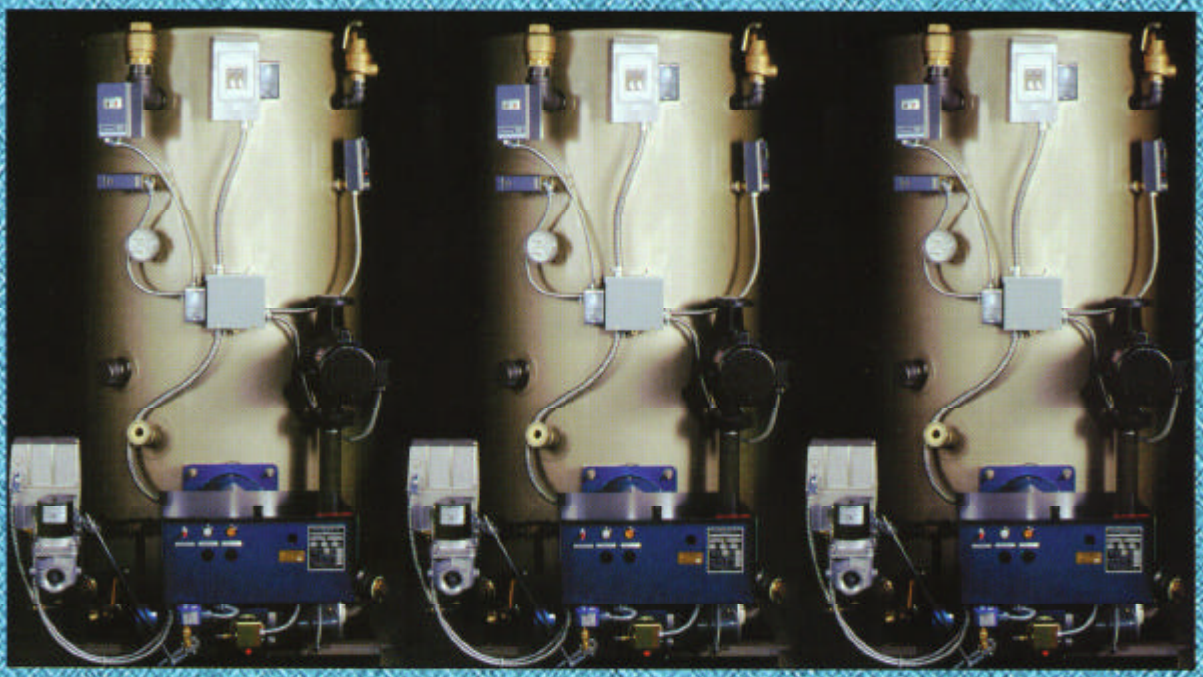
L.E.S. Series "VW"
Modular Heating Plants



Efficient · Flexible · Reliable

Gas and/or #2 Oil
500 to 13,750 MBH Output

Applications

Hydronic
Working Pressures 30 to 100 psi
Operating Temperatures 80° to 240°F
Unrestricted Flow

Indirect
125 psi Finned Copper Tube Heat Exchanger
Domestic Hot Water/Swimming Pools
Antifreeze Solutions/Heat Pump Assist/Underfloor

Multi-Purpose
125 psi Indirect with Direct Working Pressure up to 75 psi
Multiple Distribution System Modular Heating Plants
Minimum "Footprint" with Optimum Standby

Advantages of Series VW Modular Heating Plants

Low Operating Cost

Optimal plant turndown plus prevention of flow through non-operating units insures maximum partial load efficiency with minimum heat loss. Heating plant control packages with time/temp inputs (integral digital electronic or provision for interface with Building EMS) and delayed logic sequencing (adjustable time or fluid temp sampling via PLC or relay circuitry) completely eliminate unnecessary mild weather operation and control overshoot.

Standby Protection

Effective standby is inherent in the modular concept. Interruption of service is unnecessary for inspection/repair of individual modules.

Flexibility

Boilers are available for full or partial output indirect heating. A single modular heating plant installation can efficiently handle two or more different heating loads. For maximum total heating plant capacity with minimum footprint, heat-exchanger equipped and hydronic only modules may be combined as necessary. In the event of future building or load expansion, the installation of "add-on" modules is simple and cost-effective.

Experience

Field-proven boilers and components. Modular heating plant design and control principles have been refined during more than 20 years in the energy efficient heating plant business.

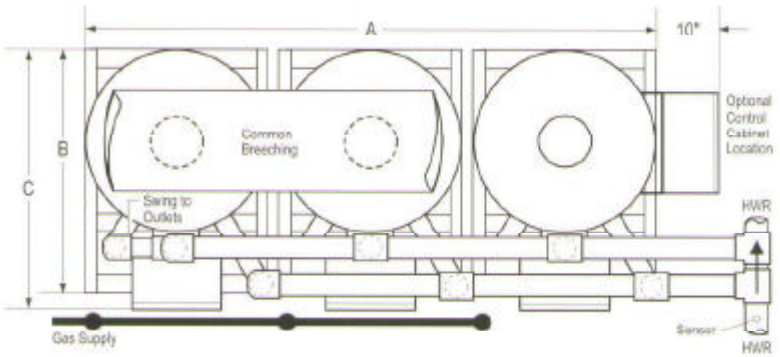
Single-Source Responsibility

Complete matched-component modular heating plant package for trouble-free system setup and maintenance. L.E.S. agents can arrange for startup and service by qualified industrial boiler/burner service personnel.

Best Overall Value

Practical factors including ease of rigging and setting, effective space utilization, pre-wiring, dual direct hydronic/indirect capability, and elimination of excess standby capacity often combine to cancel the apparent initial cost advantages of large stand-alone boilers. Even before operating savings are calculated, actual cost of installing a modular heating plant may be less than the cost of installing less efficient alternatives.

Modular Heating Plant Layout Schematic - Minimum Spacing



Modular Heating Plant Output Ratings and Plan Dimensions

Model (Coil Opt)	MBH Output	Model (NO Coil)	MBH Output	DIMENSIONS A	B	C
VW-2-25	330	VW-2-37	500	46	32	44
VW-3-25	495	VW-3-37	750	70	32	44
VW-4-25	660	VW-4-37	1000	94	32	44
VW-5-25	825	VW-5-37	1250	118	32	44
VW-2-50	660	VW-2-60	840	52	36	48
VW-3-50	990	VW-3-60	1260	78	36	48
VW-4-50	1320	VW-4-60	1680	104	36	48
VW-5-50	1650	VW-5-60	2100	130	36	48
VW-2-70	1000	VW-2-78	1150	58	36	54
VW-3-70	1500	VW-3-78	1725	87	36	54
VW-4-70	2000	VW-4-78	2300	116	36	54
VW-5-70	2500	VW-5-78	2875	145	36	54
VW-2-100	1500	VW-2-110	1670	62	39	57
VW-3-100	2250	VW-3-110	2505	94	39	57
VW-4-100	3000	VW-4-110	3340	126	39	57
VW-5-100	3750	VW-5-110	4175	158	39	57
VW-2-135	2000	VW-2-150	2250	70	43	62
VW-3-135	3000	VW-3-150	3375	106	43	62
VW-4-135	4000	VW-4-150	4500	142	43	62
VW-5-135	5000	VW-5-150	5625	178	43	62
VW-2-180	2720	VW-2-200	3000	74	45	64
VW-3-180	4080	VW-3-200	4500	112	45	64
VW-4-180	5440	VW-4-200	6000	150	45	64
VW-5-180	6800	VW-5-200	7500	188	45	64
VW-2-220	3350	VW-2-245	3680	82	48	70
VW-3-220	5025	VW-3-245	5520	124	48	70
VW-4-220	6700	VW-4-245	7360	166	48	70
VW-5-220	8375	VW-5-245	9200	208	48	70
VW-2-270	4020	VW-2-315	4690	92	54	76
VW-3-270	6030	VW-3-315	7035	139	54	76
VW-4-270	8040	VW-4-315	9380	186	54	76
VW-5-270	10050	VW-5-315	11725	233	54	76
VW-2-340	5020	VW-2-375	5500	100	57	90
VW-3-340	7530	VW-3-375	8250	151	57	90
VW-4-340	10040	VW-4-375	11000	202	57	90
VW-5-340	12550	VW-5-375	13750	253	57	90

Series VW Modular Heating Plant Designation

VW-0-000-000-X-X-0

- Number of Boilers
- Boiler Model Number
- Boiler Design Pressure (PSI)
- Power Supply
  - 1 - 115v/1ph
  - 2 - 230v/1ph
  - 3 - 208v/3ph
  - 4 - 230v/3ph
  - 5 - 460v/3ph
- Fuel
  - G - Gas
  - O - Oil
  - C - Gas/Oil
- Trim*
  - W - Water
  - C - Multi-Function

* "W" and "C" modules may be combined in one installation. Designate number of modules to be trimmed each way:

VW-4-100-030-W4C2-G-1

specifies four 30 psi VW-100 boilers, gas fired, 115v/1, two direct hydronic only and two multi-function with heat exchangers. Describe indirect duty exactly.

Features of Series VW Vertical Firetube Boilers

Low Stress Design

Single pass construction eliminates differential expansion forces across heads, permitting design return temperatures as low as 70°F and immediate "cold starting" response to all call for heat. Boilers are warranted for five years against thermal stress leaks regardless of return temperature. Consult L.E.S. for boiler configuration/control options required for direct very low temperature operation.

High Efficiency

Series VW boilers are positive pressure non-condensing appliances. They are equipped with forced-draft burners for reliable 83% efficient combustion. High-temperature fiberglass rope is used to gasket burner flanges to burner ports and steel lids to flue-gathering chambers. Custom-fabricated bent steel turbulators installed in firetubes limit flue gas velocity, insuring maximum heat transfer. Heat losses associated with draft hoods and barometric dampers are eliminated and breeching/stack sizes can be reduced.

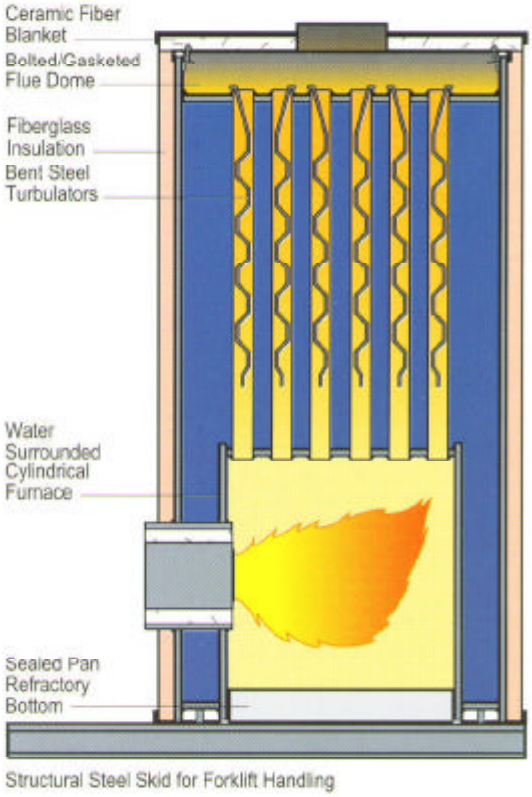
Steel Skids

Structural channel skids create a space (3" minimum) beneath boiler shells which may permit elimination of a poured concrete pad. Boilers can be rolled into place on steel pipes, levered into precise position, and easily/securely leveled by shimming of skids.

Compact Size

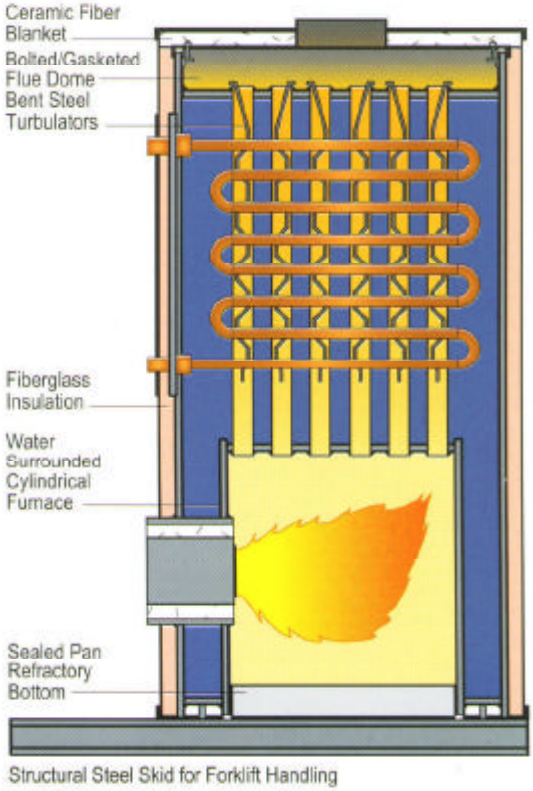
Individual boiler modules will often fit through existing doors, hallways, elevators, etc. Relatively light weights simplify location of heating plants anywhere within building, from basement to penthouse, and boilers can be grouped in any configuration for best utilization of designed or available spaces.

Series VW Direct Hydronic Boiler Cutaway



Structural Steel Skid for Forklift Handling

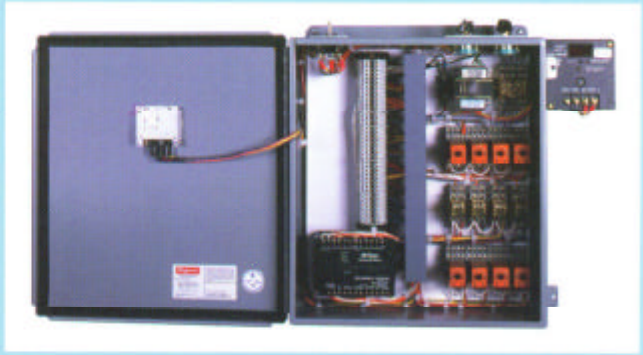
Series VC/VWC Multi-Function Boiler Cutaway



Structural Steel Skid for Forklift Handling

Series SC Modular Heating Plant Control Packages

Optimized Multiple Boiler Sequencing and Auxiliary Heating Equipment Control



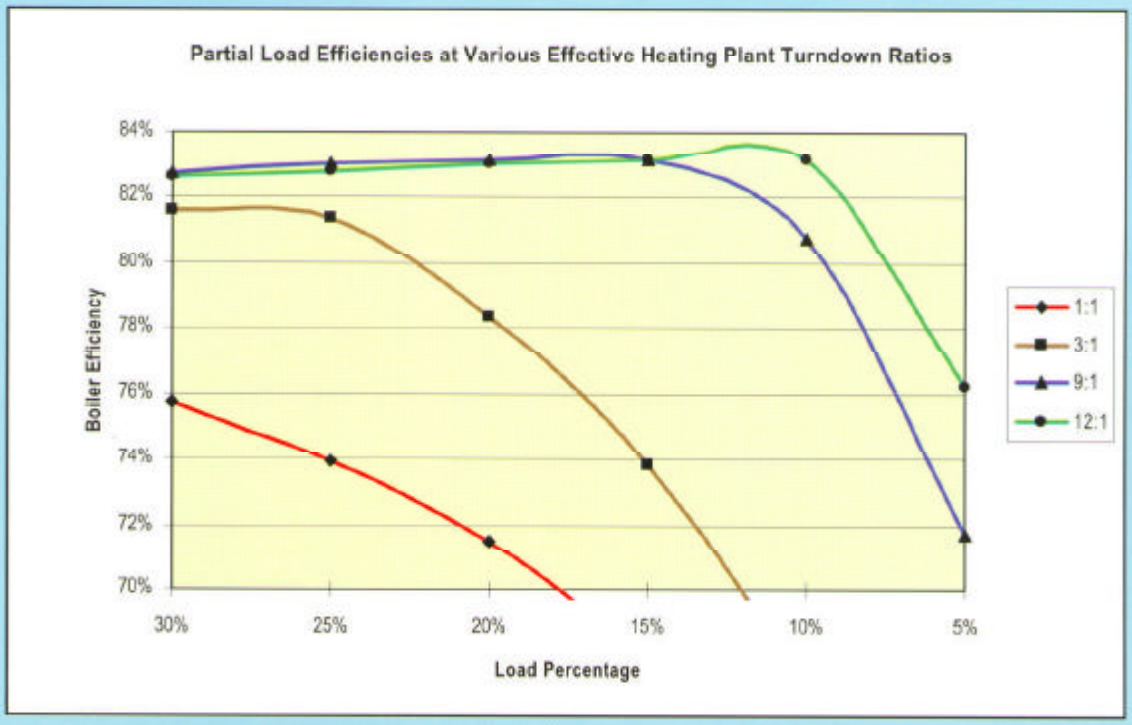
Custom designed and built panels configured for specific applications and buildings deliver multiple boiler control superior to that provided by currently available off-the shelf sequencers. Startup plus interstage delays eliminate control overshoot in response to restart system overhead and temporary load fluctuations. Use of field replaceable components minimizes repair expense and downtime over installation life. Standard features include:

- Digital Electronic Sequencing
- Outdoor Reset Temperature Control
- Individual Firing Position Selector Switches
- Adjustable Startup and Interstage Delay Timers
- Plug-in Cycling and Firing Rate Stage Relays
- Common C.A.D. (with proof) and/or Emergency Shutdown Interlock

Digital electronic temperature controls (Indoor/Outdoor Low/High Limit, Startup Boost, System Alarm), 7-Day Programming, pump (system circulating or boiler feed) interlock, and PLC-based deadband control with status report and network capability are among available options.

Partial Load Efficiency

Modular heating plants achieve high partial load efficiencies by matching individual modules to light loads. With true parallel primary/secondary piping and correct control including warm weather and night/weekend shutdown, light load equipment cycling is minimized while both unnecessary heating plant operation and excess capacity heat loss paths are completely eliminated.



1:1 = Single On/Off Package Boilers
3:1 = Single LHL or Modulating Package Boiler
9:1 = Three LHL or Modulating Boiler (3:1 turndown each) Modular Heating Plant
12:1 = Four LHL or Modulating Boiler (3:1 turndown each) Modular Heating Plant

L.E.S. Incorporated
341 East Williams // P.O. Box 102
Wyoming, IL 61491
TEL: 309-695-2200 FAX: 309-695-3302
lesinc@starkcounty.com

Represented by: