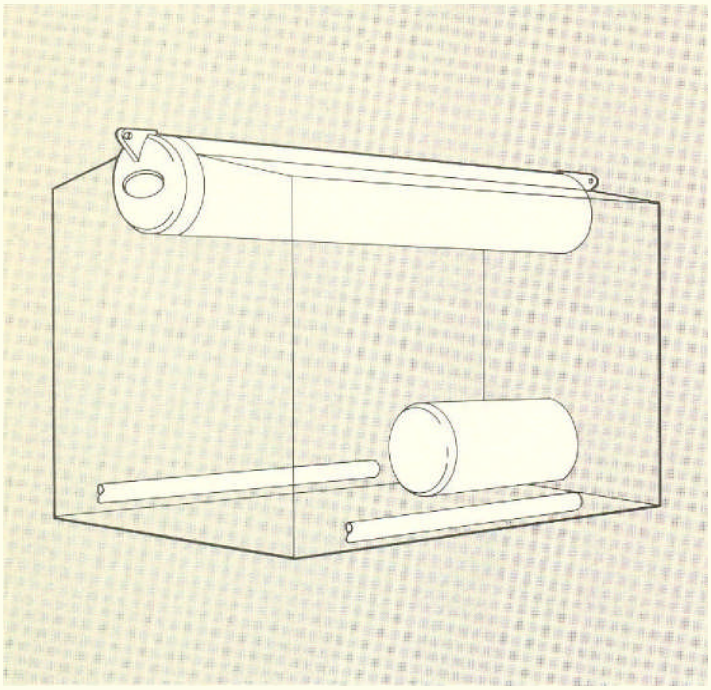
INDECK®
KEYSTONE ENERGY, LLC.

The Indeck Keystone "VL" ... Each Custom-Designed to Customer Requirements



Ever-increasing costs and lower availability of certain fuels have focused increased attention on systems that produce efficient energy at lowest cost.

Indeck Keystone Energy, LLC offers a watertube steam generator that provides custom design at competitive cost for any installation. The basic design of the Indeck "VL" consists of a longitudinal steam drum that runs from front to rear casing, a lower drum that runs from the bridgewall to the rear casing, two lower headers that run along the furnace side walls, and 2 ½" OD water tubes that connect the drums and headers, forming a natural circulation steam generator (See illustration at left). All other elements - fuels, firing systems, wall construction, and furnace and convection dimensions - are dictated by customer requirements. Each "VL" installation is the creative combination of numerous alternatives, custom-designed to a unique situation.

Left - Basic "VL" design provides wide flexibility to customize unit for firing a variety of fuels.

Indeck has custom designed, engineered and constructed hundreds of "VL" installations, ranging in capacity from 10,000 to 50,000 pph,

Included on this page (below) are some of the most creative design arrangements utilized for efficient energy production.

"VL" Design Arrangement "A"

Fuel: Hogged Wood, typically 20-50% moisture as fired

1. Front Wall - castable refractory (field installed)
2. Pneumatic Fuel Distributors
3. Setting - Columns for additional furnace volume.
4. Side Walls - spaced wall tubes
5. Convection Baffles
6. Bridgewall - Field-erected
7. Circulator Tubes - short feeder tubes run from lower drum to feed sidewall headers.
8. Firing System: Air-cooled, pin-hole Grate (Optional water cooled, pin-hole grate system available.)

"VL" Design Arrangement "B"

Fuel: Eastern Hemlock, typically 50% moisture, as fired

1. Front Wall - water cooled
2. Designed for Future Oil/Gas firing (plugged)
3. Setting - Legs to accommodate fuel cells
4. Side Walls - spaced tubes
5. Convection Baffles
6. Bridgewall - Field-erected
7. Circulator Tubes - Short feeder tubes run from lower drum to feed side wall header.
8. Furnace Section Extended due to space requirements of fuel cells
9. Firing System: Fuel Cells

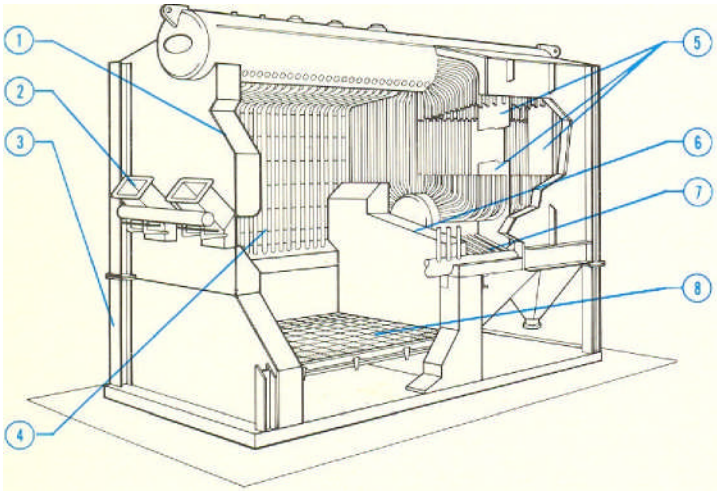


Fig. "A": 25,000 pph Wood-Fired "VL with Air-cooled Pin Hole Grate

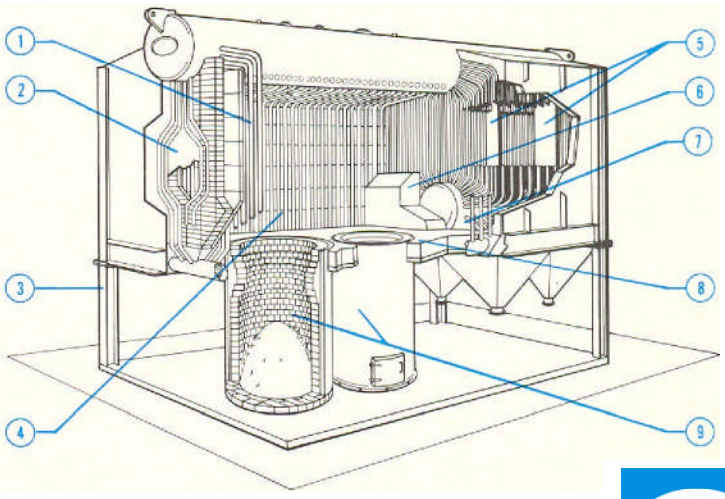


Fig. "B": 25,000 pph "VL" with Fuel Cells

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