

PyroPure Single-Effect Stills

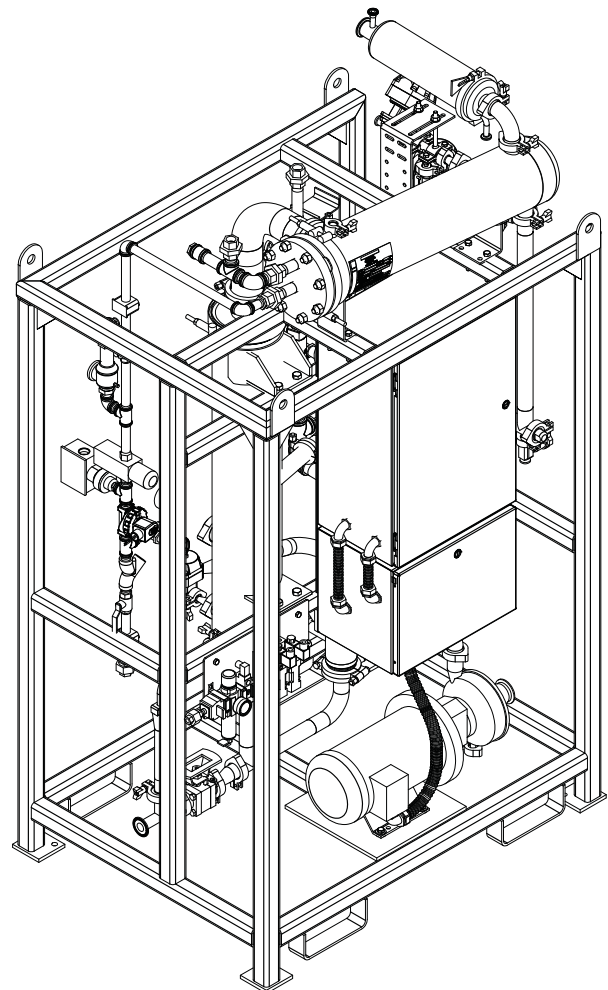
The Efficient Mueller PyroPure Single-Effect Still

Mueller PyroPure single-effect stills (SES) are a smaller distillation units designed to meet the needs and budgets of growing organizations interested in developing new products. The SES is capable of producing up to 50 gallons of WFI per hour. The SES is manufactured according to FDA current Good Manufacturing Practices (cGMPs). It features a pharmaceutical vent filter, double-tube-sheet condenser, and evaporator, including stainless steel seamless evaporator and condenser tubing, and stainless steel steam separator. All components coming into contact with feedwater, pure vapor, or distillate are made of Type 316 stainless steel, and all welded parts are made of Type 316L stainless steel.

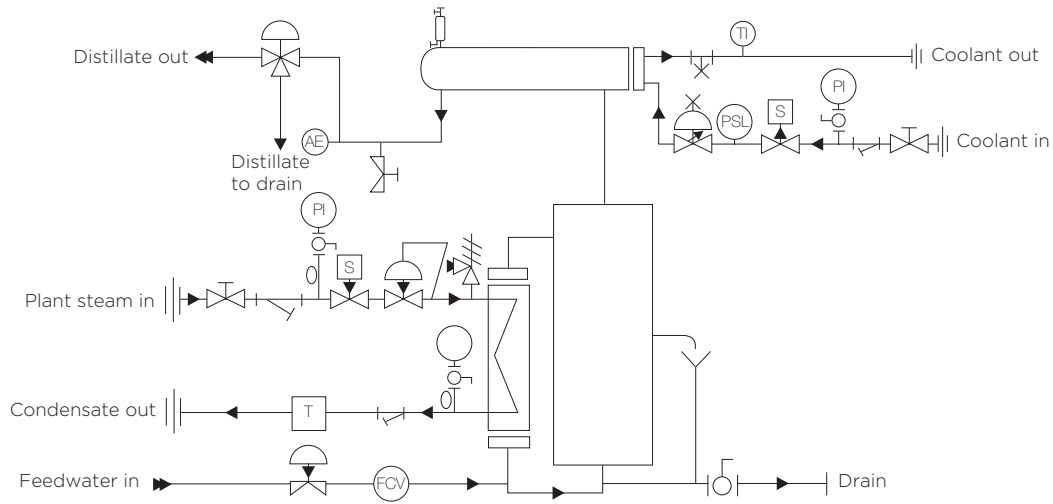
Feedwater enters the system and fills the steam separator, the tube side of the evaporator, and the level indicator assembly. At the same time, supply steam enters the shell side of the evaporator where it yields its latent heat to the feedwater through the walls of the evaporator tubes. The feedwater is evaporated, and the resulting vapor is propelled from the evaporator and into the steam separator where any impurities are centrifuged out. Pyrogen-free steam rises up through the steam separator and flows into the condenser. The pure steam is condensed by rejecting heat into cooling water circulating through the tubes of the condenser. The resulting distillate is then drained into a suitable storage vessel.

Simple Design, Reliable Operation

- External evaporators access for inspection and preventative maintenance on critical o-rings and gaskets.
- The separation columns contain no internal components that require inspection or periodic maintenance.
- All maintenance, including replacement of critical components, can be performed with only 24" of space on all sides (including the top) of the equipment.
- ASME-BPE certified fittings are used throughout.
- WFI condensers have removable tube bundles for easy cleaning and inspection of product contact surfaces.
- All product contact surfaces are manufactured from 316/316L stainless steel polished to 20 Ra maximum and electropolished.
- All elastomers in contact with feedwater and product are provided with USP Class VI certifications.
- All components are fully drainable including the optional feedwater pump.



Schematic of Operation



Specifications

Model Numbers	SES-15	SES-30	SES-50
Capacity, gph (lph) ²	15	30	50
Feedwater Inlet	.5" TC	.5" TC	1" TC
Plant Steam Inlet	.75" FNPT	1" FNPT	1" FNPT
Coolant Inlet/Outlet	.5" FNPT	.75" FNPT	.75" FNPT
Distillate Outlet	.75" TC	1" TC	1.5" TC
Instrument Air	.25" FNPT	.25" FNPT	.25" FNPT
Feedwater, gph (lph)	17	33	55
Pure Steam, lb/hr (kg/hr) ¹	155	308	501
Coolant, ghp (lph) ²	138	280	473
Electrical Srv. (Std.) ³	115 VAC, 1phase, 50/60 Hz. (Other voltages available upon request)		
Height	94" (cm)	103"(cm)	122" (cm)
Width	45" (cm)	45" (cm)	56.5" (cm)
Depth	33.5" (cm)	33.5" (cm)	33.5" (cm)
Distillate Outlet Height	68" (cm)	82" (cm)	97" (cm)

¹ Plant Steam 60 psig (4.1 barg) dry and saturated.

² Coolant water at 32°F to 80°F (0°C to 26°C) at 40 psig (2.8 barg). (Flow rates based upon a distillate outlet temperature of 190°F [88°C] and cooling water inlet temperature of 60°F [16°C]).

³ Other electrical services must be specified at time of order.