

Electrolytic Hydrogen Production Educational Unit Operations Pilot Plant

Item Number: LPK-CEHP



Introduction

Bench-scale electrolytic hydrogen production pilot plant designed for university engineering labs. Provides hands-on training in water electrolysis, gas-liquid separation, and process safety. Fully customizable system with digital PID control, corrosion-resistant components, and hydrogen gas detector. Ideal for chemical engineering curricula.

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Sub-system / Component	Technical Specification	Educational Focus & Unit Operation
Electrolytic Cell Stack	Multi-plate industrial-style electrolyzer configuration	Faraday's laws of electrolysis, electrochemical kinetics, energy efficiency calculation.
Electrolyte Circulation System	Dual corrosion-resistant magnetic drive pumps; integrated rotameters; PTFE flow control valves	Fluid mechanics, pump characterization curves, pressure drop across process equipment.
Separation & Storage Tanks	High-level gas-liquid separation columns with integrated buffer reservoirs	Gravity-driven gas-liquid separation, mass transfer, and multi-phase fluid dynamics.
Thermal Control Unit	Digital PID temperature controller with immersion heater and sensor feedback loop	Heat transfer, thermal equilibrium, and feedback loop process control.
Safety and Instrumentation	Continuous hydrogen gas ambient monitor with integrated interlocking relay	Industrial process safety, hazard analysis (HAZOP) training, sensor calibration.