

Powermaster®

**PACKAGED BOILERS
DRY OR WET BACK DESIGN**



ADVANTAGE ▼ GUARANTEED

GRESHAM'S

⚡ ⚙️ ⚙️ ⚙️ THE ENERGY-ENVIRO SPECIALISTS

**Boiler manufacturer
since 1971**

ADVANTAGE GUARANTEED

GRESHAM'S

THE ENERGY-ENVIRO SPECIALISTS

Powermaster®

LARGE FURNACE VOLUME

The National Academy of Sciences National Research Council in their Publication 981 states that "Limits must be set to ensure that the furnace section of the boiler is not overloaded causing excessively high temperatures at the furnace exit. These limits according to the task groups should be 150,000 Btu's per hour of fuel per cubic foot of effective furnace volume."

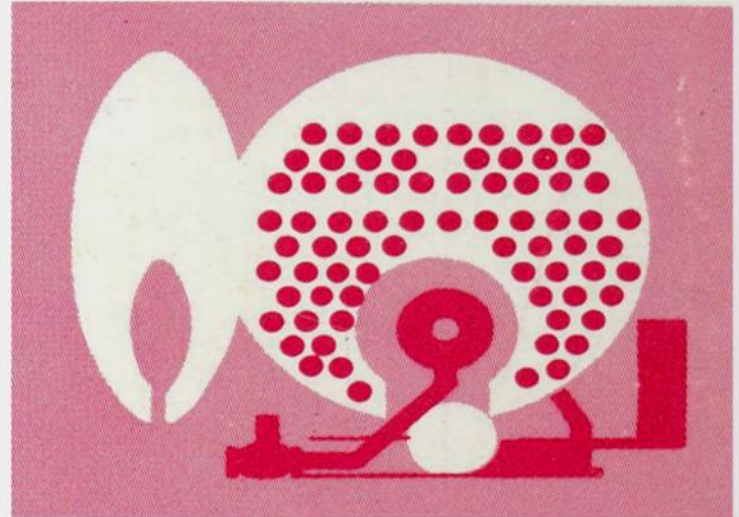
The large furnace volume of all Powermaster boilers is designed to meet or exceed this criteria.

ENGINEERED FOR ECONOMICAL SAFE, RELIABLE PERFORMANCE

Powermaster Model 6 packaged boilers are the culmination of a vast amount of experience and knowhow and reflect new standards of excellence in performance and dependability.

These fully automatic packaged boilers in sizes 40 to 700 horsepower are feature for feature the most efficient available. They are designed and manufactured to set the highest industry standards and meet the requirements of the ASME Code. Component parts are of rugged construction and design and are carefully machined, centered and balanced. Moving parts are kept to a minimum, reducing wear and consequent replacement expense. Basic simplicity, coupled with the highest quality materials, careful workmanship, and thorough testing insures long-lived, troublefree operation and low maintenance cost.

Manufacturing facilities are geared to provide uniform quality, accurate conformance to specifications, and prompt delivery. All Powermaster packaged boilers are guaranteed for a period of one year against defective material or workmanship.



BALANCED COMPONENTS FOR MAXIMUM HEAT UTILIZATION & HIGHEST EFFICIENCY

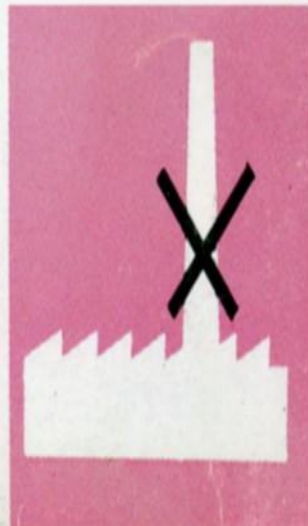
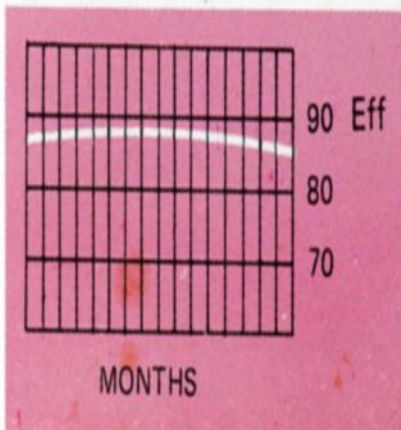
modified scotch marine boiler is of advanced dryback design and guaranteed 88% plus efficiency. Rated at five square feet of heating surface per boiler horsepower, it is engineered to extract maximum heat from every gallon of oil or cubic foot of gas used. Forced draft design eliminates expensive tall stacks and over-fire draft controls.

TUBES

Sizes and arrangement are engineered to assure maximum heat transfer. Temperature in final pass is maintained just above the dew point preventing corrosion damage that might be caused by condensed vapors. Tubes are rolled and beaded in high temperature areas and seal welded in high pressure boilers.

DOORS

Front and rear reversing chambers are equipped with hinged, pressurized, heavily insulated gas-tight doors which swing open easily for inspection and cleaning of all firing surfaces. Where space is restricted a davit can be provided to lift doors off hinges. Both front and rear doors provided with observation ports. High pressure models are fusion welded, stress relieved and X-rayed as required by ASME codes. Each boiler is encased in a metal jacketed heat resistant sheath assuring utmost insulating properties. No insulation is required at the job site. Integral structural steel saddles and skids facilitate placement in the boiler room. It is delivered fully equipped and completely wired, ready for fast installation. Our service connections need be made at the job site to place in operation.



ADVANCED BURNER DESIGN

Model 6 firing equipment is of a simple, advanced air atomizing type to efficiently burn all grades of oil gas or combination oil-gas. Full modulation provides optimum efficiency at light as well as normal operating loads with high turndown ratios.

The burner head completely mixes fuel and air and controls the flame pattern. This mixing occurs on the furnace side of the diffusion face and not in the air tube thus preventing flashback and flame instability. All combustion air is furnished through the burner head.

The main casting of the firing head forms the outside cover plate. A primary air tube connects this cover plate and the diffuser head. Straightening air vanes to control the primary air pattern are contained within this assembly. On gas and combination units, multiple gas tubes convey the gas from the gas manifold to the diffuser head. Within the primary air tube concentric tubes convey the atomizing air and oil from the tailpiece casting to the oil nozzle.

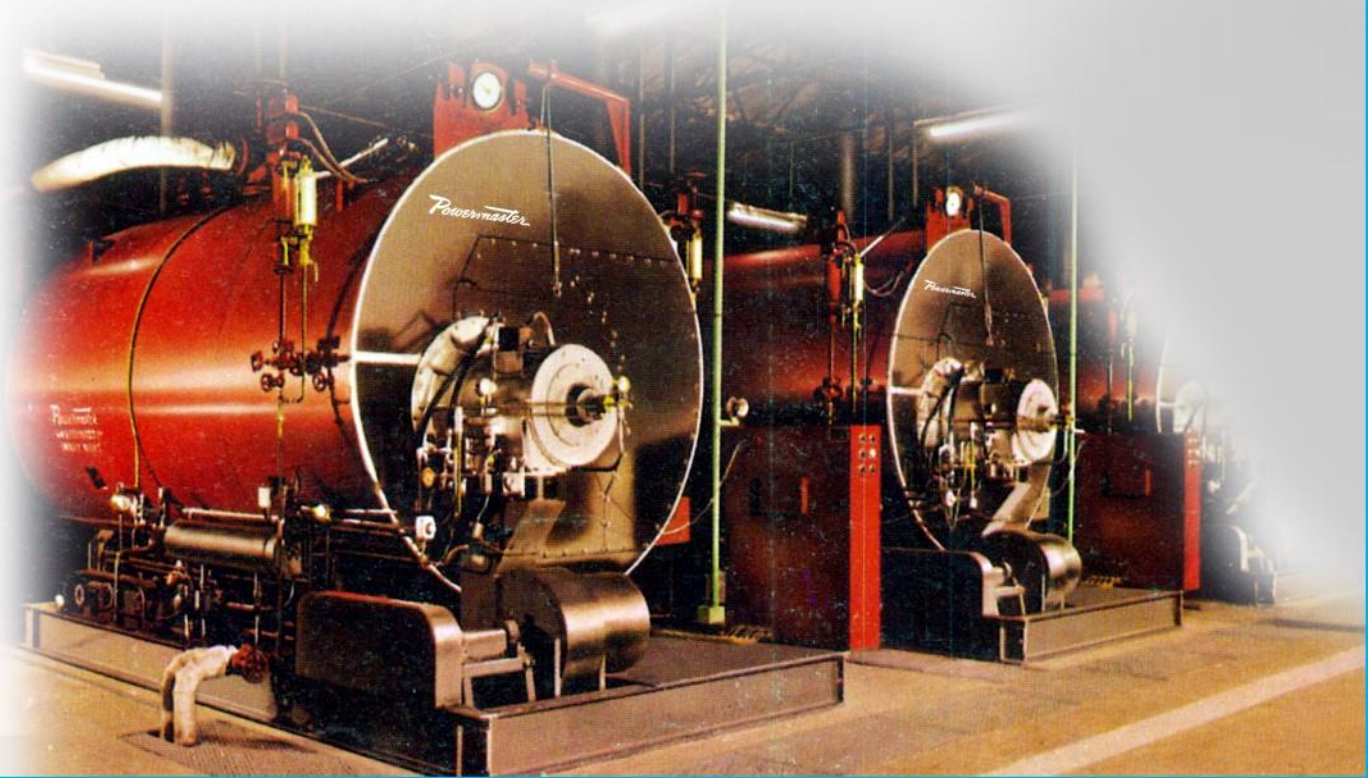
Interruptible gas-electric ignition is standard. Diesel-electric ignition can be furnished when required.

OIL FIRING

A pre-piped and wired two-stage positive displacement pump circulates oil to a point immediately behind the nozzle assembly. It is then mixed with low pressure air and forced through the nozzle into the dual air streams provided by the forced draft fan. This system generates a short controlled flame which assures that combustion takes place well within the furnace length. Automatic temperature controls make sure that the oil reaches the proper temperature before the burner commences the automatic ignition and firing cycle. A special feature of the Power, master heavy oil fuel nozzle is that it is self cleaning. Air is lawn through the tube and oil nozzle assembly before and SISfter each firing cycle purging fuel passages.

GAS FIRING

The Powermaster gas fired boiler is designed specifically to achieve stable, safe efficient combustion, and to operate at capacity with low pressure natural gas. A unique method of gas introduction through multi-jet ports around the inner and outer perimeter of the diffuser face provides perfect distribution of gas into both primary and secondary air outlets. These ports, surrounding the perimeter of the firing plate ring, permit instantaneous mixing of gas and combustion air at the face of the firing plate resulting in a stable flame pattern. This system effectively prevents flashback into the burner. Blow-off is likewise impossible with any reasonable fuel-air proportions.



COMBINATION FIRING

With combination firing, oil and gas features are engineered into a single unit. Fuel changeover is automatic at the flip of a switch. No other manual settings are required.

STANDARD EQUIPMENT

Integral steel saddles and skids; high temperature insulation and steel jacket; insulated hinged front and rear doors; stack thermometer; refractory; front and rear pyrex observation ports; openings for operating and limit controls, gauges, surface blowoff, drain, or bottom blowdown; handholes; manhole (high pressure steam - 80 hp and larger; low pressure steam and hot water - 125 hp and larger).

STANDARD TRIM FOR STEAM UNITS

Trim for steam units: Combination water column with integral low water cutoff, alarm switch and feed pump control switch, water gauge try cocks and drain valve; pressure gauge with gauge cock(s); ASME approved safety valve(s). Feed water pumps, main valve, feed check & Stop valve (s) blowdown valve column drain valve., Optional Equipment; Water Softener Deaerator Economiser & other Boiler Room accessories.

COMPLETELY PRE-WIRED CONTROL CABINET SIMPLIFIES FIELD WIRING

Each Powermaster Model 6 unit is furnished with an enclosed, dust resistant, pre-wired control cabinet containing electronic combustion programmer, starters, relays and switches. These controls monitor the complete firing cycle, check pilot and main flame, and provide for safety Shutdown in the event of flame failure. Fused control circuit switch, low-fire hold switch, and gas/oil selector switch (combination only) are provided. Oil pump motor with overload protection is supplied from the control circuit. Other motors have magnetic starters with overload protection~ Larger electric oil heaters and all 440 volt heaters operate through magnetic relay~ Our components are of world famous origin.

Optional Equipment:

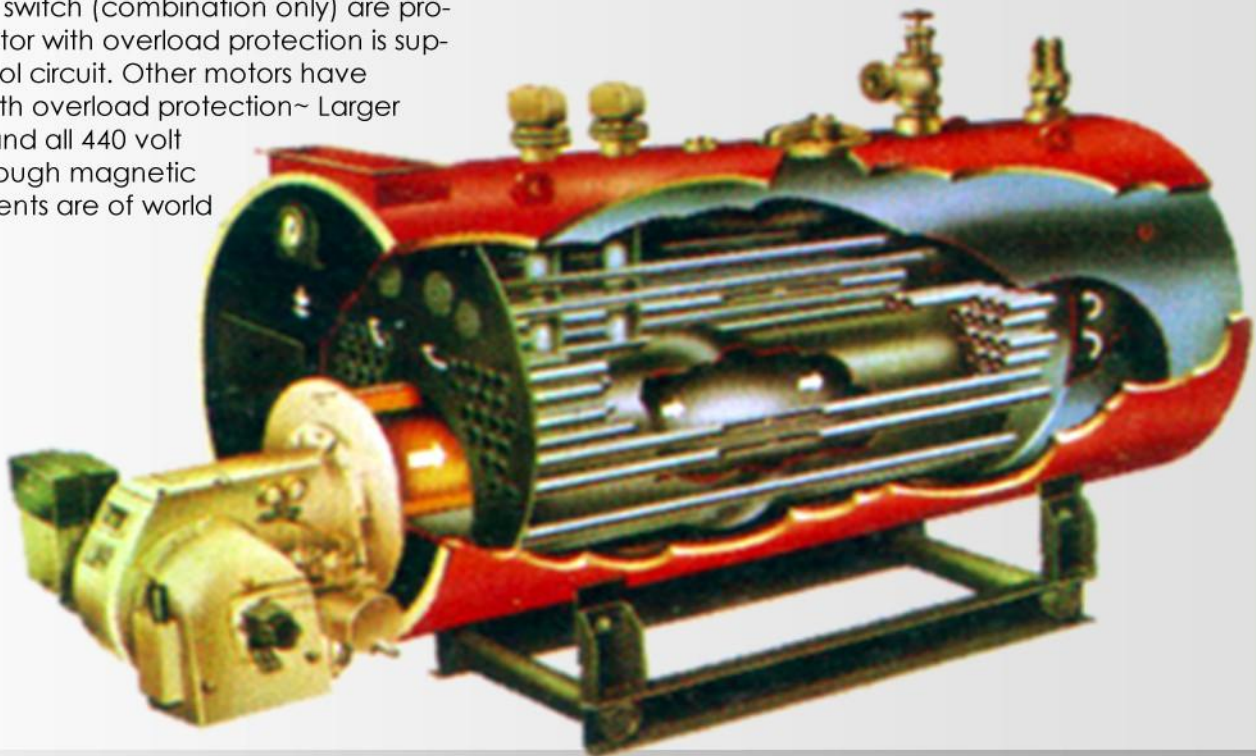
Control transformer; indicator lights for normal and safety control functions; power fuses or circuit breakers; dead, front arrangement; alarm horn or bell. Other optional equipment is available such as flow motors, recorders, programmers, Fuel Analysers. Oil pump motor with overload protection is supplied from the control circuit. Other motors have magnetic starters with overload protection. Larger electric oil heaters and all 440 volt heaters operate through magnetic relay. Our components are of world famous origin.

WET-BACK BOILER DESIGN

DEPENDABLE POWERMASTER PACKAGED BOILER FEATURES UNIQUE "TAPERFLOW" DESIGN

A special water circulation feature of the Powermaster wet-back boiler provides active protection in the rear turnaround arch area by increasing the thermally induced velocity of boiler water through this zone. This feature of Powermaster boilers prolongs the life of the rear turnaround area and increases its heat transfer rate. In the illustration, the passage beginning at "A" is gradually constricted to the point "B" exit. Acting as an aspirator, the velocity of water passing through this area cools it more rapidly and increases heat transfer.

Sizes from 20 HP to 1500 HP
Pressures upto 15 bar (g)



Powermaster®

GRESHAM'S BOILERS: THE COMMITMENT

Gresham's Started boiler manufacturing in 1971 in an association with Karachi Shipyard & Engineering Works Limited as a pioneering project for Pkistan. Todate, we have manufactured over 1200 boilers of various designs for customers ranging from food processors to power plant boilers. We have been the first in CoGeneration and EPC Projects. Notable installations included the Finance & Trade Centre at Karachi, The MCB Towers, the SNGPL Head Office Building and many others.

Gresham's Boilers exported to:

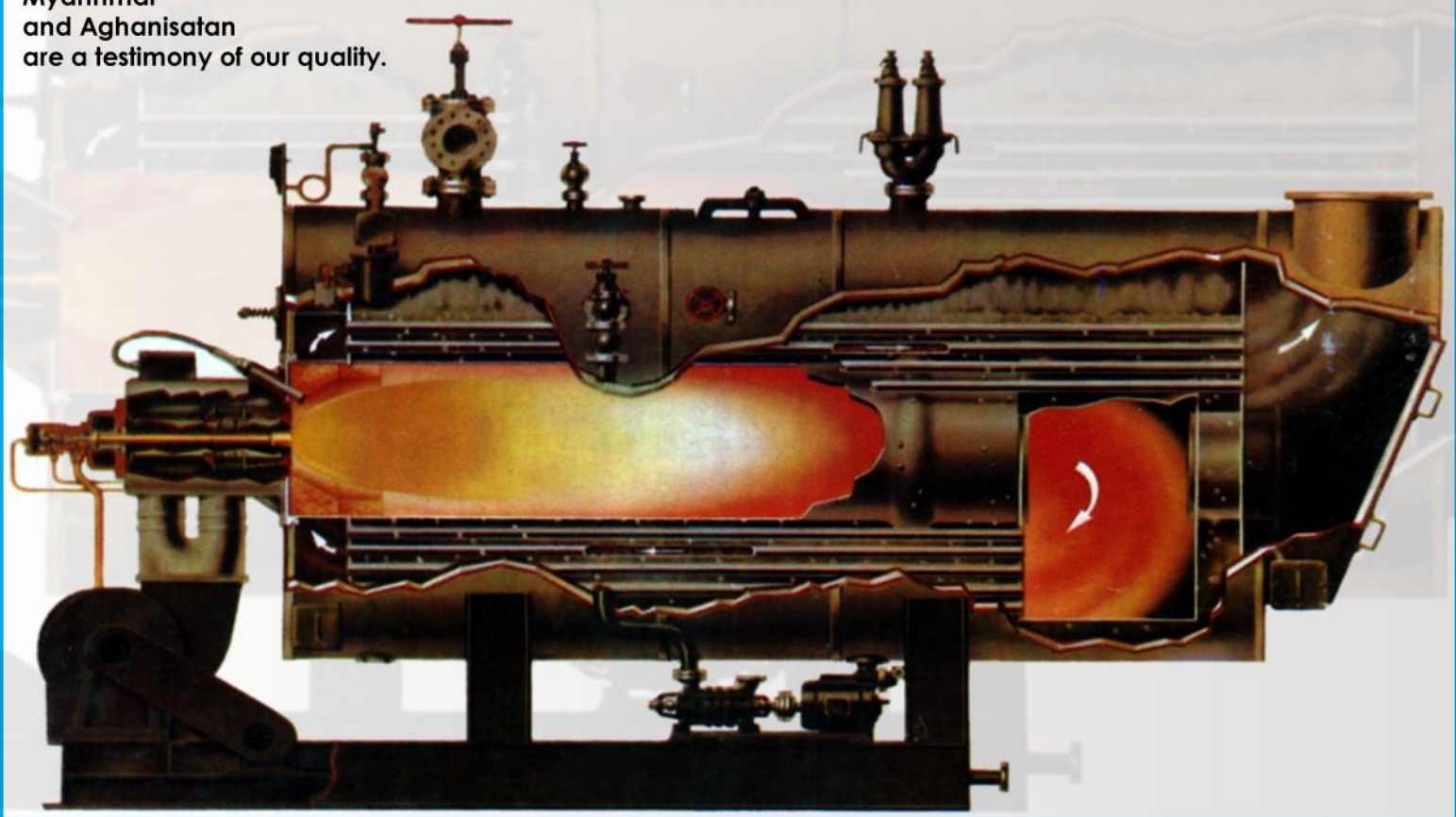
France,
Italy,
Algeria,
Iraq,
UAE,
Saudi Arabia,
SriLanka,
Bangladesh,
Myanmar
and Aghanisatan
are a testimony of our quality.

Boilers of Firetube, Watertube, Forced circulation Steam Generators, Waste Heat Recovery Units, Power plant boilers, Thermic oil Boilers, Hot air generators, RO & Water Treatment Plants, Heat Exchangers, Equipment for oil and gas industries, Portable accomodation systems, Filtration Plants are manufactured under licence agreements from world renowned brands such as Powermaster Keeler, Wanson, Ygnis, Alpha boilers..... to give you a highly engineered, safe & efficient products built to ASME Standards and Inspected by Germanischer Lloyds, TUV, SGS....

In 1982 we originated the idea of energy conservation and were behind the Boilers in Pakistan study done by the Ministry of Production which study led to the creation of ENERCON.

Gresham's

- dedicated to boiler manufacture since 1971.
- commitment to energy conservation.
- commitment to deliver a safe reliable product.



ADVANTAGE ▼ GUARANTEED
GRESHAM'S
THE ENERGY-ENVIRO SPECIALISTS

1947-2047
100
Innovation | Integrity | Value
BS EN ISO 9001
QUALITY ASSURED

GRESHAM'S EASTERN (PRIVATE) LIMITED
Business Center | Suite 702, 7th Floor Plot 19/1-A |
P.E.C.H.S, Block-6 Main Shahrah-e-Faisal Karachi 75400 |
Pakistan Tel: +92 21 343 24530 (06 Lines)
Mobile: +92 301 829 3472 Fax: +92 21 343 24080
boilers@gel1947.com | www.gel1947.com

We reserve the right to change or modify any equipment for improving our products.