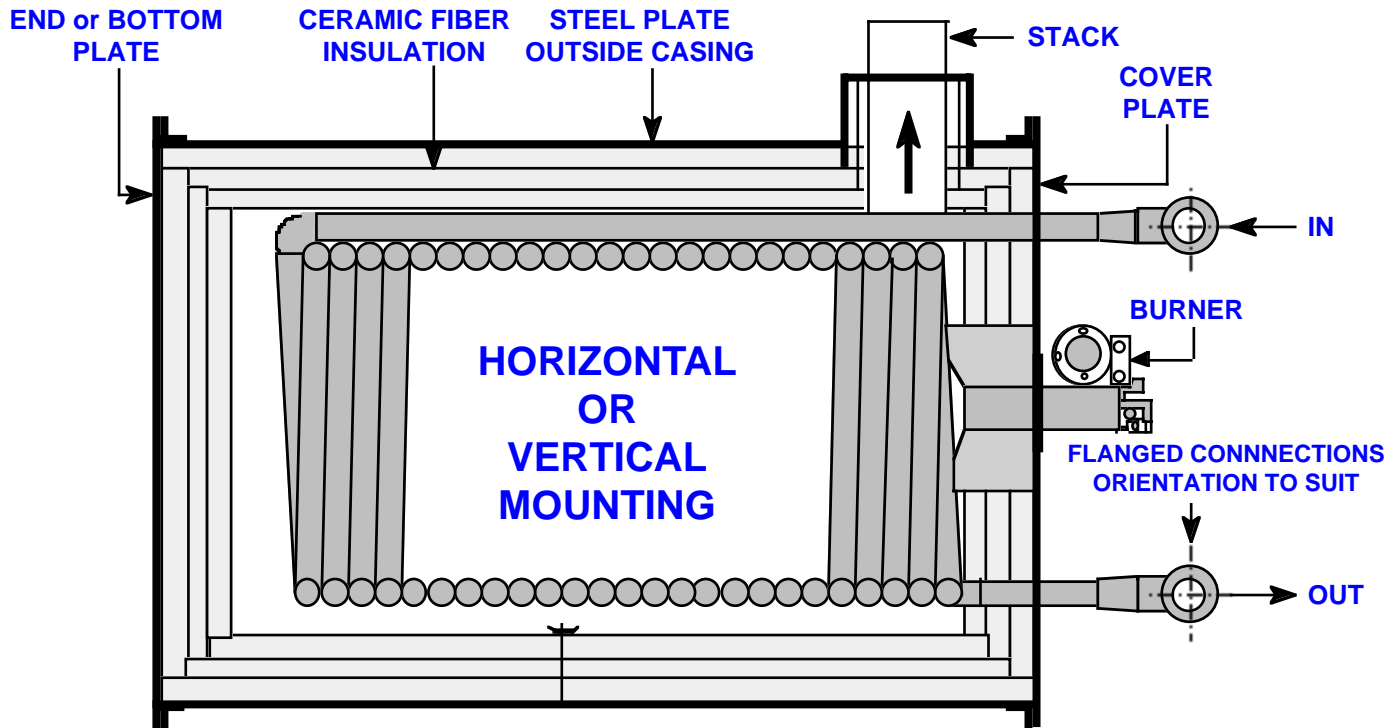


# STEAM SUPERHEATERS GAS FIRED



ACME Steam Superheaters are auxiliary equipment to steam boilers. They are built to meet the specific design and performance requirements of each application.

Pressure sections are built to ASME code. National Board or CRN registration are optional.

Burners are AGA or CGA listed with UL, CSA or other gas train standards as requested or applicable.

ACME Steam Superheaters are available for operating pressures of up to 800 PSIG and temperatures up to 1200°F. Steam flow is only limited by practical size considerations.

The ACME Horizontal or Vertical Superheaters have inlet and outlet flanged connections oriented to suit local conditions, for simplified field installation. A pressure safety valve is standard.

The burner control panel is supplemented by the ACME Temperature and Control Panel of NEMA 12 construction incorporating the main power switch, digital electronic indicating temperature controller with high limit protection, audible and visual alarm circuit with manual reset and connections to steam line pressure detector and high temperature stack detector.

The ACME Superheater is delivered to site prewired and piped requiring only steam, gas, main power and stack connections. Two Service and Operating Manuals are provided with each unit.

While ACME Electric Steam Superheaters using SCR power controllers can track demand variations between 0 and 100%, the gas fired superheaters performance is limited by the gas burners' capabilities.

On large gas burners it is possible to modulate from 30% to 100% of output. Medium size burners are provided with HI-LO-OFF capacity control. Small capacity burners are fired "ON" according to the temperature demanded with an adjustable differential and fixed "OFF" period during which time the accumulated heat content in the unit structure provides a flywheel effect.

While this bulletin shows a steam superheater construction, similar units are available to heat air or other gases.

Special features such as weatherproof construction and stainless steel casings for corrosive ambients can be provided on request.

## COMMON APPLICATIONS

- Providing dry steam at specific equipment locations.
- Avoiding condensation moisture in steam distribution lines.
- Seals pressurization on cogeneration projects.
- Textile machinery.
- Non-condensing Process Heating.
- Turbine Drives.

# GENERAL PRODUCT CODE - STEAM SUPERHEATER - GS SERIES

Product code — Operating Pressure PSIG — Coil Metal — lbs of Steam/hr — Final Temp. °F

GS — A B C PSI — 01 - Carbon Steel — F G H J — K L M N  
 02 - Stainless Steel  
 03 - Others

EXAMPLE: 125 PSI STEAM, 3000 lbs/hr, 600°F final temperature. = MODEL NO.: GS-125-01-3000-600

## SUPERHEATER SIZING INFORMATION

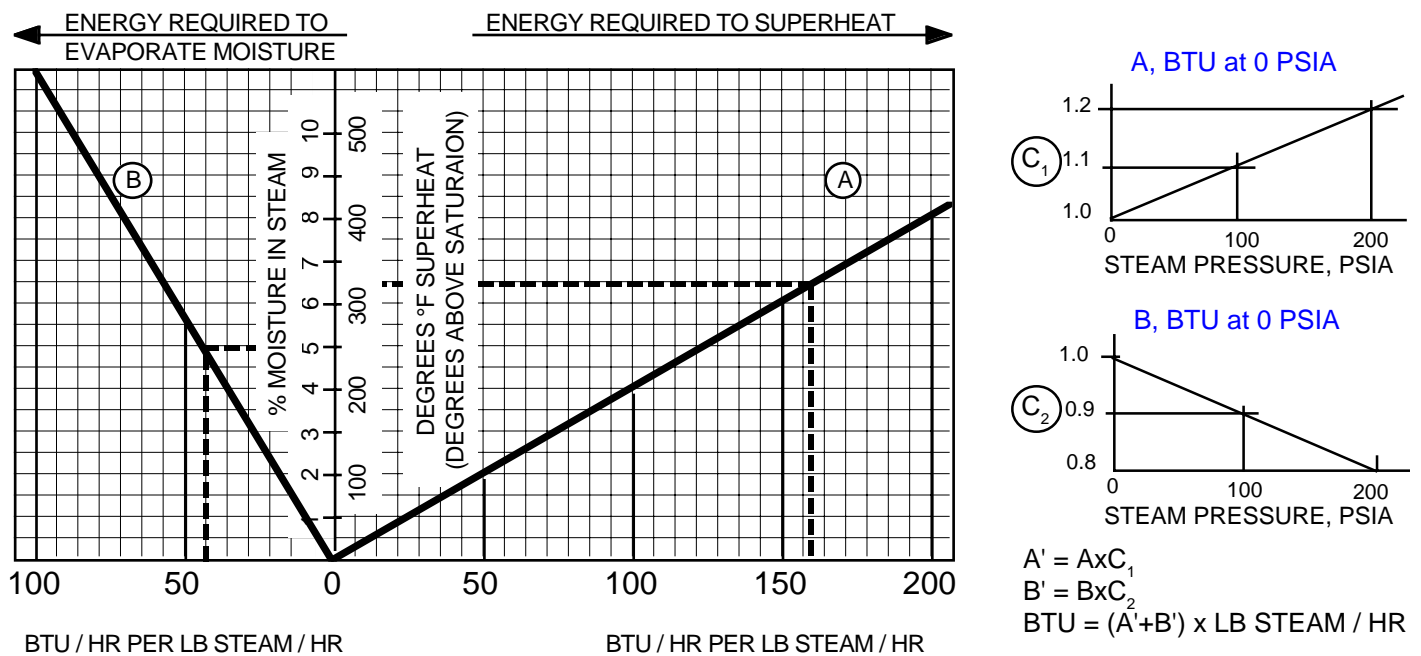
Figure 1 graphically shows the power required to superheat steam. The total power required is the sum of the energy required to vaporize the moisture content plus the energy to superheat the vapor.

### USE FIGURE 1 TO DETERMINE THE REQUIRED BTU/HR.

EXAMPLE: How many BTU's are required to superheat 1000 # / hour of steam from 100 psia saturated, 5% moisture to 650°F. at the superheater outlet ?

1. Find temperature of saturated steam (see steam tables) @ 100 psia (sat.) = 328°F.
2. Degrees superheat = 650 - 328 = 322°F
3. On vertical scale at 5% moisture, proceed horizontally left to line B and read down to B = 46 BTU / lb. steam per hr.
4. On a vertical scale at 322°F. superheat, proceed right to line A and read down to A = 159 BTU / lb. steam per hr.
5. Determine correction factors  $C_1$  and  $C_2$  for 100psia.  $C_1 = 1.09$ ;  $C_2 = 0.91$
6. Determine  $A' = A \times C_1 = 159 \times 1.09 = 173$  BTU / lb steam per hr.
7. Determine  $B' = B \times C_2 = 46 \times 0.91 = 42$  BTU / lb steam per hr.
8.  $BTU = (173 + 42) \times 1000 = 215$  MBH.
9. Add an allowance for burner efficiency and heat loss - say .75.  
 $215 / .75 = 287$  MBH burner gross input to superheater.

**FIGURE 1 : APPROXIMATE ENERGY REQUIRED TO SUPERHEAT STEAM**



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The information provided by this bulletin is a general description of ACME UNITS. 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. ©