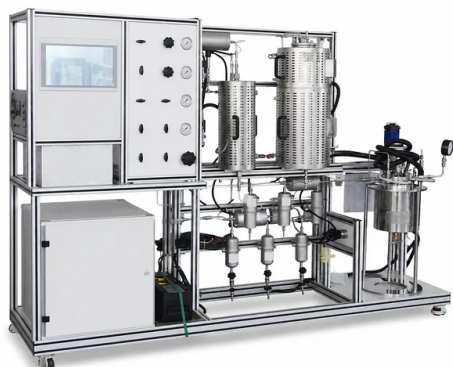


Multi Functional Catalytic Reaction And Reactor Evaluation Educational Unit Operations Pilot Plant

Item Number: LPK-SRM



Introduction

Bench-scale educational pilot plant for catalytic reaction and reactor evaluation, integrating fixed bed, fluidized bed, and stirred tank reactors. Students compare reactor designs, evaluate catalysts, and study reaction kinetics and hydrodynamics. Perfect for unit operations labs in chemical engineering curricula.

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Specification	Details
Reactor Configurations	Fixed Bed (Tubular), Fluidized Bed, Stirred-Tank Reactor (STR)
Preheating System	Independent preheaters for each reactor pathway
Gas Mixing & Distribution	Dual-gas feed with three-way control valves
Temperature Control	Programmable multi-segment PID controllers with digital display
Construction Material	Corrosion-resistant stainless steel reactors, heavy-duty aluminum alloy frame
Mobility	Equipped with heavy-duty lockable casters for easy laboratory repositioning
Physical Dimensions	Max 2200 mm × 580 mm × 1780 mm (L × W × H)
Safety Features	Over-pressure cut-offs, over-temperature alarms, and protective electrical enclosures

Target Professional Field	Core Subject / Textbook Concept	Corresponding Experimental Module on the Pilot Plant
Chemical Engineering	<i>Chemical Reaction Engineering</i> / Heterogeneous Catalytic Reactions & Kinetics	Catalyst activity evaluation, determination of conversion rates, and space-time yield in fixed-bed versus fluidized-bed reactors.
Chemical & Process Engineering	<i>Unit Operations of Chemical Engineering</i> / Fluidization & Agitation	Determination of minimum fluidization velocity in fluidized beds; evaluation of mixing efficiency and heat transfer in stirred-tank reactors.
Environmental Engineering	<i>Transport Processes and Unit Operations</i> / Fixed-Bed Adsorption & Gas Treatment	Investigation of catalytic oxidation processes and adsorption breakthrough curves using a packed bed reactor.
Food & Biological Engineering	<i>Chemical Engineering Design</i> / Reactor Sizing & Multi-Phase Mixing	Scaling-up principles, heat transfer optimization, and temperature control during exothermic/endothermic processes in jacketed reactors.