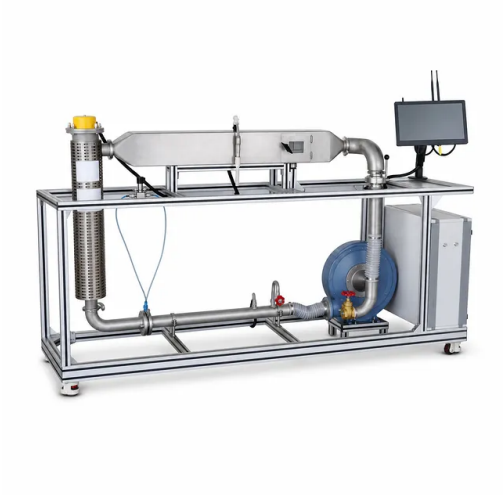
Circulating Wind Tunnel Drying And Convective Heat Transfer Coefficient Determination Educational Pilot Plant

Item Number: LPK-XHFDGZ



Introduction

This educational pilot plant enables engineering students to study convective drying, air-water vapor systems, and heat transfer by determining drying curves, drying rate curves, and convective heat transfer coefficients under variable conditions.

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Parameter	Specifications
Frame Material	High-strength industrial aluminum alloy with heavy-duty casters
Overall Dimensions	≤ 2200 mm × 580 mm × 1400 mm (L × W × H)
Control Interface	Industrial all-in-one touchscreen computer
System Operations	Constant-pressure cyclic drying, convective wind-tunnel drying
Adjustable Variables	Air velocity, heating power (temperature), and inlet humidity
Measurement Parameters	Dry-bulb temperature, wet-bulb temperature, air velocity, mass change
Safety Features	Over-temperature protection, electrical leakage protection

Experimental Module	Key Focus Areas	Learning Outcomes
Drying Kinetics Analysis	Drying curves (X vs. τ) and drying rate curves (U vs. X)	Determine critical moisture content, constant-rate drying period, and falling-rate drying period.
Air-Water Vapor Thermodynamics	Wet-bulb and dry-bulb psychrometry	Understand the use of psychrometric principles to determine air humidity and enthalpy.
Convective Heat Transfer	Constant-rate drying stage heat transfer	Calculate the convective heat transfer coefficient (h_c) between the drying medium and the material surface.
Process Variables Influence	Parameter variation (velocity, temperature, humidity)	Analyze how changes in drying air properties affect the mass transfer rate and drying time.