

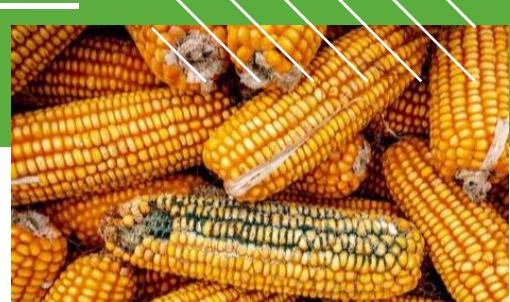
FULLY MECHANIZED RICE AND WHEAT PRODUCTION WITH A FOCUS ON LOSS REDUCTION



PART.06



Mechanization of Grain Drying



Low-Temperature Circulating Grain Dryer

Equipment Composition

- Heating unit, automatic grain temperature control system, main drying chamber.

Scope of Application

- Drying grains such as paddy rice, wheat, maize, and soybeans.

Core Features

- Low-temperature, high-airflow, and thin-layer circulation.

Advantages

- Precise **temperature control** (usually **below 50°C**) and **evenly distributing airflow** prevent grain overheating and damage.
- Ensure the **quality** and **germination rate** of dried grains.
- Particularly suitable for drying **high-moisture grain or seeds**.
- **High efficiency** and **environmental benefits**.



Box-Type Ventilation Dryer

Equipment Parameters

- **Ventilation Method:** Axial-flow fan ventilation with an airflow speed of 0.5 m/s.
- **Grain Layer Thickness:** 30 - 45 cm.
- **Batch Processing Capacity:** 500 - 1,500 kg.
- **Drying Time:** 12 - 18 hours.

Advantages

- Simple structure and low cost.
- Versatility in drying agricultural by-products.
- Suitable for smallholder farmers.

Limitations

- Uneven drying, with a **moisture difference** of **4 - 5%** between the **top and bottom layers**.
- **Manual turning** or **intermittent unloading** is required to improve uniformity.

Suitable Scenarios

- Small-scale or emergency drying situations.



Vertical Bin Ventilation Dryer

Equipment Composition and Function

- **Equipment Composition:** Storage bin, ventilation panels, fan system.
- **Functional Features:** Combines thick layer drying with storage functions.

Core Advantages

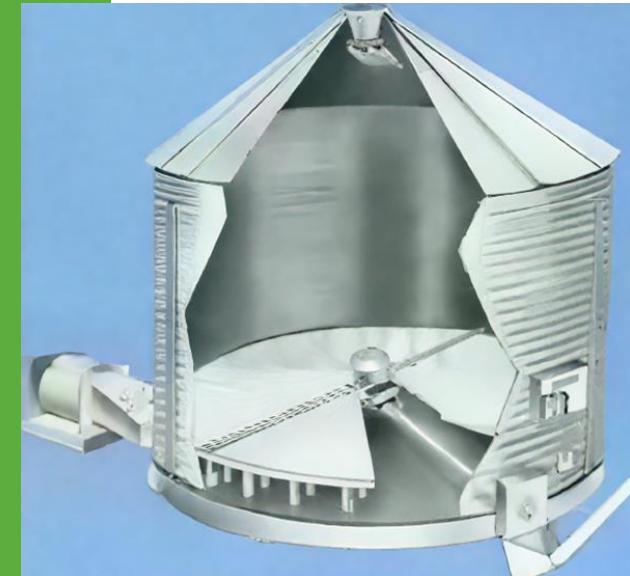
- Simple structure, large capacity, and low energy consumption.
- Uniform ventilation and effective moisture removal, ensuring good quality of the dried grain.
- Suitable for large-scale operations.

Limitations

- Uneven drying and slower speed.
- High power consumption and susceptibility to weather conditions.

Improvement Measures

- Optimize the drying effect through grain turning or staged operation.



Internal Circulation Mobile Dryer

Innovative Design

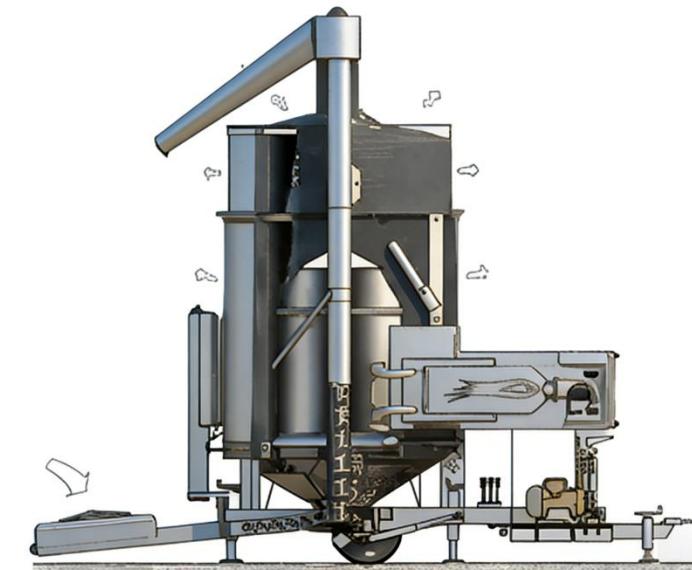
- Shortens the drying section + enables high-speed grain circulation → replaces slow-drying towers + reduces machine height.
- Eliminates the bucket elevator → compact, lightweight design + smaller footprint at the same productivity.

Core Advantages

- Efficient and uniform drying.
- High mobility, allowing for towing.
- Fast unloading and convenient feeding.

Suitable Scenarios

- Suitable for flexible farm operations.
- Widely used in rural areas of Europe and North America as a modern, user-friendly grain drying solution.



Mobile Rotary Grain Dryer

Drying Principle

- Uses hot air as the medium.
- Adopts a recirculating drying process → ensures uniform moisture reduction + drying quality.

Scope of Application

- **Grain Types:** High-moisture rice, wheat, maize, etc.
- **Target Users:** Farms, grain depots, and professional users.



Advantages and Features

- **Flexible Fuel Options:** Supports coal, wood, straw; produces **clean, pollution-free hot air**.
- **Smart Monitoring:** **Automated temperature & humidity monitoring** ensures drying quality.
- **Economical & Portable:** **Compact structure, easy mobility**, and **low investment and low operating costs** for small/medium farms.

Equipment Positioning

- An efficient, economical, and environmentally friendly grain drying solution.



Energy-Saving and Eco-friendly Grain Drying Methods



■ Straw Fuel Briquettes

Agricultural waste recycled into renewable energy.

■ Underground Cage Drying

Utilizes subsurface ventilation for natural dehumidification.

■ Functional Drying Silos

Integrates ventilation, temperature, and humidity control.

■ Above-Ground Aeration Systems

Circulates surface airflow for enhanced ventilation.

Future Directions for Mechanized Drying for Rice and Wheat

The mechanization of rice and wheat drying focuses on five key areas

- 1. Improved Adaptability:** Optimize processes for varying moisture levels and crop varieties.
- 2. Efficiency-Cost Balance:** Adopt multi-fuel options and reduce energy consumption.
- 3. Environmental performance:** Cut emissions and promote clean energy use.
- 4. Advanced Automation:** Integrate intelligent temperature and humidity control systems.
- 5. Centralized drying centers:** Integrating temporary storage, drying, and warehousing into effective hubs.

Vision

- Drive technology integration and large-scale application to establish an efficient, green, and sustainable post-harvest grain processing system.