

100L Continuous Loop Hydrogenation Educational Unit Operations Pilot Plant

Item Number: LPK-HLJQ100



Introduction

This 100L continuous loop hydrogenation pilot plant is designed for chemical engineering education, featuring 316 stainless steel construction, advanced gas-liquid mass transfer components, explosion-proof safety systems, and a 15.6-inch touchscreen with 5G connectivity, cloud data logging, bridging theory and industry.

[Learn More](#)

Major Equipment / Module	Technical Specifications & Components	Core Chemical Engineering Concepts	Associated Textbook Knowledge Points
Reaction & Mixing Vessel	100L capacity reactor - Jacketed temperature control - Magnetic flap liquid level gauge	- Jacketed heat transfer - Liquid level monitoring - Multiphase fluid dynamics	Agitation and Mixing of Liquids (<i>Unit Operations of Chemical Engineering</i>) Heat Transfer in Jacketed Vessels (<i>Transport Processes and Unit Operations</i>)
Advanced Reactor Elements	- Coiled-tube reactor - High-efficiency jet disperser - Inline static mixer	- Gas-liquid mass transfer - Convective mass transfer - High-shear dispersion	Gas-Liquid Mass Transfer & Absorption (<i>Unit Operations of Chemical Engineering</i>) Mass Transfer in Reacting Systems (<i>Transport Processes and Unit Operations</i>)
Fluid Transport & Control	- Industrial centrifugal pump - Diaphragm dosing pump - Multiple high-accuracy flowmeters	- Fluid transport dynamics - Flow measurement & calibration - Pump performance curves	Transportation and Metering of Fluids (<i>Unit Operations of Chemical Engineering</i>) Momentum Transfer & Friction Losses (<i>Transport Processes and Unit Operations</i>)
Instrumentation & Safety Systems	- Explosion-proof motors - Real-time temperature transmitters - Digital pressure gauges	- Process safety and interlocks - Thermal runaway prevention - Hazardous area classification	Process Safety and Hazard Assessment (<i>Chemical Engineering Design</i>) Piping and Instrumentation Diagrams (P&IDs) (<i>Chemical Engineering Design</i>)
Data Acquisition (DAQ) System	15.6-inch touchscreen interface 5G and Bluetooth telemetry - Cloud-based storage and logging	- Process dynamics - Digital data acquisition - Remote monitoring	Process Control and Instrumentation (<i>Chemical Engineering Design</i>)