

Electric Hot Water Generators

NEXGEN Series

KEPL's NEXGEN Hot Water generators conglomerate the reliability & ruggedness of the conventional unit with the latest technology & High-Speed communication capabilities. The NEXGEN Series Hot Water Generators meets the customer demand for technologies that are current and relevant, allows to meet greater application needs. These units have built in sensors via. Pressure, flow, temperature etc.

Features :

- Fully BMS and SCADA Compatible
- Embedded LCD (HMI)
- Remote programming and control to better monitor, operate and sync the data with any other system.
- Operating parameters like Inlet and outlet Temp., Pressure & Flow are now available at remote
- Data acquisition for Trip history
- Run Hour
- Automatic stage sequence reversal after user defined operation hours to equalize the operation time of each heater bank.
- Minimizes the onsite control cable used for conventional BMS system.



- Slave SCR power controller to modulate the entire load from 0-100% as an option
- Range : 50kW to 1200kW
- RS-232C/RS-485 port, Ethernet port for communication
- Inbuilt Self Diagnostics tool

Constructional Features

- **Type and Orientation**

KEPL hot water generators are available in vertical configuration as standard having degree of protection IP:52 / IP:55. Horizontal configuration is also available as an option.

- **Heating Elements**

Pressure rated Flanged type Immersion Heaters are used for heating. These heaters consist of multiple tubular heating elements formed into hairpins that are silver brazed to a mating flange. High Temperature Silicon Gasket are used for the pressure, temperature and material being heated.

Tubular Heating elements consist of helical coil of 80% Nickel 20% Chromium alloy resistance wire is fusion welded to the nickel-coated steel terminal cold pin. This coil assembly is precisely stretched and centered in the element metal sheath (SS-304), which is then filled with Grade "A" Magnesium Oxide powder (MgO). The filled tube is then compacted by a roll reduction mill into a solid mass, permanently stabilizing the coil in the center of the tube for providing uniform heat transfer and maintains desired dielectric strength between the coil and the sheath. The most common tubular element sheath materials used are Copper, Incoloy®304 & Stainless Steel are available as an option.

- **Pressure Vessel**

Water vessel is designed in accordance with ASME Boiler & pressure vessel code, for a maximum of 160 psig working pressure 250 Degree F. A top openable thick MS plate designed for maximum element to water contact for efficient operation is welded to shell flange. Connections for water inlet & outlet are provided with mating flanges. All vessels have a descaling point & drain connection for system drainage. Vessel is pressure tested upto 300psig

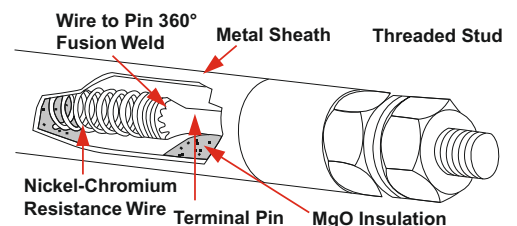
- **Insulation**

Insulation of 50mm thick resin bounded fiberglass wool of density 32Kg/m3 and clad with aluminum sheet to minimize heat loss

- **Control Cabinet**

Integral Control Panel made out of CRCA steel sheet 16gauge minimum, powder coated with high grade paint and provided with louvers to insure adequate ventilation of the control and heater terminal compartment. Access to all control components is through hinged doors with lockable pad lock. Base frame is fabricated out of ISMC100 channel.

3D image of hot water generator



Standard Controls & Safeties

- Incomer MCCB with electronic grade copper bus bars and mechanical interlock for safe operation.
- Magnetic Contactors with MCB / HBC fuses for heater switching
- Pilot lights indicate the functional operation. The most commonly specified functions are Phase indications, Each Stage ON, Supply ON.
- Alarm package de-energizes the boiler and gives audible and visual indications of high temperature, low water level or zero flow rates. Each condition is indicated with a separate pilot light.
- Low water cut off switch is included to de-energize the HWG if the water level drops.
- Pressure Relief Valve duly factory calibrated is provided to relieve excess pressure.
- Air purge valve to bleed of the air automatically found in the water line.
- Temperature & Pressure gauges are provided at Inlet and outlet



Step Controller

Temperature Control using Micro processor based multistage electronic progressive staging sequencer with thermistor sensor to control the HWG in stages. Logic and control circuits continuously monitor the input signal to determine if more or less heat is required. Appropriate action is then taken automatically.

- Step Controller (Sequencer) are fail safe.
- Reset to OFF if the Power is interrupted.
- Cycles down if Sensor Leads are cut or short circuited.
- The Temperature Span and Time Delay (1-75 sec.) is field selectable.
- Test mode to verify Load Wiring, Contactors and stage operations with 1 sec time delay.



BMS Compatible

- Dry contacts for start/stop command, on/off status indication, fault indications such as high temperature and low water level.
- Provision for remote operation and local remote selector switch status.
- RS-485 communication port for remote programming and control (optional)
- Remote interlock is provided to enable the user energize or de-energize the H.W. Generator from remote or any field/pump interlock.



Optional Features

- **Ground fault detector**

Available with externally mounted core balance CT for instantaneous tripping to provide ground fault protection.

- **Energy Monitor**

Kilowatt Hour Meter mounted with current transformers to give digital indication of KWH

- **Vernier/SCR control**

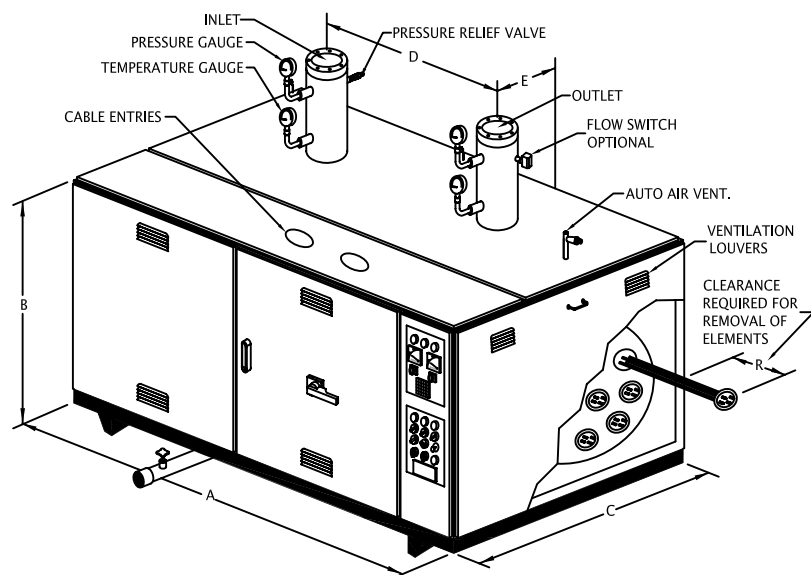
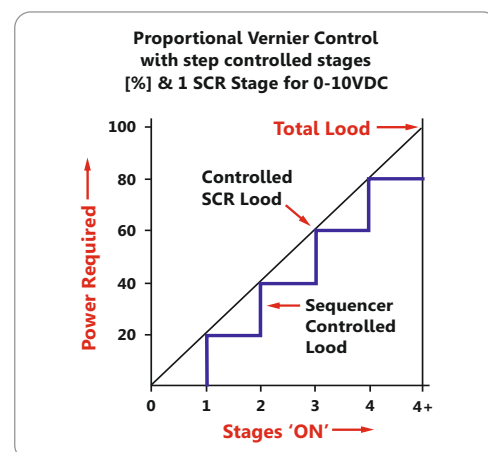
Installations which require critical temperature control, One vernier heater stage is connected to a slave SCR controller. Additional stages are sequenced ON and OFF while the SCR vernier stage automatically fills the gap between the step controlled stages, providing full proportional control over the entire heater KW range. Both the SCR vernier stage and the step controller stages are controlled by the step controller.

Benefits :

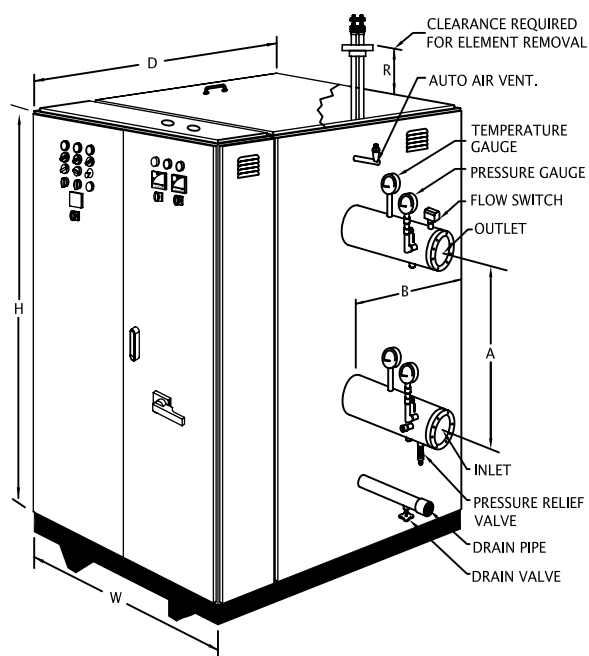
- ⑩ Vernier Control results in more precise control.
- ⑩ Provides infinitely variable heating from 0% - 100% of the total KW and very precise Temperature Control.
- ⑩ Reduces or eliminates the hunting between stages.
- ⑩ Reduces the No. of Thermal Shock.
- ⑩ Enhance the life of the heaters 3-4 times.

Relevant IS Codes :

Heaters	IS:4159-2002
Pipes	IS:1239
Flanges	IS:
Ingress Protection	IS:12063
Control Panel	IS:13947
Insulation	IS:8183-1993
Pressure Vessel	ASME Section VIII



HORIZONTAL CONSTRUCTION



VERTICAL CONSTRUCTION