DATASHEET

PURA-Lab

24/12/2024

Membrane distillation lab unit.

The PURA-Lab is a fully automated, 24-hour operation lab unit for investigations in various MD configurations. All set points can be set on the handheld tablet which is connected via WIFI to the server. The connectors, vessels, sensors and piping is constructed to be highly flexible, which allows experimental constructions of nearly every different type of MD. Data acquisition of all process-relevant sensor values are automatically written in a .csv-file.

The Aquastill TestCell allows to build variable module configurations, channel thicknesses, membranes and spacer geometries, leading to thorough studies on heat and mass transfer, scaling/fouling potential as well as membrane aging tests and up-scaling calculations.

The high precision PURA-Lab combined with the multi variable TestCell allows to validate your simulation model for any MD configuration.

aquastill

Temperature range/precision	Evaporator (IN or OUT controlled) Condenser (IN or OUT controlled)	30°C–85°C/±0,2K* 5°C–75°C/±0,2K*
Temperature ranged	Evaporator (IN or OUT controlled) Condenser (IN or OUT controlled)	
Condenser flow rate	50–300 l/h	
Operating modes	DCMD, AGMD, V-AGMD, PGMD, VMD	
TestCell: effective membrane surface	S1: 250 mm x 150 mm (375 cm^2) S2: 100 mm x 60 mm (60 cm^2) S3: 670 mm x 310 mm (2077 cm^2)	
TestCell: auxiliary parts	Sealings: silicone or FKM Channel Plates: PP Front plate: PMMA or PP Housing: stainless steel 316Ti	
Feed tank	20l to 600l	
Temperature measuring	Pt100 class A	
Flow measuring	Inductive	
Conductivity measuring	Evaporator: inductive Condenser: inductive Product: conductive	0–500 mS/cm 0–50 mS/cm 0–2000 µS/cm
Pressure measuring Condenser channel Evaporator channel	Air gap/vacuum gap	0-1600 mbar absolute 0-1600 mbar relative 0-1600 mbar relative
Weight measuring/accuracy	0–30 kg/1 g or 0-15 kg/0,5 g	
Pumps	Membrane TPE, Housing PP	
Vacuum pump	Membrane TPE, Housing PP	Max flow: 32 l/min Max vacuum: 50 mbar abs
Heat exchanger (plate and frame)	Stainless steel 1.4401 plates with copper or nickel brazing or gasketed with titanium plates	
Operation/settings/display	Integrated display	
Rack/housing	ITEM PA/Pan PP	
Dimensions of PURAlab**	1,4 m L x 0,88 m W x 1,6 m H	
Heating	Electric (3–12 kW)	
Cooling	Vapour-compression refrigeration cycle (2,5 kW)	
Add-Ons	pH, turbidity, TDS Sensors	

* At steady state

** Additional space is required if the tank size exceeds 20 l

All control variables and/or measurement parameters in the PURA-Lab can be tailored according to specific requirements.

The PURA-Lab is well equipped with safety shutdown to protect from pump dry run, module over pressure and system overheating.