

MULTIPLE-EFFECT WATER DISTILLATION PLANT

Introduction:

Star Engineering Services designed the Multi – effect distillation plants to produce the sterile and pyrogen-free distilled water of very high quality with a very low consumption of energy and cooling water.

"Multiple-effect" distillation gets its name from the fact that more than one boiling chamber or "effect" is used to produce distilled water. With multiple-effect technology, the water in subsequent boiling chambers. This recycling of energy provides the energysaving feature of multiple-effect distillation.

Technical Specification:

Steam source pressure – Primary steam to pure steam Design temperature, Watersource pressure and Working temperature according to the capacity of unit. Pure steam generated at pacific level.

Distillate Quality:

PH 6.8 – 7.0

Specific conductivity 0.3 – 0.5 µ Siemen-cm

Distillate temperature 98 deg. C

Feed water quality deionized

Models Designed by Star Engineering Services:

1- Multi-effect Steam Heated Type 100 MS

Capacities and consumption

Primary Steam	Distilled Water Produc-	Pures	nutione) Stearn action	Feed Water	(4		Course feed wa Kz/h					ater Co olang v Mh		
Риссяцие	tion		kg/n en Temp.	Concurre- tion		(muni	berofe	ofeffects) (number of eff						
6ω(g)	10.	120	135	Vn	3	4	5	6	7	3	4	5	6	7
3	100	60	40	110	40	30	25			145	85	40		
4	125	70	60	140	50	40	35			190	100	30		
5	155	70	80	170	65	50	40			240	125	60		
6	180	70	80	200	75	60	50			275	150	70		
7	205	70	80	230	90	70	- 55			330	170	85		
8	230	70	80	245	95	75	60			355	183	95		

Dimension and Weights

Plat Height	Product Outlet Height	Plat With			lize Log					Weight		
Bun	784274	28420	3	4	5	6	3	3	4	5	6	7
2000	1875	750	1020	1300	1,590			430	500	S80		

2- Multi-effect Steam Heated Type 200 MS

Capacities and consumption

Primary Steam	Distilled Water	Pure: Prode	uative) Steam action	Feed Water			Course feed wa Kg/h				ling ₩ S* C co			
Ризяще	Produc- tion	Max. Pure Stea	kg/h en Temp.	Consump- tion		(mure)	erofe	fects)			(nuny	erofe	fects)	
bar(g)	νh	120*	135*	10h	3	4	5	6	7	3	4	5	6	7
3	200	120	80	220	80	63	- 33			230	170	80		
4	250	160	120	275	105	80	70			380	200	95		
5	310	160	160	340	135	105	85			480	250	120		
6	360	160	180	400	155	120	95			550	295	140		
2	410	160	180	460	180	140	113			660	340	120		
8	440	160	180	490	195	150	12			710	370	185		

Dimension and Weights

Plant Height	Product Outlet Height	Plant Width			last Leng umber of					Weight		
man	mun	mm	3	4	s	6	7	3	4	s	6	7
2200	2075	800	1140	1450	1800			520	580	630		

3- Multi-effect Steam Heated Type 400 MS

Capacities and consumption

Primary Steam Pressure	Distilled Water Produc-	Pure: Prode	natire) Steam action	Feed Water			feed wa Kg/h					ater Cor oling wa Mh		
Гязяце	tion		. kg/h en Temp.	Consump- tion		(nun)	berofe	ffects)			(muny	erofeff	ects)	
ba(g)	10h	120*	135*	10h	3	4	s	6	7	3	4	s	6	1
3	400	240	160	440	160	130	110			580	340	160		
4	500	280	240	550	210	160	140			740	400	180		
5	620	280	240	680	270	210	170			960	500	240		
6	720	300	300	800	310	240	185			1045	580	280		
7	820	300	340	880	360	280	230			1290	660	340		
8	880	300	340	940	385	295	250			1420	740	370		

Plant Height	Product Outlet Height	Plant Width			lart Lery umber of					Weight		
man	mm	mum	3	4	s	6	7	3	4	s	6	7
2500	2295	950	1380	1750	2230			800	1040	1140		

4- Multi-effect Steam Heated Type 500 MS

Capacities and consumption

Primary Steam Pressure	Distilled Water Produc-	Pure 2 Prode	native) Steam action	Feed Water	(4		Consu feed wa Kg/h					ater Cor oling w Ma		
r norale	tion		. kg/h en Temp.	Consump- tion		(mani	berofe	ffects)			(mamb	erofeff	ects)	
9m(t)	1/h	120*	135*	1/h	3	4	5	6	7	3	4	5	6	7
3	500	300	200	550	200	160	130	110		725	420	200	105	
4	625	300	300	690	260	205	170	135		950	500	240	120	
5	770	300	360	855	335	255	210	175		1200	625	300	140	
6	900	3:20	360	990	375	300	245	205		1375	740	3.50	160	
3	1020	320	360	1130	440	340	285	240		1650	850	425	175	
8	1100	320	360	1210	475	370	305	260		1775	925	465	225	

Dimension and Weights

Plant	Product Outlet Height	Plast Width			lart Leng					Weight		
Height	nega	anani	3	4	s	6	7	3	4	s	6	7
2600	2330	800	1500	2050	2660	3050		950	1050	1220	1420	

5- Multi-effect Steam Heated Type 800 MS

Capacities and consumption

Primary Steam	Distilled Water Produc-	Pute S Pacific		Feed Water	(*		Consu feed we Kan				oling Wa S'Ceo			
Pressure	tion	Max. Pure Stea	kg/h en Temp	Consump- tion		(reard	terofe	fects)			(ബൻ)	erofes	ècts)	
bu(5)	10.	120*	135*	105	3	4	5	6	7	3	4	5	6	7
3	808	520	360	950		260	130	220			650	340	160	
4	1000	560	520	1160		320	170	260			780	400	150	
5	1340	560	595	1425		4/20	210	340			1030	500	240	
6	1520	560	640	1690		480	245	370			1120	580	280	
7	1760	560	640	1875		550	285	420			1340	660	340	
8	1985	560	640	2090		590	305	420			1330	740	370	

Dimension and Weights

Plant	Product Outlef	Plas			Plant Len number of	gth nen feffects)				t Weight nherofe		
Height	Height	what	3	4	5	6	7	3	4	5	6	7
1020	ettern.	ກມານ										
2800	2600	900		2600	3150	3600			1600	1820	2040	

6- Multi-effect Steam Heated Type 1000 MS

Capacities and consumption

Primary Steam Pressure	Distilled Water Produc-	Pure : Prode	native) Stearn action	Feed Water	(4		Consu feed wa Kg/h				oling Wa S*C co			
PROPUR	tion		n Temp.	Consump- tion		(10120)	berofe	ffects)			(mumb	erofeff	ects)	
bu(g)	1/h	120*	135*	10.	3	4	5	6	7	3	4	5	6	7
3	1000	600	400	1100		320	260	215			840	440	210	
4	1250	740	580	1375		415	340	275			1000	525	260	
5	1550	740	720	1705		515	415	3.50			1250	660	280	
6	1800	740	840	1980		60.5	490	415			1480	770	3.50	
7	2050	740	840	2260		700	565	480			1700	935	400	
\$	2200	740	840	2420		760	615	520			1850	1000	450	

Dimension and Weights

Plant Height	Product Outlet Height	Plant Width			Plant Len number o	gth men feffects)				t Weight nherofe		
mm	mum	man	3	4	5	6	7	3	4	5	6	7
2800	2600	900		2700	3200	3700			1700	1940	2200	

7- Multi-effect Steam Heated Type 1500 MS

Capacities and consumption

Primary Steam Pressure	Distilled Water Produc-	Pure: Prode	satire) Steam sctices	Feed	(4		Consu feed wa Kg/h					ater Con oling wa Mh		
	tion	Max. Pure Stea	. kg/h m Temp.	Water Consump- tion		(mma)	erofe	ffects)			(samsp	erofeff	ects)	
bu(g)	Vh	120*	135*	l/h	3	4	s	6	7	3	4	5	6	7
3	1500	900	600	1650		480	395	330			1260	600	335	
4	1875	1050	850	2070		620	510	415			1500	715	400	
5	2350	1050	1090	2560		770	630	530			1875	1000	450	
6	2700	1050	1200	2970		910	735	620			2220	1150	525	
7	3060	1050	1200	3380			850	720				1275	650	
8	3300	1050	1200	3640			920	780				1390	720	

Dimension and Weights

Plant Height	Product Outlet Height	Plant Width			Plant Len number of	gth nm f effects)				Weight nherofe		
mm	mm	mm	3	4	5	6	7	3	4	s	6	7
3000	2820	1000		3300	3800	4400	5000		2300	2700	3150	3600

8- Multi-effect Steam Heated Type 1800 MS

Capacities and consumption

Primary Steam	Distilled Water	Pure 2 Prode	satire) Steam action	Feed			Consu feed wa Kg/h				olâng Wa IS*Ceor			
Ризяци	Produc- tion	Max. Pure Stea	. kg/h en Temp.	Water Consump- tion		(mma)	berofe	fects)			(mamb	rofeff	ects)	
bar(g)	10h	120*	135*	1/h	3	4	s	6	7	3	4	s	6	7
3	1800	1080	720	1980		570	470	395			1510	720	400	
4	2250	1260	1020	2500		740	610	490			1800	860	480	
5	2820	1260	1310	3070		920	750	630			2250	1200	540	
6	3240	1260	1440	3.560		1090	880	740			2660	1380	630	
7	3670	1260	1440	4050			1020	860				1530	780	
8	4000	1260	1440	4360			1100	930				1670	865	

Dimension and Weights

Plant Height	Product Outlet Height	Plant Width			Plant Len number of	gth nan f effects)				t Weight nberofe		
neum	mm	rum	3	4	5	6	7	3	4	s	6	7
3000	2820	1000		3500	3900	4450	5100		2800	3200	3750	4400

9- Multi-effect Steam Heated Type 2000 MS

Capacities and consumption

Primary Steam Pressure	Distilled Water Produc-	Pure 2 Paoda	native) Steam action Kg/h	Feed Water Consump-				Rumption Water ten h		C		Water Co * C cooli temp.) 1/h	ing wate	
	tion		en Temp.	tion		(N	unber of	f effects)			(Nu	mber of	effects)	
Bar (g)	ĩ⁄h	120*	135*	1/h	3	4	5	6	7	3	4	5	6	7
3	2500	1520	1000	2750	-	800	650	550	470	\vdash	2050	1100	600	-
4	3125	1730	1460	3430		1030	850	750	650		2500	1305	750	-
5	3870	1730	1810	4260		1290	1035	875	750		3120	1675	810	-
6	4500	1730	1960	4950		1510	1220	1040	\$90		3680	1920	930	-
7	5120	1730	1960	5650			1415	1200	1050			2340	1160	
8	\$500	1730	1960	60.50			1540	1300	1140			2550	1280	

7

5400

Dimension and Weights Plant Weight net kg. (Number of effects) Plant Length mm. (Number of effects) Product Outlet Height Plant Height Plant Width 7 3 3 4 s 6 4 s 6 21121 20120 3000 1100 4500 5000 \$800 6400 3700 4200 4700 3200

10- Multi-effect Steam Heated Type 2500 MS

Capacities and consumption

Primary Steam Pressure	Distilled Water Produc-	Pure 2 Paoda	native) Steam action Kgh	Feed Water Consump-				Rumption water ter h		C		Water Co * C cooli temp.) 1/h		
	tion	Pure Stea		tion		(N	umber of	f effects)			(Nu	mber of	effects)	
Bar (g)	ĩ⁄h	120*	135*	1/h	3	4	5	6	7	3	4	5	6	7
3	2500	1520	1000	2750		800	650	550	470	\vdash	2050	1100	600	-
4	3125	1730	1460	3430		1030	850	750	650		2500	1305	750	*
5	3870	1730	1810	4260		1290	1035	875	750		3120	1675	810	*
6	4500	1730	1960	4950		1510	1220	1040	890		3680	1920	930	*
7	5120	1730	1960	5650			1415	1200	1050			2340	1160	*
8	\$500	1730	1960	60.50			1540	1300	1140			2550	1280	*

D	imension a	nd Weigh	ts									
Plant	Product Outlet	Plant Width			Plant Len Number o	gth mm f effects)				Weight nber of e		
Height	Height	HOM	3	4	s	6	7	3	4	s	6	7
3200	3000	1100		4500	5000	5800	6400		3700	4200	4700	5400

11- Multi-effect Steam Heated Type 3000 MS

Capacities and consumption

Primary Steam Pressure	Distilled Water Produc-	Pure 2 Prode	native) Steam sction Kgth	Feed Water Consump-				numption water ter h		C		Water C * C cool temp.) 1/h		
	tion		en Temp.	tion		(No	umber of	effects)			(Nu	mberof	effects)	
Bar (g)	1/h	120*	135*	1/h	3	4	5	6	7	3	4	s	6	7
3	3000	1770	1160	3300		960	790	660	565		2520	13:20	670	-
4	3750	2080	1680	4125		1240	1020	825	710		3000	1575	720	-
5	4650	2080	2100	5115		1540	1260	1060	910		3750	1980	960	-
6	5400	2080	2370	5940		1815	1470	1245	1070		4440	2200	1125	-
2	6120	2080	2370	6760			1700	1435	1255			2800	1390	-
8	6600	2080	2370	7280			1840	1560	1365			30.50	1500	-

Dimension and Weights

Plant Height	Product Outlet Height	Plant Width			Plant Len Jumber o	gth mm f effects)				Weight nber of e		
mm	mm	mm.	3	4	5	6	7	3	4	5	6	7
3500	3220	1200		5500	6200	6900	7600		4200	4700	\$300	6000

12- Multi-effect Steam Heated Type 4000 MS

Capacities and consumption

Primary Steam Pressure	Distilled Water Produc-	Pure Prode	mative) Steam action Kgh	Feed Water Consump-				numption water ter h		C		Water C * C cool temp.) 1/h	ing wate	
	tion		an Temp	tion		(No	umberci	f effects)			(Nu	mberof	effects)	
Bar (g)	1/h	120°	135*	1/h	3	4	5	6	7	3	4	s	6	7
3	3000	1770	1160	3300		960	790	660	565		2520	13:20	670	-
4	3750	2080	1680	4125		1240	1020	825	710		3000	1575	720	-
5	4650	2080	2100	5115		1540	1260	1060	910		3750	1980	960	
6	5400	2080	2370	5940		1815	1470	1245	1070		4440	2200	1125	-
2	6120	2080	2370	6760			1700	1435	1255			2800	1390	
8	6600	2080	2370	7280			1840	1560	1365			30.50	1500	

Dimension and Weights

Ι.	Plant Height	Paoduct Outlet Height	Plant Width			Plant Len Fumber o	gth mm f effects)				t Weight mber of e		
1	mm	mm	WY SHE	3	4	5	6	7	3	4	5	6	7
<u> </u>	man	anun	2020										
	3500	3220	1200		5500	6200	6900	7600		4200	4700	5300	6000

13- Multi-effect Steam Heated Type 5000 MS

Capacities and consumption

Primary Steam Pressure	Distilled Water Produc-	Pure 2 Paoda	native) Steam ction Kgth	Feed Water Consump-				ramption water ten h		C		Water C * C cool temp.) 1/h	ing wate	
	tion	Pure Stea	m Temp.	tion		(Nu	mber of	effects)			(Nw	nber of	effects)	
Bar (g)	Иħ	120*	135*	μħ	3	4	5	6	7	3	4	5	6	7
3	5000	2900	1860	5500		1600	1310	1100	940		4400	2200	1125	•
4	6250	3380	2680	6875		2070	1700	1375	1180		5000	2620	1400	*
5	7700	3380	3360	8525		2570	2090	1760	1510		6250	3200	1510	-
6	9000	3380	3360	9900		3025	2450	2075	1780		7390	3850	1760	*
7	10200	3380	3850	11200			2825	2390	2090			4675	2175	*
8	11000	3380	3850	12100			3075	2600	2280			\$085	2400	•

Dimension and Weights

Plant Height	Product Outlet Height	Plast Width	Plant Longth men (Number of effects)					Plant Weight net kg. (Number of effects)				
			3	4	5	6	7	3	4	s	6	7
					6000	6000	2000		<100	<000	2200	
3000	3450	1300		5500	6200	6900	7600		6100	6800	7700	8600

Product contact components 316L stainless steel

Frame 304 stainless steel

Control Panel 304 stainless steel

Insulation Aluminum with 2" rock wool

The control panel has a hygienic design due to the smooth plastic foil covered surface which yields to a finger touch on the clearly text marked switch mechanisms.

The controls unite forms, together with power pack and control panel, a complete unit in its fan-ventilated sheet metal box.

Working principle:

The plant consist of 3 or 8 effects, or columns, which each is separate distillatory ontaining, pre heater tubes, evaporator / condenser tubes and steam separation system.

Only the first column is heated from the external source, which can be either steam or electricity.

The pure steam produced in the first column is used for heating the second column, which will also produce pure steam but at a somewhat lower pressure.

This pure steam is used for heating the next column and so on through the numberof columns. When the pure steam is used for heating the following column will it atthe same time be condensed to pure distilled water?

The pure steam produced in last column will be condensed in a condenser partly by incoming feed water and partly by cooling water.

Submission:

Avail from Star Engineering Services Multiple-effect distillation plants that are offered in various types.

The Columns of these distillers are made using thick stainless steel.

Further, our range is known for quality, material used operations and performance.

Available in wide applications, these can also be custom made as per the client requirements.

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