Ion Exchange Water Purification Educational Pilot Plant For Engineering Unit Operations

Item Number: LPK-SIX

Introduction

This bench-scale ion exchange pilot plant trains engineering students in water purification. Dual transparent columns simulate industrial softening and demineralization. Students observe fluid dynamics, perform resin regeneration, and analyze breakthrough curves. The corrosion-resistant frame ensures durability in unit operations experiments.

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Parameter / Experimental Module	Technical Details & Features	Associated Academic Concepts
Physical Footprint	Max 2200 mm × 580 mm × 1920 mm (L × W × H)	Laboratory space planning, plant layout
Frame Material	Industrial-grade aluminum alloy with locking casters	Structural design, pilot plant mobility
Separation Columns	Dual transparent columns with composite bed piping	Multistage separation, column hydraulics
Water Production Process	Demineralization and softening operations	Ion exchange capacity, chemical equilibrium
Regeneration & Maintenance	Backwashing, chemical regeneration, rinsing	Resin activation, fluidization, bed expansion
Process Monitoring	Flowmeters, conductivity indicators, pressure gauges	Mass balance, sensor calibration, process control