Order Code - 32456
Distillation Column With DAQ

Tesca Computer Interfaced Continuous Distillation Column 32456 has been developed to permit student study of the fundamentals of a continuous distillation system encountered in modern industrial processes. The solution to be distilled is stored in the feed tank. The solution is pumped from the feed tank via the feed metering pump. The distillation column consists of re-boilers, glass column sections, column packing, four packing support plate assemblies, reflux separator assembly, condenser and cap assembly. The distillate feed consists of a reflux three way control valve, distillate spiral cooler, and distillate storage tank. The residue feed comes from the reboilers through the residue spiral cooler to the residue storage tank. Either the distillate of the residue may be pumped back into the feed tank for reprocess. Sampling ports are provided on all packing support plates, feed input, feed output, reflux, distillate tank, residue tank, and re-boiler.
Thermocouples are used to take all temperature readings Data Acquisition Software provides real time data on computer screen along with graphs & tabular results.
Detailed Operation & Maintenance Manual is provided along with the trainer.

Features

- Small Scale pilot plant for demonstration of Distillation Process.
- Wide range of experiments can be conducted on single unit.
- Comprehensive Instrumentation Panel with all necessary safety instruments.

Experiment Capabilities

- Pressure drop across the column as a function of boil-up rate.
- Column efficiency as a function of boil-up rate, at total reflux
- Binary mixture separation of components with changes in the feed flow rate, feed temperature, reflux ratios, and re-boiler temperatures.
- Comparing Raoult-Dalton Law using the method of McCabe-Thiele
- Taking samples and performing appropriate analytical procedures.
- Distillation at constant reflux ratio: variation of top product composition with time
- Mass balance across the system

Technical Specifications

- A 50mm diameter plate distillation column of @ 2m height, containing 8 sieve plates and down-comers. Every plate includes a temperature sensor positioned to measure accurately the temperature of the liquid on each plate up to ±0.01°C.
- A 50mm packed column for comparative studies of the two types of distillation column.
- Column connected to 4 flasks of 3L capacity each: 2 for Feed; 1 for Distillate; & 1 for bottom product.
- Electrically heated borosilicate 3 re-boilers of capacity 200°C for 1-2 hours of batch operation: 2 for the feed & 1 for bottom product.
- Fluid medium Heating bath for heating purpose up to 500°C
- An overhead refrigerated cooling condenser, with capability to reach minimum temperature of 0°C, has cooling water flow measurement and adjustment.
- A condensate collecting vessel
- Reflux return valve, solenoid operated.
- Differential manometer connected to the top and bottom of the column, to monitor column pressure drop.
- Vacuum system with gauge to allow distillation studies at reduced pressures.
- Two 5L feed vessels,
- Peristaltic feed pump
- Electrically heated re-boilers
- A bottoms product heat exchanger
- Temperature sensors in each flow stream entering and leaving the condenser and of the feed, product system and re-boiler temperatures.

Services Required

- Electric Supply 230 V AC, 16 A, Single Phase, Earthed.
- Personal Computer with USB port, Windows operating system & all peripherals.

Note: Specifications are subject to change.

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