



**Pharmalab**

INDIA PRIVATE LIMITED

TECHNOLOGY YOU CAN TRUST

**Multiple Effect Distilled Water Stills**

***Purity for Life***



## Engineering Success Through Five Decades

Pharmalab manufactures equipment that delivers purity solutions for over five decades to diverse industries where survival depends on conformance to GMP and other stringent quality standards. Our strength is our ability to customize products to meet the specific need of our customer.

Founded in 1962, the organization has designed, fabricated, and commissioned a variety of state-of-the-art stainless-steel plants and equipment that includes WFI

generation plants, Pure steam generators, Sterilizers, Filters, Isolators, Freeze Dryers, and other equipment for end number of clients in India and across the world. Over the years the organization has won the recognition and trust of clients from industries like Pharmaceuticals, Life Science, Agro and Chemicals, Food & Beverages, and Healthcare.

With three manufacturing sites in Gujarat, a marketing office in Mumbai and a team of highly qualified and dedicated scientists and technocrats, Pharmalab offers indigenously manufactured products with a high competitive advantage. Several joint ventures with the world leaders for the newest technologies ranging from clean room to vapor compression to filtration systems have allowed us to set new benchmarks in quality and service. More important, we offer the best value for money.



## Multiple Effect Distilled Water Still



## Unique Pyrogen Separation and Removal System

Pharmalab's Multi Effect Distilled Water Still has a unique three-stage pyrogen removal system, which includes a specially designed centrifugal separation followed by separators. We have evolved a rationale for the removal of impure water by means of unique purging system. This ensures endotoxin removal exceeding Log 3 reduction.

## Multiple Effect Distilled Water Still

Pharmalab has been a leading supplier of Water For Injection Plant for more than three decades. In an effort to continuously upgrade the product, Pharmalab have evolved the improved design of Multi Effect Distilled Water Still. This design offers advantages like compact design requiring less space, reduced complexity with Inbuilt NCGR, reduced maintenance and improved ease of operation. This equipment is designed to meet the stringent standards set by major pharmacopoeias such as USP, IP, BP and JP. The plant is manufactured as per FDA – current Good Manufacturing Practices (cGMP) and in accordance to ASME requirement. The WFI is produced on the basic principle of Distillation by Thin Film Evaporation.

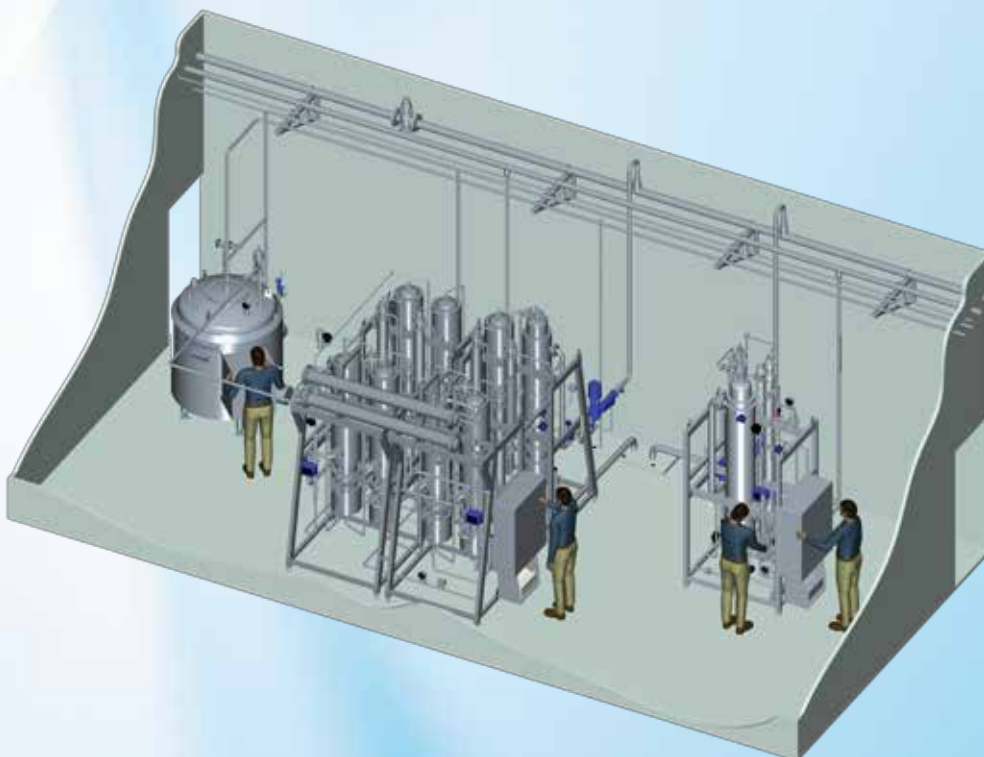
This process involves a shell and tube heat exchangers (column) where heat transfer is done by falling film evaporation. High temperature is reached for every drop of water produced, thus ensuring sterility levels demanded for WFI. Separation of the pyrogenic load is achieved through centrifugal force generated during the upward movement of the steam.

During the process, feed and distilled water within the plant is in continuous motion and hence there is no stagnancy. Impurities, along with the pyrogenic load, are continuously purged from every column. At start-up during pre-heating and self-sanitization the residual accumulated water will also drain off before WFI is produced.

Our plant is designed to be crevice-free as crevices promote stagnation and stimulate bacterial growth. All columns are designed to ASME specifications and are approved by CE for PED regulations as per European Union requirement. All contact parts in the plant are electro polished, pipe joints are orbitally welded, gasket are made of pure Teflon or pharmaceutical-grade silicon and the first column is double tube sheet designed to prevent pure steam mixing with plant steam, should there be a weld joint failure in the tube sheet.

This state-of-the-art system delivers WFI of a quality standard for storage and distribution that is much higher than what is desired by pharmacopoeias throughout the world.

## 3D Image



## Designed for the times

- New FAT area specially designed and built for Pharma grade equipment.
- Full capacity trials during FAT simulating Pharmaceutical facility conditions like dry steam and purified water ensures peace of mind
- Inhouse facility to check endotoxin level during FAT.

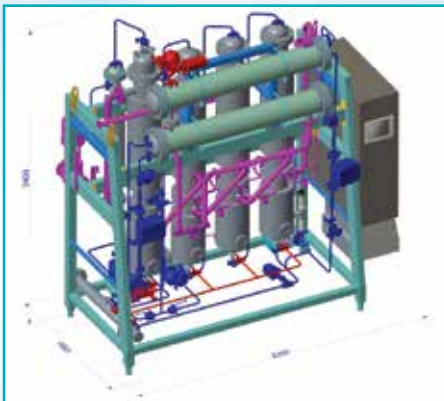


Factory Acceptance Test (FAT Area)

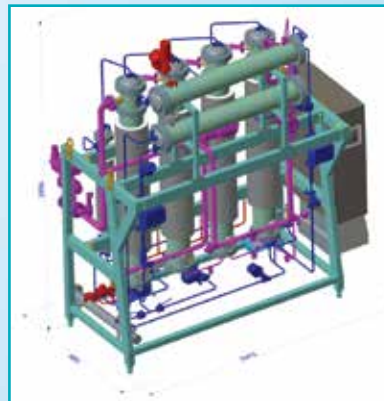


Pyrogen Testing Kit

Compact design ▶



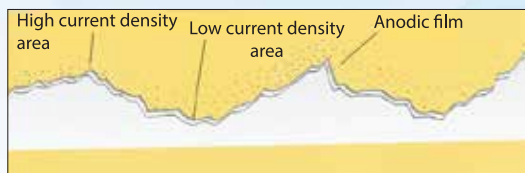
New Design Foot Print  
[300WS]



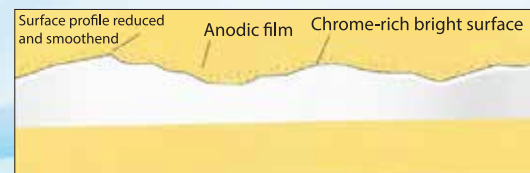
Existing Design Foot Print  
[300WS w/o NCGR]

## Outstanding Features

- The plant is completely made in AISI 316L stainless steel with active surface being electropolished.
- Double tube sheet for first heat exchanger where boiler steam is used.
- Unique in-built degasifying (NCGR) system in first column for removal of non-condensable gases from feed water.
- Consistent WFI output temperature.
- Expanded tube for tube-to-tube sheet joints.
- Two specially designed top coolers as per cGMP.
- PLC based operation along with all interlocks and validated logic with skid mounted AISI 304 stainless steel control panel.
- Complete documentation to serve international audit requirements.
- Reduced feed water consumption by innovative endotoxin removal system.
- Compact design ensures less foot print and shorter column height reduces ceiling height requirement.
- Unique column design requires no additional height for tube bundle removal from top.
- Reduced rouging effect by reduction of pure steam contact surface area within the column.
- Increased life cycle of equipment.
- Ease of maintenance due to reduced working height for pure steam piping and shorter column height.
- Orbital welding with boroscopy, sanitary fittings and pharmaceutical grade gasket are the features of piping system.
- The insulation is made of rock wool covered by AISI 304 stainless steel sheet.
- The frame is made of AISI 304 stainless steel



Before Electropolishing



After Electropolishing

### PLC based operation ▶

## Special Features

- Simultaneous WFI and Pure Steam production
- Proportionate capacity control with full automation.
- High energy saving (less plant steam) and cooling water saving (80% less) models
- SCADA communication and 21 CFR Part 11 compliance
- Drain cooling arrangement to meet environmental norms
- Manufacturing and performance to meet many international guidelines like ASME BPE, GAMP, ISO 9001-2008, HTM 2010
- Self-Sterilization mode
- Stand-by mode
- Preventive maintenance alert through HMI
- VFD base control system to improve efficiency and reduce operating cost.

# Technical Specifications

Model	Number of Columns	3 Kg Model				8 Kg Model				Dimensions and Weight			Weight-Kg	WFI Outlet Height-mm
		Plant Steam 3 to 6 Kg/cm <sup>2</sup> (143°C to 165°C)				Plant Steam at 8 Kg/cm <sup>2</sup> (175°C)				Height-mm	Length-mm	Width-mm		
		WFI-LPH	Steam Kg/Hr	Feed water-LPH	Cooling Water-LPH	WFI-LPH	Steam Kg/Hr	Feed water-LPH	Cooling Water-LPH					
80	4	80	37	92	140	-----	-----	-----	-----	2300	2200	1050	600	1300
150	4	150	69	172	225	284	131	326	426	2700	2200	1050	775	1900
	7	150	61	172	45	284	115	326	85	2700	3325	1050	1000	1900
300	4	300	138	345	420	568	261	653	795	2500	2450	1100	1050	1800
	7	300	121	345	84	568	230	653	159	2500	3800	1100	1375	1800
500	5	500	135	575	650	918	248	1055	1193	3100	2550	1250	1500	2250
	8	500	119	575	130	918	218	1055	239	3100	3900	1250	2125	2250
700	5	700	189	805	910	1200	324	1379	1560	2900	3050	1400	1900	2400
	8	700	166	805	182	1200	285	1379	312	2900	4550	1400	2725	2400
1000	5	1000	270	1149	1300	1918	518	2205	2493	3400	3425	1500	2550	2700
	8	1000	238	1149	260	1918	456	2205	499	3400	5075	1500	3700	2700
1500	5	1500	405	1724	1950	2750	743	3161	3575	3750	3425	1500	2850	3000
	8	1500	356	1724	390	2750	654	3161	715	3750	5075	1500	4100	3000
2000	6	2000	460	2299	1500	3834	882	4407	2876	3700	4300	1500	4200	2900
	8	2000	414	2299	300	3834	794	4407	575	3700	5650	1500	5500	2900
3000	6	3000	690	3448	2160	5500	1265	6322	4125	4100	4700	1600	6400	3300
	8	3000	621	3448	432	5500	1139	6322	825	4100	6150	1600	8400	3300
5000	6	5000	1150	5747	3000	9584	2204	11016	5900	4500	5650	1850	10700	3600
	8	5000	1035	5747	600	9584	1984	11016	1180	4500	7250	1850	13800	3600

- NOTE:**
- 1) Plant Steam should be dry and saturated.
  - 2) Plant Steam required is at 6 / 8 Kg/Cm<sup>2</sup> (g) pressure for Standard Operation of plant (Depends on operation at 6 / 8 Kg/Cm<sup>2</sup> (g))
  - 3) Plant Steam required is at 7 / 9 Kg/Cm<sup>2</sup> (g) pressure for Auto Operation of plant (Depends on operation at 6 / 8 Kg/Cm<sup>2</sup> (g))
  - 4) Feed water and cooling water should be supplied at 25°C. All calculations are based on 25°C temperature of feed and cooling water.
  - 5) There is possible variation of ± 50 mm in dimensions.
  - 6) In case of Auto operation only depth will increase by 150-200 mm.
  - 7) With total number of columns equal or greater than 7 numbers, minimum plant steam requirement is 4 Kg/Cm<sup>2</sup> (g)
  - 8) Model 80, is also available in electrically operated version. But in electrically operated version, output will not be variable.
  - 9) 3 Kg model is designed to operate from 3-6 Kg/Cm<sup>2</sup> (g) pressure. Based on increase in pressure, the WFI output (in LPH) increases accordingly.
  - 10) Weight given is approximate weight considering standard equipment. Weight will change as per selection of accessories.

"ALL AND ANY INFORMATION IN THIS CATALOGUE IS SUBJECT TO CHANGE WITHOUT ANY NOTICE"



**Registered Office:** Pharmalab India Private Ltd.,  
 Kasturi, 3rd floor, Sanghvi Corporate Park, Govandi Station Rd, Govandi (E), Mumbai 400 088, INDIA.  
 Tel.: +91-22-66 22 9900 • Fax: +91-22-66 22 9800 • E-mail: pharmalab@pharmalab.com • Website: www.pharmalab.com  
**CIN No.: U29297MH2006PTC163141**