

Gas Phase Mixing And Residence Time Distribution Determination Educational Unit Operations Pilot Plant

Item Number: LPK-RTD



Introduction

Integrated lab system for gas-phase mixing and RTD determination. Supports pulse and step tracer methods with dual CSTR and PFR reactors, industrial components, and PC data logging. Provides hands-on study of non-ideal flow and reactor behavior for university students.

[Learn More](#)

System Parameter / Module	Technical Specifications & Components	Associated Curricular Knowledge Points
Reactor Configurations	Kettle-type reactor (CSTR approximation) and tubular reactor (PFR approximation)	Ideal vs. non-ideal flow, reactor modeling, axial dispersion
Tracer Injection System	Pneumatic 4-way and 6-way switching valves; 316L/PTFE transport lines	Step input response, pulse input response, tracer mass balance
Monitoring Instrumentation	6 high-precision pressure sensors, thermocouple transmitters (TC), and analog-to-digital (AD) conversion modules	Sensor calibration, process variable monitoring, signal conditioning
Control Interface	Dedicated Windows-based workstation with integrated self-check and data logging software	Real-time data acquisition, automated system diagnostics
Physical Dimensions	Width: ≤ 2200 mm, Depth: ≤ 580 mm, Height: ≤ 1600 mm	Industrial plant layout, laboratory space optimization
Structural Frame	Industrial aluminum alloy profile with heavy-duty adjustable leveling casters	Pilot plant safety, structural ergonomics, mobility