

Dual-Mode Gas Absorption And Desorption Unit Operations Training Pilot Plant

Item Number: LPK-SMTXS



Introduction

Industrial-scale pilot plant for gas absorption and desorption training in chemical engineering. Features dual-mode operation with real and simulated materials, transparent columns for flow visualization, and customizable design. Supports independent or combined loops for hands-on unit operations experiments.

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Parameter / Component	Specification / Detail
Footprint Dimensions	Approximately 3930 mm × 2560 mm × 4060 mm (L × W × H) <i>[Customizable to fit lab space]</i>
Structural Frame	Steel construction with powder-coated finish; 3 mm checkered plate flooring for non-slip operation
Safety Features	1.2 m high safety handrails on the upper platform; integrated angled safety ladder
Columns Included	1 × Packed Absorption Column, 1 × Packed Desorption Column
Column Construction	Transparent, corrosion-resistant sections for visual observation of packing and fluid dynamics
Control System	PC-based SCADA system supporting real-time data acquisition and dual-mode simulation

Experimental Module	Core Textbook Topic	Key Learning Outcome
Hydrodynamics of Packed Columns	Pressure Drop & Flooding	Determine pressure drop as a function of gas and liquid flow rates; identify loading and flooding points.
Absorption Coefficient Determination	Interphase Mass Transfer	Calculate volumetric mass transfer coefficients under varying liquid spray densities.
Desorption (Stripping) Operations	Stripping & Solvent Regeneration	Evaluate the efficiency of solute removal from the liquid phase using gas stripping.
Closed-Loop Absorption-Desorption	Continuous Unit Operations	Understand steady-state recycle systems, solvent regeneration loops, and material balances.