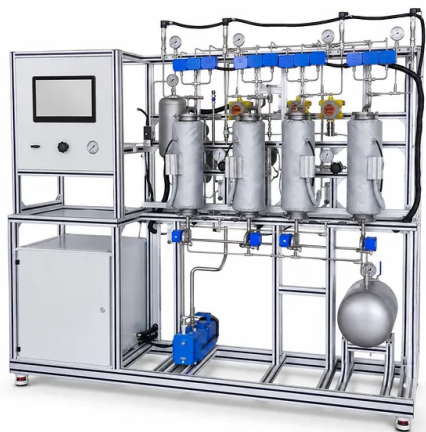


Carbon Dioxide Adsorption And Capture Educational Unit Operations Pilot Plant

Item Number: LPK-TBJC



Introduction

Advanced laboratory pilot plant for teaching carbon dioxide adsorption and capture unit operations. Features four-tower adsorption system with 400°C heating jackets, high-precision CO₂ and O₂ sensors, and 15.6-inch touchscreen with wireless data logging. Ideal for chemical engineering education.

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Equipment Component / Module	Technical Specification	Associated Unit Operations & Academic Concepts
Four-Tower Adsorption System	SUS304 stainless steel towers; heating jackets rated up to 400°C; pressure range: -0.1 to 1 MPa.	Gas-solid adsorption kinetics, fixed-bed mass transfer zones, thermal swing regeneration, pressure swing adsorption.
Gas Mixing & Feed Section	Configured for Nitrogen/CO ₂ mixtures (standard 15:85 ratio); integrated gas mixing manifold.	Gas-phase diffusion, convective mass transfer, preparation of industrial flue gas simulants.
Analytical Instrumentation	Integrated high-precision CO ₂ sensor, O ₂ sensor, multi-range mass flow meters, multi-point temperature sensors.	Mass balance equations, dynamic breakthrough curve analysis, sensor calibration, and instrumentation.
Control & Data Acquisition	15.6-inch touchscreen PLC terminal; wireless data logging; real-time visualization of P&ID.	Process dynamics and control, automated safety interlocks, data acquisition system (DAS) operation.
Frame & Enclosure	Aluminum alloy structural profile; adjustable caster wheels; dimensions ≤2200×580×2000mm.	Pilot plant scale-up, system layout design, laboratory safety standards.