

Industrial Freeze-Drying & Vacuum Packing Solutions

By Freeztech Innovations
Coimbatore, India - 30+ Years of Excellence

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Company Introduction



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Company Introduction

Freeztech Innovations is a premier manufacturer and supplier of industrial freeze-drying and vacuum-packing machinery serving the food processing, pharmaceutical, nutraceutical, and export sectors across India and internationally.

With over three decades of technical expertise in industrial refrigeration and preservation technologies, Freeztech Innovations delivers precision equipment engineered for:

Maximum preservation of nutritional value and product quality

Scalable capacity from pilot-scale to large industrial operations

Compliance with international food safety and pharmaceutical standards

Cost-effective, energy-efficient processing solutions

Our Mission: To revolutionize fruit, vegetable, and pharmaceutical preservation through advanced freeze-drying and vacuum-sealing technology, enabling businesses to extend shelf life, maximize export opportunities, and meet global quality benchmarks.





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Freeze-Drying Technology Explained



Freeze-Drying Technology Explained

Freeze-drying (lyophilization) is a three-stage moisture removal process that combines deep freezing, vacuum sublimation, and secondary drying to preserve products at their peak quality.

The Three Stages

Stage 1: Freezing (-30°C to -50°C)

1

Rapid freezing of prepared fruits, vegetables, or pharmaceutical products

2

Forms fine ice crystals that minimize structural damage

3

Duration: 4-24 hours depending on product size and capacity

Stage 2: Primary Drying (Sublimation)

Vacuum chamber pressure reduced to <0.6 mbar

Temperature maintained at -20°C to 0°C

Ice transforms directly to vapor without melting

Duration: 20-40 hours for most fruits and vegetables

Result: 80-90% moisture removal

Stage 3: Secondary Drying

1

Temperature gradually increased to 20-50°C

2

Remaining bound moisture removed

3

Vacuum maintained throughout

4

Duration: 4-12 hours

5

Final moisture content: 2-5% (ideal for stability)

End Result: Premium Preserved Products

✓ 97% nutrient retention

✓ Shelf life extended to 25+ years



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Product Lines



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Freeze-Drying Machines (Lyophilizers)

Industrial-grade equipment for complete moisture removal while preserving nutrients, flavor, and structure.

Key Features:

100% Made in INDIA
component integration

Advanced vacuum
pump systems (Rotary
vane, Screw, Turbo)

Accurate temperature
control ($\pm 2^{\circ}\text{C}$
tolerance)

PLC with touchscreen
interface

Fast drying cycles (20-
40 hours)

Energy-efficient
insulation &
condensation
technology

GMP-compliant design
documentation

FDA-aligned for
pharmaceutical
applications

24/7 operational
capability with minimal
maintenance





Vacuum Packing Machines

Commercial-grade vacuum sealers for airtight packaging of freeze-dried or fresh products.

Key Features:

- 1** Adjustable vacuum strength (1-90% vacuum intensity)
- 2** High-speed operation: 1000-5000 pouches/hour
- 3** Multiple pouch size compatibility (5cm to 40cm width)
- 4** Oxygen absorber slot integration
- 5** Cushion mode for delicate products (freeze-dried fruits)
- 6** Digital display with preset programs
- 7** Emergency stop & safety features
- 8** Minimal operator training required
- 9** Moisture detection sensors for optimal packing



Vacuum Packing Machines

Capacity Ranges & Pricing

Freeze-Drying Machines – Capacity & Commercial Overview

System Capacity (Per Batch)	Typical Applications	Average Batch Cycle Time*	Indicative Investment Range	Expected ROI Period
5 – 10 kg	Pilot trials, R&D labs, startups, product testing	30 – 40 hours	₹12 – 18 Lakhs	24 – 30 Months
25 – 50 kg	Small to mid-scale food processors, niche products	35 – 50 hours	₹25 – 40 Lakhs	18 – 24 Months
100 – 200 kg	Commercial food & pharma production	45 – 60 hours	₹50 – 85 Lakhs	12 – 18 Months
500 kg & Above	Large-scale industrial processing & exports	60+ hours	₹1.5 – 2.5 Crores	8 – 12 Months

Vacuum Cleaning & Packing Machines – Capacity & Commercial Overview

Machine Type	Operating Speed	Ideal Application	Indicative Investment Range	Typical Payback Period
Manual / Semi-Automatic	200 – 500 pouches per hour	Small batches, startups, pilot production	₹3 – 6 Lakhs	6 – 12 Months
Automatic Chamber Type	1,000 – 2,000 pouches per hour	Medium-scale food processing	₹8 – 15 Lakhs	8 – 14 Months
High-Speed Rotary System	3,000 – 5,000 pouches per hour	Large-scale production & export units	₹20 – 35 Lakhs	10 – 16 Months



Combined Systems (Bundled Pricing)

1 Freeze-Dryer (50kg) +
Vacuum Packer
(2000/hr)
₹35-50 lakhs

2 Freeze-Dryer (100kg) +
Vacuum Packer
(3000/hr)
₹70-1 crore

Bundled pricing offers 10-15% savings vs. individual purchases



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Applications & Industries





Food Processing & Export

Fruits: Strawberries, mangoes, apples, bananas, blueberries, raspberries

Vegetables: Carrots, broccoli, peas, beans, mushrooms, onions

Value-Add Products: Snacks, trail mixes, breakfast cereals, baby food, pet treats

Export Markets: USA, EU, Japan, Middle East



Pharmaceuticals & Nutraceuticals

- 1** Active Pharmaceutical Ingredients (APIs)
- 2** Herbal extracts & supplements
- 3** Vaccines & biological products
- 4** Nutritional powders & formulations
- 5** Compliance: GMP, ISO 9001, ISO 13485 standards



Specialty Applications

Cosmetics & skincare
products

Medical device
sterilization

Space food & military
rations

Research &
development labs

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Success Stories



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Case 1: Fruit Export Business

Challenge: Fresh fruit spoilage during shipping; limited shelf life

Solution: Freeze-dryer (50kg) + Vacuum packer (2000 pouches/hr)

Results:

Shelf life extended from 7 days
→ 12+ months

Product weight reduced 90%
(lower shipping costs)

Retail premium increased 40%

ROI achieved in 18 months





Case 2: Nutraceutical Startup

Challenge: High production cost; maintaining ingredient potency

Solution: Freeze-dryer (25kg pilot) + Vacuum packer (500 pouches/hr)

Results:

- 1 97% nutrient retention vs. spray-dried alternatives
- 2 Premium market positioning achieved
- 3 Expanded into 8 new product formulations
- 4 Revenue grew 250% in Year 2





Case 3: Pharmaceutical Facility

Challenge: Regulatory compliance; batch traceability

Solution: PLC-integrated 100kg freeze-dryer + data logging system

Results:



Full GMP compliance
achieved



Batch documentation
automated



Production capacity
doubled



FDA pre-approval
inspection cleared



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Why Choose Freeztech Innovations?



✓ Three Decades of Expertise

Established background in industrial refrigeration, gas supply, and precision equipment manufacturing ensures reliability and technical support.





✓ Customized Solutions

From pilot-scale R&D to large industrial installations, we design systems tailored to your specific product, capacity, and business goals.





✓ Quality Assurance

- 1** ISO 9001:2015 certified manufacturing
- 2** GMP-compliant design & documentation
- 3** CE-marked equipment for European markets
- 4** FDA alignment for pharmaceutical applications



✓ Comprehensive Support

On-site installation & commissioning

Operator training & documentation

Spare parts availability & maintenance contracts

Technical consultation for process optimization





✓ Competitive Pricing



Direct manufacturer advantage (no middlemen markup)



Flexible payment plans & lease options



ROI-driven equipment selection guidance



✓ Proven Track Record

- 1** 100+ installations across food, pharma, export sectors
- 2** Client testimonials from leading manufacturers in India & abroad
- 3** Case studies demonstrating 300-500% ROI within 2-3 years





✓ Local Advantage (Coimbatore-Based)

Proximity enables faster commissioning, quicker spare parts delivery, and responsive technical support for Tamil Nadu, Andhra Pradesh, and pan-India clients.



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Operational Costs (Monthly Estimate)

For 50kg Freeze-Dryer + Vacuum Packer Combo

Cost Factor	Amount
Electricity(200 batches/month @ 50kW avg)	₹25,000-35,000
Cooling water(recycled system)	₹3,000-5,000
Consumables(vacuum bags, oxygen absorbers)	₹8,000-15,000
Maintenance & spare parts(monthly allocation)	₹5,000-8,000
Labor(1-2 operators)	₹20,000-30,000
Total Monthly Operating Cost	₹61,000-93,000

Monthly Production Potential: 10,000 kg finished product (freeze-dried @ 90% weight reduction)

Average Selling Price: ₹400-600/kg (depending on product & market)

Monthly Revenue Potential: ₹40-60 lakhs

Gross Margin: 65-75%



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Technical Specifications (Standard Freeze-Dryer Model)



Technical Specifications (Standard Freeze-Dryer Model)

Chamber Dimensions: 1500mm (L) × 1200mm (W) × 1400mm (H)

Drying Surface Area: 3.6 m²

Freezing Capacity: 100 kg per cycle

Temperature Range: -50°C to +50°C

Vacuum Level: <0.6 mbar (achievable)

Heating Power: 15-25 kW

Cooling Power: 30-50 TR (Tons of Refrigeration)

Total Power Consumption: 40-60 kW

Operating Pressure: 1 to 0.05 mbar

Cycle Time: 24-72 hours (depending on product)

Automatic/Manual Control: PLC-based automated with manual override

Safety Features: Pressure relief, safety interlocks, alarm systems



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Contact Information




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Our Factories at


Coimbatore | Perambalur | Cochin | Davanagere | Bagalkote

Our Group of Companies

Sri Venkateswara Carbonic Gases Pvt. Ltd | Rasi Engineering Works | Swathi Air Products
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