

SMALL STANDARD STEAM SUPERHEATERS

CONSTRUCTION

Acme ES Series Standard Steam Superheaters are designed, built and tested to ASME Section 8 Div. 1 code :

ES Series Superheaters are available in carbon steel or stainless steel SS304.

Maximum temperatures : 500° F or 700° F.

They are complete packaged units including 4 in. (100 mm) insulation with metal cover, safety relief valve and prewired control panel for full modulation of KW capacity. Heating elements include derated INCOLOY heating blades. Flanged heating elements on ES-50 and ES-60 Series have individually replaceable blades.

STANDARD CONTROL PANEL

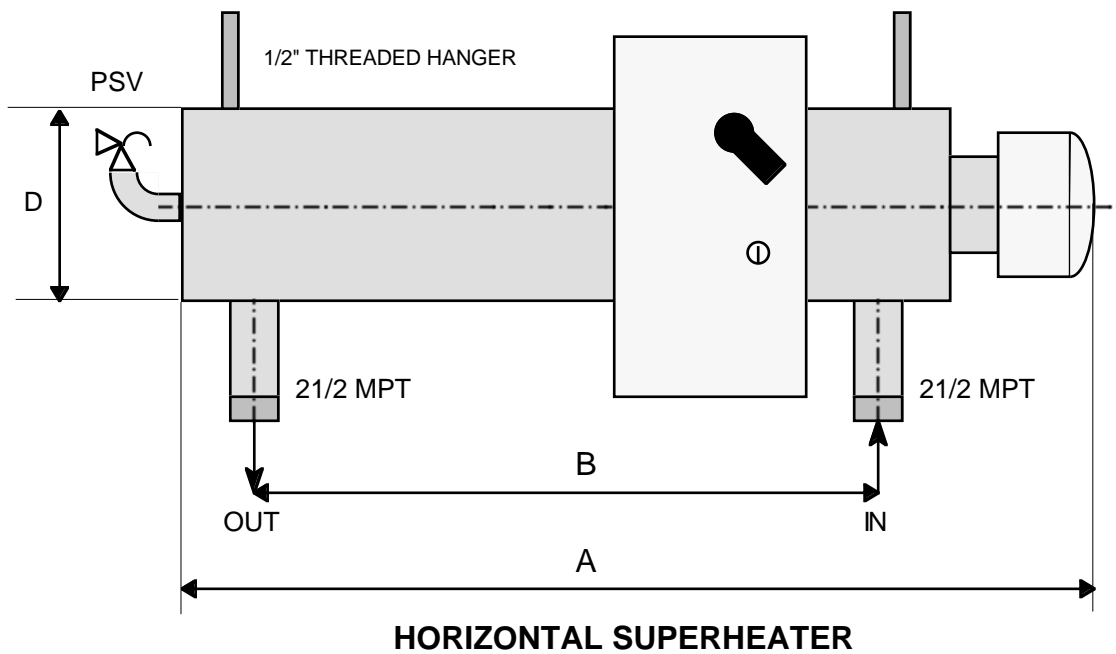
- NEMA 1 OR NEMA 4/12 Enclosure.
- Disconnect Switch, door interlocked.
- Control transformer, fused.
- Fused power circuit, I²T fuses.
- Back-up contactor.
- Electronic dual display Process Controller with additional high limit feature.
- Thermocouple sensor in well.
- Independent additional high limit controller for back-up circuit with manual reset.
- SCR or Triac Power Controller for full modulation of capacity.
- On-Off Control switch.
- Power "ON" light.
- Audible and visual alarm circuit with silencing button contacts for remote supervision.
- ASME Pressure Safety Valve.



**Vertical
Unit**

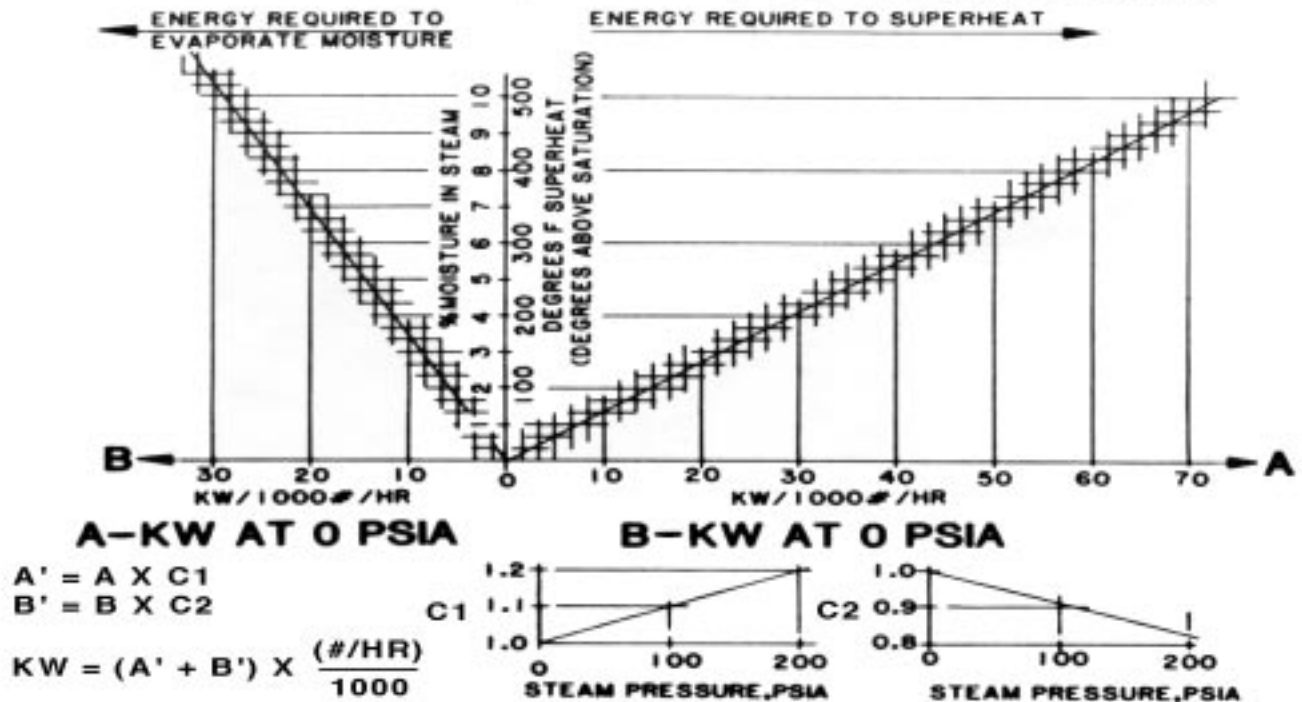
APPLICATIONS

- Superheated steam for non condensing processes and steam injection.
- Superheated steam for sterilization in hospitals, pharmaceutical and food plants.
- Superheated steam for high temperature drying processes.
- Superheated steam for turbine bearings.
- Superheated steam to avoid moisture at point of use in industrial plants with long distribution lines.



SERIES	KW							
	ES-25-150-500	3	4.5	6	7.5	9	11	13
ES-50-300-700	6	9	12	15	18	22	26	
ES-60-300-700	9	12.5	18	22.5	27	33	39	
DIMENSIONS								
OVERALL LENGTH A :	46 in. 1170 mm			58 in. 1500 mm		76 in. 1930 mm		
C. TO C., IN & OUT B :	30 in. 760 mm			43 in. 1010 mm		60 in. 1525 mm		
DIAMETER OF INSULATION COVER D :	ES-25	11 in.					275 mm	
	ES-50	14 in.					350 mm	
	ES-60	15 in.					375 mm	

FIG.1. ENERGY REQUIRED TO SUPERHEAT STEAM



SUPERHEATER SIZING INFORMATION

Figure 1 graphically shows the power required to superheat 1000 lbs of steam per hour. The total power required is the sum of the energy required to vaporize the moisture content plus the energy to superheat the vapor. Use Figure 1 to determine the required KW.

EXAMPLE : What KW is required to superheat 500#/hour of steam from 100 psia saturated, 2% moisture to 500° F at the superheater outlet?

1. Find temperature of saturated steam (from steam table) @ 100 psia + sat = 328° F.
2. Degrees superheat = 500 - 328 = 172° F.
3. On vertical scale at 2% moisture, proceed horizontally left to energy line and read down to B = 7KW for 1000# / hr.
4. On vertical scale at 172° F superheat, proceed right to energy line and read down to A = 27KW for 1000# / hr.
5. Determine correction factor C1 and C2 for 100 psia. C1 = 1.09; C2 = 0.91.
6. Determine A' = A X C1 = 27 X 1.09 = 29.43KW
7. Determine B' = B X C2 = 7 X 0.91 = 6.37KW
8. KW = (29.43 + 6.37) X (500/1000) = 17.9KW.
9. Add an allowance for safety and heat loss, round off at 20KW.
10. Select the ACME Steam Superheater equal or larger than calculated requirements.

TO ORDER - SPECIFY :

ES-25-150-500 ES-50-300-700 ES-60-300-700	KW	VOLTAGE	PHASE	CONSTR.	PANEL	POSITION
	AB	- CDE	- F	- G	- H	- J
Pressure Class 150 (10 BAR) OR 300 (20 BAR)		600	1	1-Carbon	1-NEMA 1	1-Horizontal
		480	Or	Steel	2-NEMA 4/12	2-Vertical
		380	3	2-SS304		
		240				
		220				
	208					
Temperature MAX. 500° F OR MAX. 700° F						

Example : For a class 150 Superheater, 500° F Max., 11KW, 480V 3PH, CS, NEMA 4/12 Panel, Horizontal Installation. Model # is **ES-25-150-500-11-480-3-1-2-1**

Note : For larger Electric Steam Superheaters, request ES-Series bulletin (May 1986).

OTHER ACME PRODUCTS IN THE SAME FIELD.

- High Pressure Steam Boilers up to 2500 PSI (167 BAR).
- High Temperature, High Pressure Hot Water Generators.
- Thermal Liquid Heater in C.S. or S.S.
- Thermal Storage Units.
- Steam Accumulators.
- Stainless Steel Hot Water or Steam Generators.
- Gas fired Steam Superheaters
- High Pressure Steam testing stations.
- Finned Tubular Air Heaters.
- Electric Unit Heater 22 to 300 KW.
- Automatic Scraper Strainers.

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Represented by :

The information provided by this bulletin is a general description of ACME systems. All specifications are subject to change without notice. Installation, maintenance and other instructions provided with the equipment shall be closely followed by installers, owners and users. All ACME products are covered by the Standard Limited Warranty sheet.