

Fixed-Bed Chemical Reaction And Gas Dust Tar Removal Unit Operations Pilot Plant

Item Number: LPK-CDTR



Introduction

Integrated educational pilot plant for studying catalytic gas-solid reactions and downstream gas purification. Features dual fixed-bed reactor, three-stage heating, and touchscreen control for hands-on engineering training. Ideal for chemical and environmental engineering curricula.

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Component / Subsystem	Technical Specifications	Primary Educational Concept & Module
Reactor Assembly	Dual fixed-bed tubular reactors; constructed from high-grade stainless steel (310S/316L); internal thermocouple sleeves.	Heterogeneous Catalysis, Reaction Kinetics, and Reactor Design.
Thermal System	Three-stage independent electric heating furnace; high-precision temperature control loops; real-time digital display.	Heat Transfer in Packed Beds, Thermal Profiles, and Process Control.
Gas Conditioning	Stainless steel preheaters and water-cooled condensers; high-efficiency particulate and tar filtration units.	Gas-Liquid Separation, Condensation Unit Operations, and Gas Purification.
Instrumentation & Control	15.6-inch industrial-grade touchscreen; integrated 5G/Bluetooth connectivity; data logging and trend plotting.	Process Automation, Instrumentation, and Data Acquisition.
Piping & Frame	Heavy-duty aluminum profile mobile frame; corrosion-resistant quick-disconnect ferrule fittings.	Pilot Plant Design, Fluid Piping Layouts, and Structural Engineering.