

Internal Circulation Gradient Free Catalytic Reaction Educational Pilot Plant

Item Number: LPK-SRIG



Introduction

Internal circulation gradient free catalytic reaction educational pilot plant for chemical engineering unit operations. Provides isothermal gradient free operation and hands on study of heterogeneous catalysis kinetics and mass transfer with precise control. Ideal for academic labs.

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System Parameter / Module	Technical Detail / Feature	Target Learning Outcome & Educational Concept
Reactor Configuration	Internal circulation gradient-free catalytic reactor with integrated adjustable-speed magnetic drive stirrer.	Intrinsic reaction kinetics; elimination of external and internal mass/heat transfer limitations.
Control & Instrumentation	Industrial-grade all-in-one touchscreen PC with programmable control and automated data acquisition.	Process dynamics, automated control loops, and digital data collection.
Safety Systems	Programmable temperature control, automatic over-temperature and over-pressure alarms, pressure relief paths.	Process safety management (PSM), safe operating limits, and emergency shutdown procedures.
Feed and Flow System	Precision feed pumps, flow meters, and optional wet gas flow meter for exit gas measurement.	Mass balancing, stoichiometry, and fluid transport through packed beds.
Frame & Dimensions	Heavy-duty anodized aluminum alloy frame on lockable casters; dimensions 1480 mm × 580 mm × 1780 mm.	Modular pilot-scale laboratory integration and industrial space efficiency.