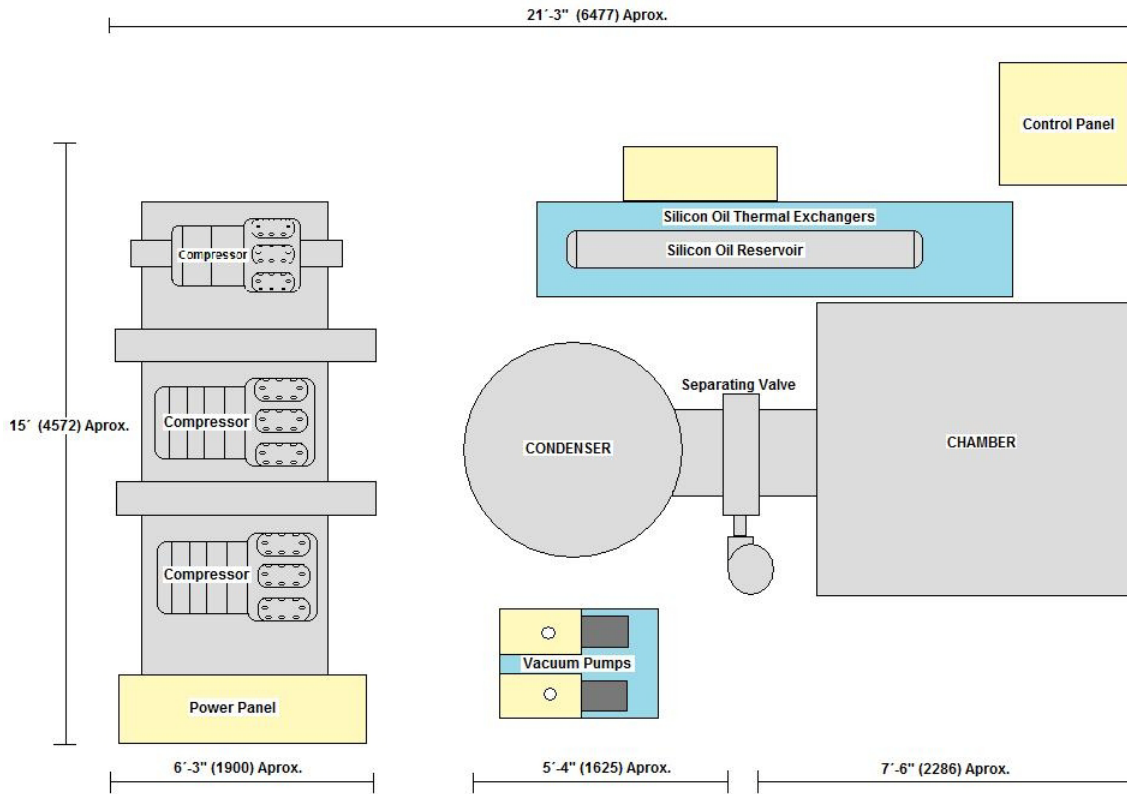
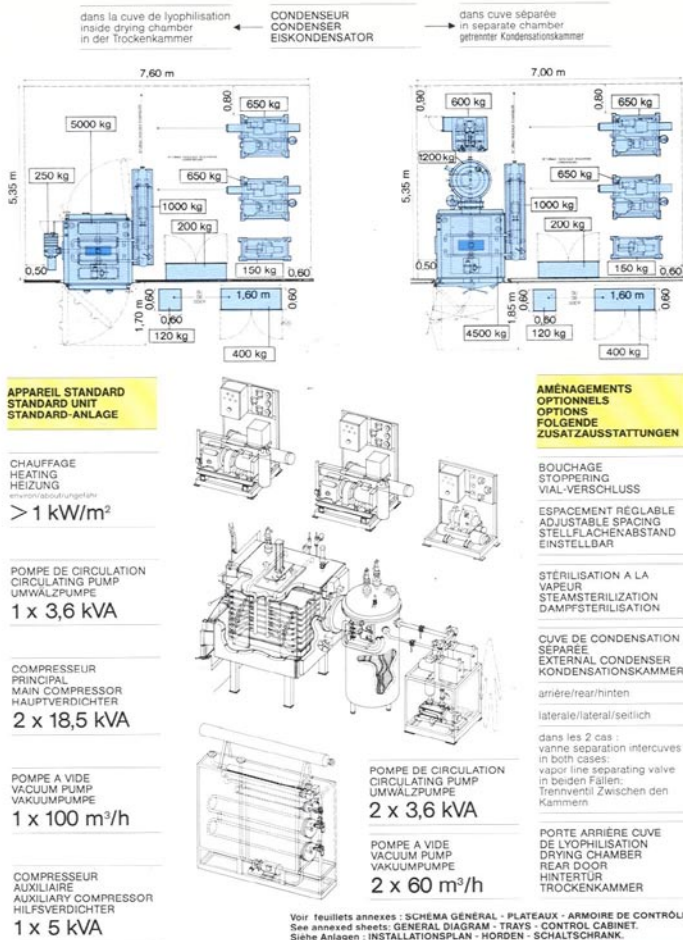


SMH 1000 PRODUCTION FREEZE DRYER

Chamber Design:	Rectangular
Useable Shelf Area:	134.5 Square Feet
Number of Useable Shelves:	Eight (8)
Dimensions of Shelves:	39" wide, 62" deep (approx)
Shelf Flatness:	+/- 0.4"
Space between Shelves:	2.7"
Ice Capacity, Condenser Condensing Rate	200 Kg @ -40 C: 20 Kg p/hr @ -50 C: 12 Kg p/hr @ -60 C: 3 Kg p/hr
Gross Weight	22,000 lbs (approx)
Recommended Footprint:	15' x 30'
Shelf Temperature Range:	-60 C to 50 C
Maximum Condenser Temperature	-65 C
Shelf Cooling Rate:	20 C to -40 C: 55 minutes
Temperature Control:	+/- 0.8 C
Condenser Cooling Rate:	20 C to -40 C: 25 minutes
Ultimate Vacuum:	50 microns, Hg
Chamber Evacuation Rate:	Ambient to 100 microns, Hg: 40 minutes



model SM.H. 1000							
SEQUENCES OF OPERATION	NUMBER OF COMPRESSORS ENGAGED	OPERATING CONDITIONS (SUCTION) °C	WATT INPUT		VACUUM SYSTEM k.W	CIRCULATING SYSTEM HEATER + PUMP k.W	TOTAL kW
			EACH: kW	TOTAL: kW			
1) Shelf precooling temperature decreasing from +30°C down to -50°C in approx. 1 hr	3	-30 -60	18 11	54 33	-	2	from 56 to 35
2) Batch freezing (100 l) on precooled shelves begin. of freezing end of freezing approx. duration : 1 1/2 hr	3	-40 -60	15 11	45 33	- -	2	from 47 to 35
3) Chamber evacuation 3.1. process condenser cooling beginning after 15 min.	2	-40 -50	15 13	30 26	2 x 1,5 = 3	2	from 46 to 42
3.2. shelf temperature control beginning after 15 min	1 1	-60 -60	11 11	11 11			
4) Sublimation (see note g) 4.1. process condenser cooling 4.2. Heating (energy of sublimation-circulating system)	2	-60	11	22	1 x 1,5 = 1,5	12	35,5
5) Secondary drying	2	-70	10	20	1 x 1,5 = 1,5	2	23,5



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