

Hot Filtration Educational Unit Operations Pilot Plant Laboratory System

Item Number: LPK-CHFT



Introduction

This integrated laboratory bench-scale hot filtration pilot plant enables students to study solid-liquid separation under thermal conditions, featuring a stainless steel vessel, removable heating jacket, and multi-layer filter plates for unit operations education, ideal for chemical engineering laboratory curriculum.

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System Component / Feature	Technical Specification	Associated Unit Operation / Academic Concept	Aligned Classic Textbooks
Filtration Vessel	304 Stainless Steel, quick-disassembly upper clamp plate, lower head structure.	Solid-liquid separation; Cake resistance; Filter medium resistance.	<i>Unit Operations of Chemical Engineering</i>
Filter Assembly	Integrated three-layer internal filter plates.	Multi-stage particulate separation; Clarification; Porous media flow.	<i>Transport Processes and Separation Process Principles</i>
Thermal Jacket	Removable heating jacket with integrated temperature controller.	Heat transfer in jacketed vessels; Viscosity-temperature relationship.	<i>Transport Processes and Separation Process Principles</i>
Pressure Monitoring	Dual dial pressure gauges (inlet/outlet monitoring).	Pressure drop across filter cake; Constant pressure filtration.	<i>Unit Operations of Chemical Engineering</i>
Support Structure	Industrial aluminum profile frame with heavy-duty locking casters.	Pilot plant design; Equipment layout; Scale-up considerations.	<i>Chemical Engineering Design</i>