

Fluidized Bed Gas Solid Catalytic Reaction Educational Pilot Plant

Item Number: LPK-LHCQG



Introduction

Our educational fluidized bed gas-solid catalytic reaction pilot plant is ideal for chemical engineering labs. Students study fluidization dynamics, catalyst evaluation, and process control hands-on. Features include a customizable reactor, touchscreen HMI, and safety interlocks for safe, curriculum-aligned experiments.

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System Component / Module	Specification & Educational Function
Reactor Assembly	Customizable quartz or stainless steel reactor tube; operating within standard gas-solid reaction temperature ranges.
Heating Unit	Program-controlled split-type electric furnace for rapid heating and easy reactor access.
Instrumentation & Control	Touchscreen industrial panel PC; digital displays for temperature, pressure drop, and gas flow rates.
Safety Mechanisms	High-limit temperature cut-off and pressure relief systems with audible/visual alarms.
Experimental Module 1	Fluidized Bed Hydrodynamics: Determination of minimum fluidization velocity (U_{mf}) and bed pressure drop curves.
Experimental Module 2	Gas-Solid Catalytic Kinetics: Evaluation of catalyst activity, selectivity, and conversion rates under varying temperatures and flow rates.
Experimental Module 3	Catalyst Deactivation & Regeneration: Study of in-situ thermal regeneration under controlled air/gas flows.