LABPARK

Educational Food Engineering Pilot Plants Catalog

Contact us for more catalogs of Practical Training Unit Operations Pilot Plants, Educational Unit Operations Pilot Plants, etc.

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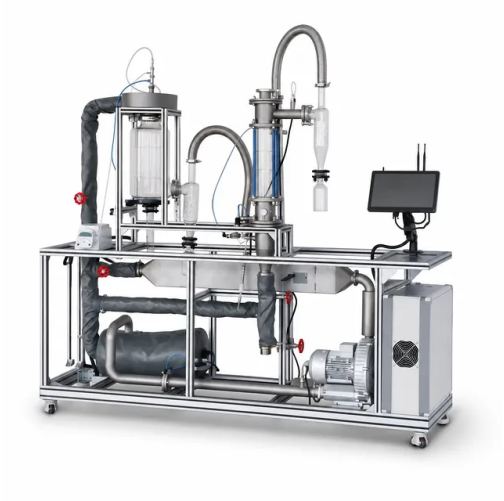
COMPANY PROFILE

>>> About Us

Labpark is a high-tech enterprise serving universities, research institutes, and enterprises in fields such as chemical engineering, biotechnology, and environmental science. Our main product lines are Educational Unit Operations Pilot Plants and Practical Training Unit Operations Pilot Plants, designed to support practical engineering education. Supported by our own R&D platforms and 209 technical patents, we operate a production facility with a planned area of 49,000 square meters, dedicated to helping institutions enhance laboratory infrastructure and practical training capabilities.

Multi-Functional Drying Educational Unit Operations Pilot Plant

Item Number: LPK-BMFD



Introduction

Versatile multi-functional drying educational unit operations pilot plant integrating tunnel, fluidized bed, and spray drying. Enables hands-on study of drying curves, psychrometry, and gas-solid separation for chemical engineering curriculum in higher education labs.

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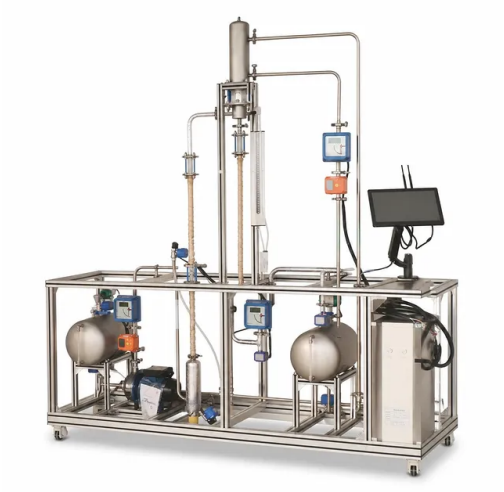
System Parameter / Module	Technical Description & Capabilities
Drying Modes	Tunnel drying, fluidized bed drying, and spray drying
Visual Components	Transparent spray drying tower, fluidized bed column, and cyclone separators
Chassis Construction	High-strength industrial aluminum alloy frame with lockable casters
Equipment Footprint	Maximum dimensions of 2200 mm × 580 mm × 1980 mm (L × W × H)
Instrumentation & Sensors	Integrated dry-bulb/wet-bulb temperature sensors, anemometers, and electronic balance indicators
Core Laboratory Exercises	• Determination of drying curves and drying rate curves • Psychrometric measurement of air humidity • Comparative study of drying kinetics in static vs. fluidized states • Visual analysis of atomization dynamics and gas-solid separation in cyclones

Rising And Falling Film Evaporation Educational Unit Operations Pilot Plant

Item Number: LPK-DGZF



Introduction

Hands-on educational pilot plant for studying rising and falling film evaporation, flow regimes, and heat transfer. Customizable for university labs with industrial instrumentation and data acquisition. Enables comparative evaluation of evaporation modes and energy efficiency.

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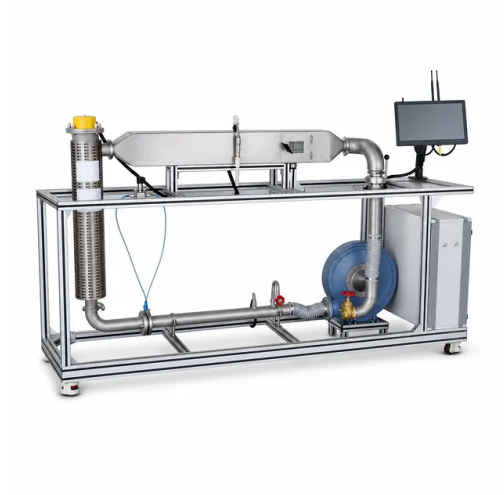
Experimental Module / System Spec	Technical and Operational Details	Curricular Alignment & Textbook Knowledge Points
Two-Phase Flow Observation Module	Single vertical tube heated section with sight glass; real-time control of heat flux and liquid feed rates to stabilize different flow regimes.	**Two-Phase Flow & Heat Transfer to Boiling Liquids** Directly links to theories in *Unit Operations of Chemical Engineering* regarding liquid-vapor mixtures, boiling regimes, and two-phase hydrodynamic transport.
Rising & Falling Film Evaporation	Dual-configuration feed routing; adjustable liquid distribution for uniform film thickness; vacuum and atmospheric pressure operation.	**Evaporation Equipment & Film Dynamics** Illustrates the principles of heat-sensitive liquid concentration as detailed in *Transport Processes and Unit Operations*, focusing on film heat transfer coefficients and boiling-point elevation.
Industrial Control & Data Acquisition	Integrated industrial touch-screen workstation; automated sensor calibration; real-time PID control loops for heating and feed systems.	**Process Control & Instrumentation** Applies concepts of process control, sensor integration, and system design as discussed in *Chemical Engineering Design*, preparing students for modern digitalized plant environments.
Mass and Energy Balances	Precision flowmeters, temperature transmitters, and pressure sensors located at critical inlets and outlets for accurate balance calculation.	**Conservation of Mass and Energy** Supports practical calculations of overall heat transfer coefficients, vapor yields, and thermal efficiency, aligning with fundamental mass and energy balance chapters in classic chemical engineering curricula.

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.

LABPARK
No. 116 Wenzhu Street, Gouzhao Township, Zhongyuan District, Zhengzhou City, Henan Province, China