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Product brochure
2026 edition

HEAT PUMP DEHYDRATION SYSTEMS

Clean, controlled drying at a lower energy cost.

Closed-loop heat pump dryers for fruits, vegetables, spices and herbs — from a single-phase cabinet to a five-tonne walk-in chamber, selected and installed by AFEC.



AFEC walk-in chamber · twin heat pump

11
models in four families

18 – 1,152
trays of 800 × 600 mm

40 – 5,000 kg
indicative fresh input per batch

10 – 80 °C
controlled drying temperature

01 RUNNING COST

What it costs to remove 100 kg of water

Every dryer is paid for in energy per litre of water taken out of the product. A heat pump recovers the heat that other dryers vent.

DRYER TYPE	ENERGY	COST PER 100 KG WATER REMOVED	SAVING
AFEC heat pump dryer	**40 kWh**	**₹320**	—
Coal-fired hot-air dryer	45.5 kg coal	₹455	**30%**
Electric-heater dryer	125 kWh	₹1,000	**68%**
LPG-fired dryer	11.5 kg LPG	₹1,093	**71%**
Diesel-fired dryer	15.6 L diesel	₹1,406	**77%**

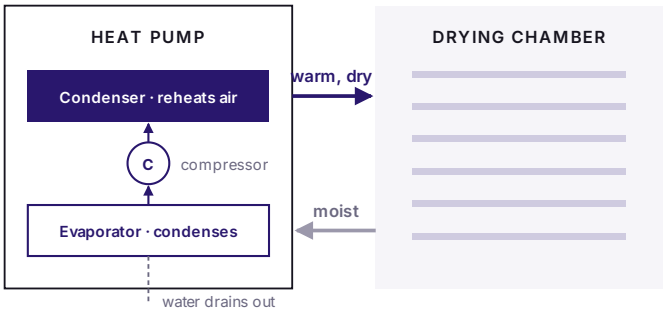
Example · one batch in an R300

300 kg fresh onion slices dried from about 86% to 6% moisture release about **255 L of water**. Heat pump: ≈ **102 kWh ≈ ₹820**. An electric-heater dryer needs ≈ 319 kWh ≈ ₹2,550 for the same batch.

Basis: hot-air dryers need ≈ 4.5 MJ of heat per kg of water removed. Heat pump at 2.5 kg water per kWh — the middle of the 2.2–2.7 kg/kWh range given by the rated dehumidification and power input of the AFEC models. Prices: electricity ₹8/kWh, LPG ₹95/kg, diesel ₹90/L, coal ₹10/kg. Combustion efficiency: LPG 85%, diesel 80%, coal 55%. Illustrative estimate — actual consumption depends on product, loading, climate and tariff.

02 PRINCIPLE

Moisture leaves as water. Heat goes back to the product.



01 Moist air from the trays passes over the evaporator; its water condenses and drains away.

02 The compressor lifts the recovered heat to a useful temperature.

03 The condenser reheats the now-dry air.

04 Fans drive the warm, dry air back across the trays — and the loop repeats.

03 BUILT IN

Closed loop
Air is dried and reheated, not exhausted — the heat stays in the chamber.

Set-point control
Temperature held between 10 and 80 °C, with humidity sensing and automatic control.

Multi-stage programmes
Temperature and time set in stages, so a proven recipe repeats batch after batch.

Food-safe build
SS304 trays and stainless trolleys in an enclosed, insulated chamber.

No fuel on site
Electric only — no burner, smoke, chimney or fuel store.

Weather-independent
Drying runs day and night, in monsoon and winter alike.

04 RANGE AND SPECIFICATIONS

Eleven models, one principle.

Size the dryer by tray area and fresh input per batch; size the electrical connection by connected load.



Compact cabinet
C100 · C150 · C200



Integrated
M100



Walk-in · single heat pump
R300 · R600 · R1200



Walk-in · twin heat pump
D1000 · D1500 · D3500 · D5000

Model	Capacity kg / batch	Trolleys	Trays	Tray area m²	Dehumid. L / h	Heat pump kW	Aux. heater kW	Connected load kW	Running ≈ 60% · kW	Supply
COMPACT CABINET										
C100	**40 – 80**	—	18	8.6	3.5	1.3	1	**2.3**	**1.4**	1~ 220 V
C150	**40 – 80**	—	18	8.6	4.5	1.98	2	**3.98**	**2.4**	1~ 220 V
C200	**90 – 180**	—	36	17.3	9	3.3	2	**5.3**	**3.2**	1~ 220 V
INTEGRATED										
M100	**100**	1	36	17.3	4	2.1	3	**5.1**	**3.1**	1~ 220 V
WALK-IN CHAMBER · SINGLE HEAT PUMP										
R300	**300**	6	96	46.1	12	5.5	9	**14.5**	**8.7**	1~ / 3~
R600	**600**	12	192	92.2	25	9.5	9	**18.5**	**11.1**	3~ 380 V
R1200	**1,200**	20	320	153.6	—	19.4	—	**19.4**‡	**11.6**	3~ 380 V
WALK-IN CHAMBER · TWIN HEAT PUMP										
D1000	**1,000**	16	256	122.9	24	11	18	**29**	**17.4**	3~ 380 V
D1500	**1,500**	24	384	184.3	50	19.8	18	**37.8**	**22.7**	3~ 380 V
D3500	**3,500**	40	640	307.2	100	40	18	**58**	**34.8**	3~ 380 V
D5000	**5,000**	72	1,152	553.0	—	56.8	—	**56.8**‡	**34.1**	3~ 380 V

Capacity: indicative fresh input per batch; actual loading depends on product, cut and tray load and is confirmed by AFEC. ‡ Heat-pump input only; heater rating given in the proposal. Connected load = heat pump + auxiliary heater. Running load is a typical batch average of ≈ 60% of connected load and varies with product, ambient and programme.

05 COMMON SPECIFICATIONS

Trays	800 × 600 × 50 mm, SS304 — 0.48 m² each
Trolleys	870 × 610 × 1750 mm, stainless steel, 16 trays
Chamber	100 mm PU insulated panels, coated-metal skin
Airflow	Forced horizontal circulation across the trays
Controls	Automatic, temperature and humidity sensors, staged programmes
Refrigerant	R134a

Temperature	Cabinets up to 65–80 °C · chambers 10–75 °C
Modes	Heat dry, dehumidify; cool dry on cabinets
Ambient	Cabinets –10 to 40 °C · chambers up to 45–50 °C
Noise	65 dB(A) integrated · 75 dB(A) chambers
Installation	Cabinet and integrated: ready to run. Walk-in: panel chamber assembled on site
Supply	1~ 220 V or 3~ 380 V, 50 Hz; 415 V suitability confirmed in proposal

06 APPLICATIONS

Made for Indian produce.

Fruits
Mango, banana, papaya, pineapple, apple, amla, guava, chikoo

Vegetables
Onion, garlic, carrot, potato, tomato, okra, beetroot, bitter gourd

Spices
Red and green chilli, turmeric and ginger slices, pepper

Herbs and leaves
Moringa, mint, coriander, curry leaves, tulsi, stevia

Flowers
Rose, marigold, hibiscus and other petals

Food products
Noodles, vermicelli, papad, pasta, fruit leather

Seafood, meat, nuts and sticky high-sugar fruit: suitability confirmed by process trial.



Compact cabinet · product render

07 WORKING WITH AFEC

1 — Requirement
Product, daily quantity, site and power

2 — Review
Suitability check; trial where needed

3 — Proposal
Model, layout and scope of supply

4 — Installation
Coordination and commissioning

5 — Support
Operator guidance and after-sales

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Images show representative installations and renders; supplied configuration may differ. Specifications and capacities are indicative and may change without notice; figures for your application are confirmed in AFEC's technical proposal. © 2026 Alliance Food Engineering Consultant Pvt. Ltd.