Basic USG Package Includes:

- ASME Code Constructed and National Board Registered Vessel
- Fiberglass Insulation
- 20 Gauge Steel Jacket With Enamel Paint
- Structural Steel Support Skid Base
- Boiler Steam / Clean Steam Pressure Gauges
- Blow Off Manual & Automatic
- Gauge Glass
- Steam Separator
- High Pressure & Low Water Cut Off
- ASME Pressure Relief Valve
- Total Dissolved Solids Monitor (optional)
SUPERSTEAM Unfired Steam Generator Design

WORKING PRESSURE AND DESIGN
SUPERSTEAM Unfired Steam Generators are constructed and stamped in accordance with the ASME Code, Section VIII, and bear the “UB” stamp. All vessels are registered with the National Board, and ASME data papers are furnished. Unfired Steam Generators that generate over 50 psi steam will have full x-ray and stress relieving done in accordance with the ASME Code, except in the case of stainless steel construction which will only get full x-ray.

Shell Side Maximum Allowable Working Pressure: (50 PSIG for generating steam up to 45 PSIG; 150 PSIG for generating steam up to 135 PSIG)

MATERIALS OF CONSTRUCTION
Shell: Carbon steel, 304 or 316 stainless steel are available. Other materials can be provided on request if allowed by ASME code. Stainless steel is used primarily with deionized water to produce clean steam for food processing, medical services and similar applications. If stainless steel is to be used for any other service, the feedwater should be carefully checked for compatibility, especially for the presence of chlorides.

Tubes: Copper, 90/10 Copper-Nickel, 304 or 316 stainless steel (for deionized water applications) are available. Other alloys may be used subject to ASME code compliance.

CLEAN STEAM APPLICATION
In the past, boiler steam was used for humidification purposes, but boiler steam contains chemicals and additives which may be injurious to health, so many jurisdictions now require a clean steam source for humidification. Hospitals, medical centers, and laboratories require sterilization steam. A SUPERSTEAM clean steam Unfired Steam Generator is the choice for providing clean steam for sterilization. Pharmaceutical applications require clean steam. Unfired Clean Steam Generators by SUPERSTEAM meet these requirements. Cooking of food by steam requires a source of clean steam. SUPERSTEAM Unfired Clean Steam Generators meet this requirement. SUPERSTEAM Unfired Steam Generators are completely packaged and ready for use. All components are mounted and pre piped prior to shipment requiring only connections to services.

SOLID STATE CONTROL PANEL WITH 700 SERIES PRESSURE CONTROLLER
DHT 700 Series Controller is a microprocessor based control platform combined with an alpha-numeric, backlit LCD display/keypad.

Standard Features
- Microprocessor Based
- Two Line Alpha-Numeric
- 40 Character LCD Display
- 3 Function Keys
- Isolated 24VDC Sensor Power
- 4/20MA
- 1 Analog Input
- 8 Digital Inputs
- 1 Analog Output
- 4 Relay Outputs 5 AMP.
- Fully User Programmable in English
- ‘Pop Up’ Alarm Screens
- P.I.D. Setpoint Control
- RS485 MODBUS® Data Port
- Compatible with BMS/BAS

DHT Control Panel

Input
- Steam Pressure Set Points
- Blowdown Timer Setting

Output
- Power
- Normal
- Water Feed
- Blow Down
- High/Low Water Alarm
- High Pressure Alarm
- Low Pressure Alarm
Optional Features

ALARM BELL:
An alarm bell circuit can be furnished to sound an alarm bell in the event of either low water or high pressure. An alarm silencing relay allows manual pressing of button to silence the alarm, but a red warning light remains on until the alarm condition is corrected.

REMOTE CONTROL:
Remote control also available on a variety of on-off controls whereby the Unfired Steam Generator can be started and stopped from a remote location. DHT Series 700 Controller has a Modbus RS485 protocol. It will require an additional gateway converter to communicate with BMS ie. BACnet, LonWorks, etc...

VACUUM BREAKER:
Vacuum breaker will be mounted in the head and will break any vacuum which might occur when the source steam is condensed.

CENTRIFUGAL BOILER BLOW OFF - CONDENSATE COOLER:
DHT provides a Condensate Cooler to receive blow down from the Steam Generator, flash the blow down to steam and cool the condensate going to drain.

UNFIRED STEAM GENERATOR MAKE UP - WATER FEEDING:
Make up water must be furnished to the Unfired Steam Generator. This can be accomplished by a simple solenoid valve which opens and closes in response to a signal from the water level controller or fired water pump which is controlled by the water level controller.

AUTOMATIC BLOWDOWN - TIMER:
On Unfired Steam Generators using city water (Note: Some areas with high mineral levels should use soft water conditioners) there will be an accumulation of minerals built up in the bottom of the generator. There is a seven day, 24-hour timer connected to an interval timer which is connected to a solenoid valve which will blow the boiler down. The 24-hour timer can be set in frequencies as close as two hours and as far apart as once every seven days.

AUTOMATIC BLOWDOWN - CONDUCTIVITY CONTROLLER:
Simultaneous control of TDS inhibits precipitation of corrosion solids and scale build-up.

HIGH WATER CUT-OFF OPTION FOR UNFIRED STEAM GENERATOR:
In case of an emergency when the solenoid feed water valve sticks to the open position a high level switch will send a signal to the emergency cut-off solenoid valve to shut the feed water line.

This option consists of an electric probe mounted in the top of the vessel connected to a high level switch. The high level switch will send a signal to either an air operated ball valve or an electrically operated ball valve mounted in the feedwater line. Both of these valves are power to open, spring to close.

This valve can be either an auxiliary feedwater valve or the operating feed water valve. If this valve is also used as the operating feedwater valve the feedwater switch in the level controller will send a signal to the valve to open and close when the level controller calls for feedwater.

As the feedwater safety valves are powered to open, spring close, the feedwater valve will close upon loss of power.
Vertical Unfired Steam Generator

ENERGY SOURCE: STEAM

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Length (Inches)</th>
<th>Height (Inches)</th>
<th>Width (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VSGU-18-3</td>
<td>42</td>
<td>44</td>
<td>44</td>
</tr>
<tr>
<td>VSGU-20-3</td>
<td>44</td>
<td>44</td>
<td>46</td>
</tr>
<tr>
<td>VSGU-24-3</td>
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<td>50</td>
</tr>
<tr>
<td>VSGU-30-4</td>
<td>55</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>VSGU-36-5</td>
<td>62</td>
<td>56</td>
<td>74</td>
</tr>
<tr>
<td>VSGU-40-5</td>
<td>68</td>
<td>60</td>
<td>74</td>
</tr>
</tbody>
</table>

Note: Dimensions and Specifications subject to change without notice.
# Horizontal Unfired Steam Generator

**ENERGY SOURCE: STEAM**

## Specifications - Horizontal/ Steam

### Model Number | Length (Inches) | Height (Inches) | Width (Inches)
--- | --- | --- | ---
HSGU-20-4 | 72 | 44 | 36
HSGU-24-5 | 84 | 48 | 40
HSGU-30-6 | 96 | 50 | 46
HSGU-36-8 | 126 | 53 | 50
HSGU-40-10 | 154 | 58 | 54

Note: Dimensions and Specifications subject to change without notice.
Vertical Unfired Steam Generator

ENERGY SOURCE: High Temperature Hot Water

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Note: Dimensions and Specifications subject to change without notice.
**Horizontal Unfired Steam Generator**

*ENERGY SOURCE: High Temperature Hot Water*

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Note: Dimensions and Specifications subject to change without notice.
### Recommended Specification

**Capacity: STEAM TO STEAM**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Output rating, lbs/hr:</td>
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</tr>
<tr>
<td>Output steam pressure, psig:</td>
<td></td>
</tr>
<tr>
<td>Input steam pressure, psig:</td>
<td></td>
</tr>
<tr>
<td>Feedwater temperature, deg F:</td>
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</tr>
</tbody>
</table>

**Capacity: HTHW WATER TO STEAM**

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<th>Value</th>
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<tr>
<td>Output rating, lbs/hr:</td>
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</tr>
<tr>
<td>Output steam pressure, psig:</td>
<td></td>
</tr>
<tr>
<td>High temperature water entering temperature, deg F:</td>
<td></td>
</tr>
<tr>
<td>High temperature water, GPM:</td>
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</tr>
<tr>
<td>Feedwater temperature, deg F:</td>
<td></td>
</tr>
<tr>
<td>Control valve configuration:</td>
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</tr>
<tr>
<td>Close-off pressure drop, psi:</td>
<td></td>
</tr>
<tr>
<td>Operating pressure drop, psi:</td>
<td></td>
</tr>
</tbody>
</table>

- Furnish and install as indicated on the plans, _____ SUPERSTEAM Unfired Steam Generator(s). MODEL _____ ASME constructed ASME stamped for a design pressure of _____ PSIG under Section VIII of the ASME code with manufacturers’ data reports furnished.

- Material of construction shall be (carbon steel) (304 S.S.) (316 S.S.) _____ Generator is horizontal _____ vertical _____ configuration.
  Generator shall be provided with steel skid supports and lift lugs.

- The following components are furnished as part of a completely packaged unit:
  - Steam separator
  - 3” insulation with 20 ga steel jacket painted blue
  - Shell side safety relief valve
  - Gauge glass and tri-cocks
  - Pressure gauges for steam to steam units
  - Thermometers and pressure gauge for water to steam units
  - Manual blow off valve
  - Level control
  - Pressure control valve with control valve ( ) Air ( ) Pilot ( ) Electric
  - Traps for steam to steam units
  - Control panel
  - Feedwater solenoid valve
  - Total dissolved solids monitor (optional)

- Heating element - The heating element shall be “U” tube design with either a cast iron or steel fabricated head. Full length tracks shall be provided for support inside the vessel. Tubes are 3/4 “ O.D. and material is ( ) copper ( ) 90/10 cu-ni ( ) 304SS ( ) 316SS.

- Layout shall be ( ) 15/16 triangular pitch ( ) 1” sq. pitch ASME Constructed and ASME Stamp for a design pressure of _____ PSIG.

- Warranty - See Manufacturer’s limited warranty.