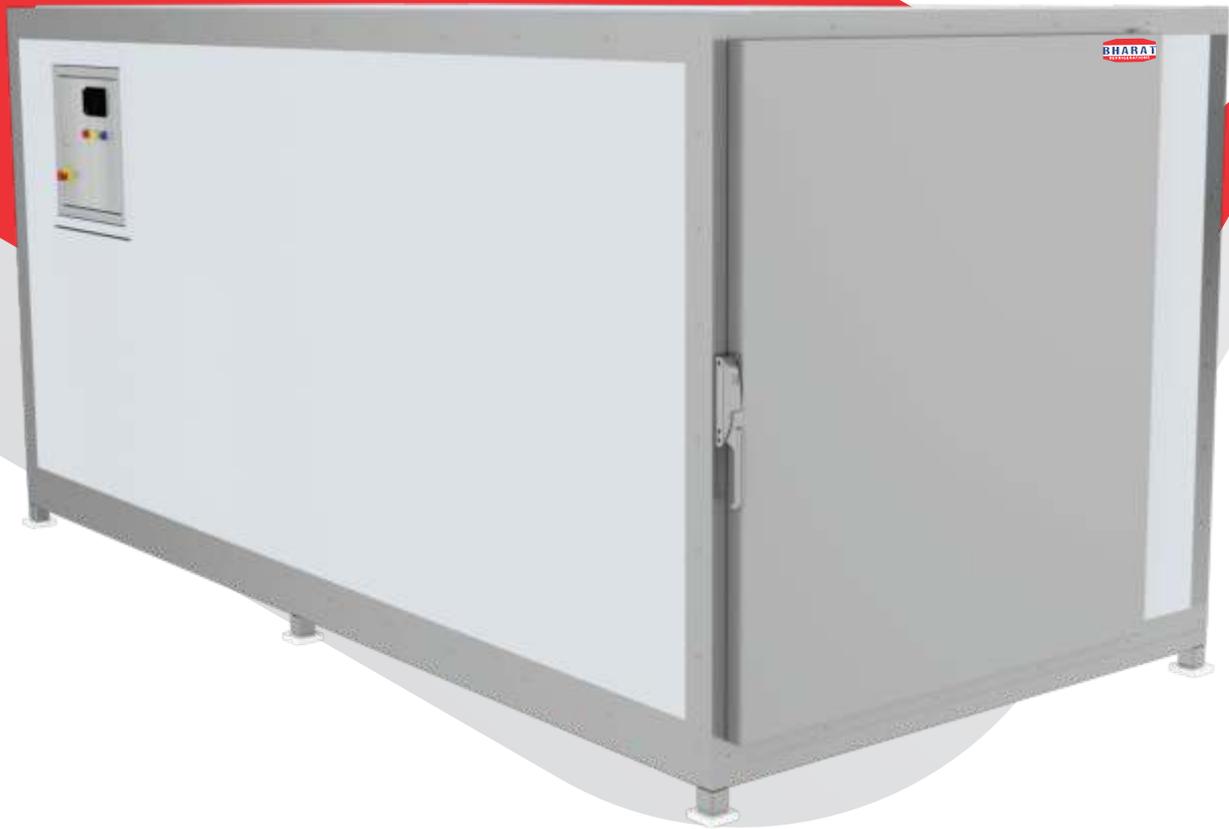
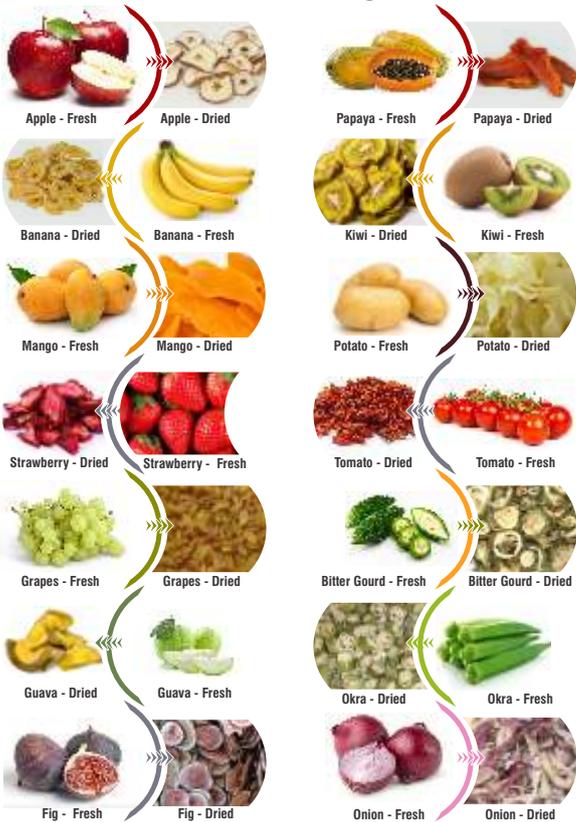


Heat Pump Food Dehydrator



Vegetables & Fruits



Herbs & other Products



Bharat Refrigerations providing total cooling solution for various industry segments, now offers an innovative HEAT PUMP FOOD DEHDRATOR to improve food preservation technique for quality and to reduce wastage of horticulture and floriculture produces, as well as it can be an eventual preserving technology for sustainable development and rural empowerment. Small and marginal food processing entrepreneurs and farmers can take advantage by drying their produces like fruits, vegetables, spices, herbs and other food products.

What is Heat Pump Food Dehydrator?

A device that transfer heat from a colder area (ambient temperature) to a hotter area (drying chamber) by using mechanical energy (refrigeration technology).

Various Drying Methods - Energy and Economy Comparison Table						
Heat energy required to evaporate 100 kg of water is 225000 kJ or 2.6 kW for 24 hour						
Fuel Type	Electric	Coal	Diesel	NG	LPG	Electric
Heating Mode	Electric heating	Coal Boiler	Oil-fired Boiler	Gas Boiler	Gas Boiler	Heat pump
Heat Value	3600 kJ/kWh	23027 kJ/kg	33494 kJ/L	36006 kJ/m ³	46860 kJ/kg	3600 kJ/kWh
Thermal Efficiency	95%	30%	85%	85%	90%	450%
Effective Thermal Value	3420 kJ/kWh	6908 kJ/kg	28470 kJ/kg	30605 kJ/kg	42174 kJ/kg	16200 J/kWh
Fuel Price	7 ₹/kWh	5 ₹/kg	65 ₹/L	55 ₹/m ³	60 ₹/kg	7 ₹/kWh
Fuel Consumption (Unit)	62.79 kWh	32.57 kg	7.9 L	7.35 m ³	5.34 kg	13.89 kWh
Fuel Consumption (Cost)	439.5 ₹	163 ₹	513.5 ₹	404.25 ₹	320 ₹	97.23 ₹
Labor Management, Warehousing Cost	Low	High	High	High	Low	Low
Safety Performance	Unsafe	Unsafe	Unsafe	Unsafe	Safe	Safe
Environmental Pollution	None	Very serious	More serious	More serious	Light pollution	None
Life of Equipment	5-8 years	6-9 years	6-9 years	6-9 years	8-12 years	10-15 years

Application

Drying Fruits:

Apples, Apricots, Bananas, Coconuts, Dates, Figs, Grapes, Peaches, Pears, Pineapples, Plums, Breadfruit, Mango, Papaya, Nectarines, Jack Fruits, Guava, Pomegranate, Orange, Berry Fruits, Prunes, Cherries, Amla Fruit.

Drying Vegetables:

Cabbage, Carrot, Cauliflower, Beets, Corn, Radishes, Spinach, Potato, Tomato, Sweet Potato, Water Melon, Celeriac, Celery, Collards, Lettuce, Beans, Cucumbers, Garlic, Onions, Peppers, Sweet Corns, Okra, Coriander/cilantro, Cluster Beans, Asparagus, Pickled Cucumbers, Bulbous Root, Marrow.

Drying Agriculture Products:

Rose, Chrysanthemum, Mushroom, Edible Fungus, Tobacco Leaf, White Fungus, Red Pepper, Daylily, Capsicum, Herbs, Horseradish, Winter Squash.

Drying Herbs:

Basil, Dill, Fennel, Lavage, Mint, Oregano, Parsley, Rosemary, Sage, Savoury, Geraniums, Tarragon, Thyme, Tea.

Drying Seafood:

Sea Fish, Squid, Shrimp, Sea Ear, Cuttlefish, Hippocampi

Drying Food:

Almost any cooked food

Working Principle

Conventionally, materials are dried either in the field (sun drying) or using high temperature dryers (Electric, Gasfired, etc.) Successful outdoor drying depends upon good weather. High temperature drying can damage the nutrient content. Specialty crops such as Flower, herbs, Echinacea, fruits etc. need to be dried at low temperature (30°C to 45°C) for product quality optimization. This is an important consideration as they have a relatively high commercial value. Heating ambient air to use for drying is a simple and cost effective procedure but at higher ambient air relative humidity, it is not possible to dry products at low allowable maximum temperature condition. High temperature drying deteriorates the material structure and can render it unsuitable for further use. Low temperature drying of speciality crops reduces the risk of loss in Nutrient content and damage to physical properties. Bharat Refrigerations Dehydration Dryer incorporated with two systems:

1. Heat Pump
2. Dehumidifier

Heat Pump functions to add the latent and sensible heat with low energy consumption. The running cost comparison of various systems is shown in the table in previous page.

Dehumidifier functions to remove moisture from drying chamber to maintain low relative humidity.



Features

1. Energy saving & environmental protection

Saving operating cost, no heat loss (insulated chamber and recirculation of hot air), low noise

2. Exact control of temperature and humidity

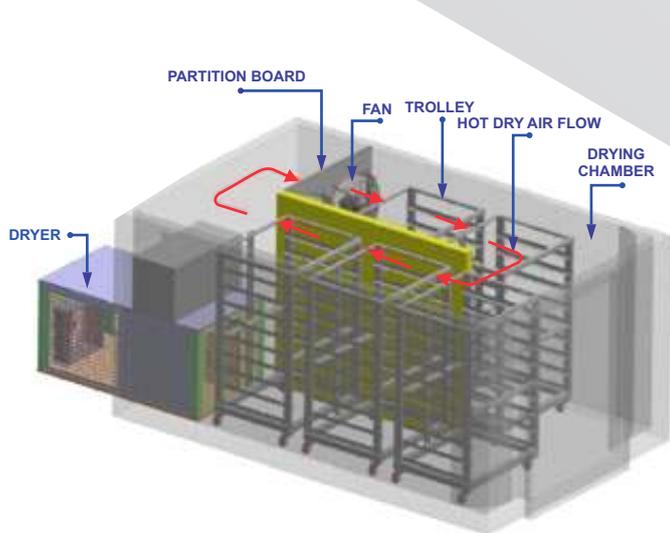
Required drying temperature varies according to the produce and heat pump controls drying temperature between 30°C to 75°C and relative humidity below 25%

Technical Specifications:

Model	Fresh (Wet) Product Capacity (kg)	Power Supply	Connected Power (kW)	Heating Capacity (kW)	Cooling Capacity (kW)	Dehumidification Capacity (L/H)	Usable Tray Area (m ²)	Dimension of Dryer (mm)
HPD0020	20 to 60	1ph 230V	1.5	3.4	2.4	1.9	2.8	2100 x 838 x 1460
HPD0050	50 to 100	1ph 230 V / 3ph 400V	3	6	4.5	6	10	2492 x 1212 x 1285
HPD0100	100 to 250	3ph 400V	7	9	7	11	20	2650 x 2350 x 1300
HPD0200	200 to 300	3ph 400V	11	15	11	17	32	3150 x 2350 x 2150
HPD0300	300 to 450	3ph 400V	15	18	14	22	47	4700 x 2350 x 2150
HPD0500	500 to 750	3ph 400V	20	29	22	34	96	6600 x 3375 x 2080
HPD0700	700 to 900	3ph 400V	29	35	28	43	128	7220 x 3375 x 2200
HPD1000	1000 to 1400	3ph 400V	40	60	45	64	160	6700 x 3325 x 2150
HPD2000	2000 to 2800	3ph 400V	75	104	80	113	307	9100 x 4200 x 2200

Note:

- Heating & Cooling Capacity based on 60°C condensation and 15°C evaporation temperature (Except in model HPD0020).
- Dehumidification capacity based on 100 % RH air inlet, in lower RH it may be lower.
- Product capacity is the fresh (wet) product loading capacity and it depends on product condition.
- Connected power, heating capacity and cooling capacity is given at 12°C evaporating temperature and 60°C condensing temperature.



Inside View



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(Wholly Owned Subsidiary of ICE MAKE REFRIGERATION LIMITED)

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