## EQUIPMENTS

Principle Equipments

Heat sealer, Compressor for heat sealer, Retort, Compressor for retort operation, Boiler, Pulveriser, Peeler, Slicer, Steriliser, Grinder, Steam jacketed kettles, Racking system, Kettles

with stirrer, Frying system, Centrifugal pump, LPG stove with gas connection, Pre-heater, Liquid filling machine etc.

Auxiliary Equipments

Deep freezer, Walk in coolers, Balances (Table top & Digital), Hydraulic pallet truck, Generator, Material handling equipments, Working tables, Storage racks & Laboratory equipments etc.

**PROJECT COST – FIXED COST – WORKING CAPITAL (in Rs. '000)**
**(Estimate for a model project) (Cost is calculated to Indian value)**

| | | |
|---|---|---|
| a) | Land & Land development (1600 $m^2$) | 610.00 |
| b) | Building and civil works (862 $m^2$) | 3807.00 |
| c) | Plant and machinery | 5699.00 |
| d) | Miscellaneous fixed assets | 1123.00 |
| e) | Pre-operative expenses | 811.00 |
| | Total fixed capital | 12050.00 |
| | Working capital margin * | 687.00 |
| | Total Project cost | 12737.00 |

Means of finance

| | |
|---|---|
| - Promoters contribution | 3699.50 |
| - Term loan | 9037.50 |

***Subject to change depending upon the product mix**

**PRODUCTION CAPACITY-(estimate)**

Suggested economic capacity: 1000Kg /day
(for four products)
Working : 1 shift/day, 300 working days/year
Capacity : 300 Tonnes /annum
Optimum utilization capacity: 70%

**TECHNOLOGY/MANUFACTURING PROCESS – Availability**

The technology for the manufacture of Ready-to-eat foods in retort pouches (thermo processed) has been developed at CFTRI, Mysore, using appropriate equipment for optimal product recovery of right quality. The CFTRI has the necessary expertise to provide technical assistance and guidance for setting up the project. The CFTRI can offer further technical assistance for project implementation under technical consultancy arrangements.