

# **REVOMAX** *HDR*



**Revolution  
in  
combustion efficiency**

## THE GRESHAM'S STORY

**Gresham's** started boiler manufacturing in 1971 in an association with Karachi Shipyard & Engineering Works Limited as a pioneering project for Pakistan. To date, 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 include 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, Sri Lanka, Bangladesh, Myanmar and Afghanistan are a testimony of our quality.

## Quality Inspiration.

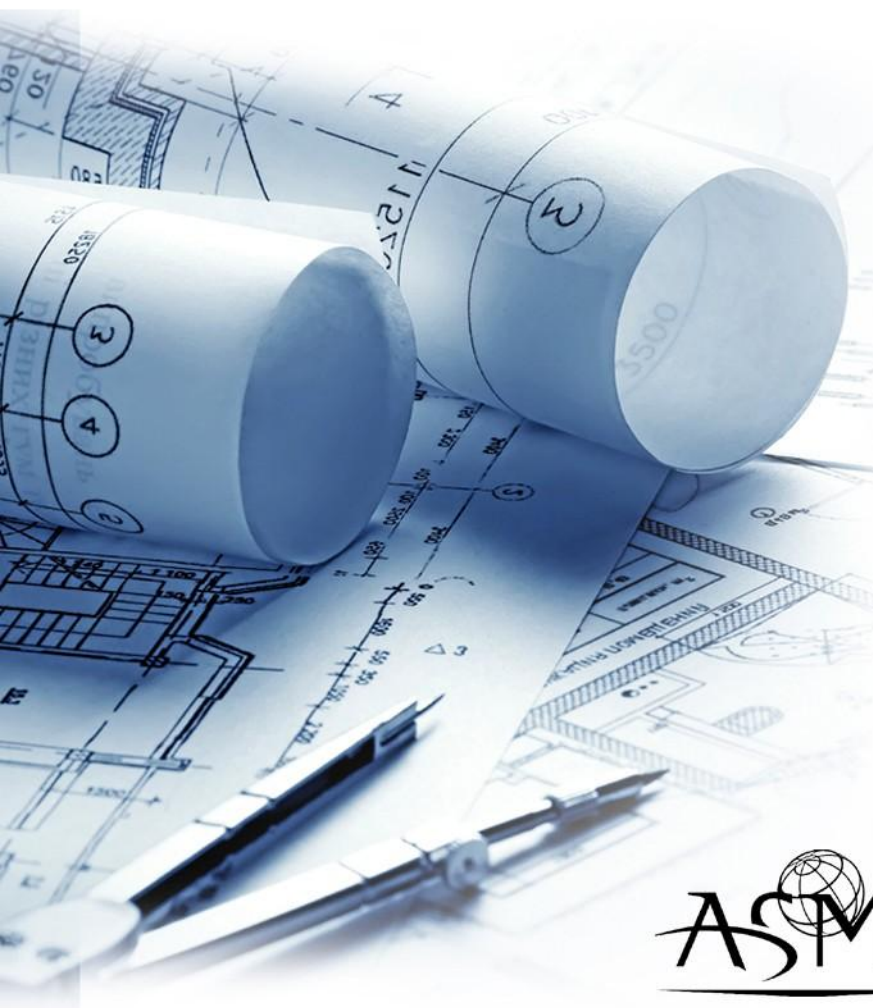


William Edwards Deming was an American engineer, statistician, professor, author, lecturer, Quality Expert. Mr. Deming inspired Toyota to quality manufacture in 1954.

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 accommodation 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.



ASME Codes used for manufacturing all Boilers.







# Swiss Technology

From Switzerland, the world's most advanced Boiler Design.....

**Revomax HDR-3** Pass Reverse Flue Boilers are manufactured in sizes from 500 to 17000 kg/hr of steam with maximum pressures of 13 bar.

Modern, high technology burners, especially sized and configured, from World Famous manufacturers are used with options for Natural Gas, Diesel, Heavy Furnace Oil or combination of fuels.

The construction of **Revomax HDR**

Boilers is on the latest ASME Sec I Codes and Inspection during Construction is supervised by Internationally well known Third Party Inspectors from Germanischer Lloyds, TUV, SGS.

ASTM specification quality steel from certified mills is used and all materials are re-examined before manufacturing by Inspectors.

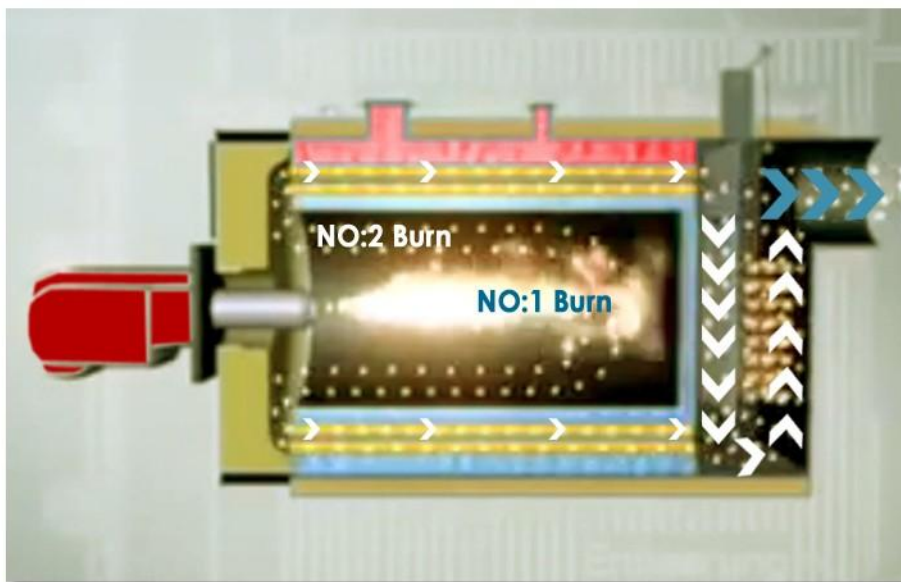


Respecting the discipline of ancient Samurai warriors, an all encompassing Quality Standard approved by Inspection Agencies monitors every aspect of construction.

The Six-Sigma discipline [Revomax HDR](#) boilers, thus, are distinguishable with robust and flexible designs providing the highest efficiency on output/input yearly efficiency basis, a 5 Year Pressure Vessel Warranty, ease of operation and maintenance.

The Reverse Flue Burning Principle:

Fuel needs Oxygen to ignite. Excess Air containing 21% oxygen and 78% Nitrogen through the burner combines with fuel to produce a flame. However, the nano seconds available allows fuel to slip through unburnt. This happens with every burner especially when today, Boiler Manufacturers, to increase efficiency tend to keep Oxygen levels to 2-3% resulting in high Carbon Monoxide generation especially during modulation.



Carbon monoxide is between 0 to 5 ppm at all firing range including modulation. Exhaust gas temperature about 30 C above steam temperature. Stage 1 Economiser is standard equipment. Stage 2 Economiser increases efficiency between 7-

## BURNS FUEL TWICE !!!

Tests were conducted on a Reverse Flue Design Boiler at the Tucson Medical Centre, Arizona, USA in comparison to a standard three pass boiler. The result in wasted fuel are available at our website for study and show the Annualised Output/Input efficiency difference at over 86% as compared to standard firetube annual efficiency of 65%. More and more Gas distribution companies are reverting to Efficiency based Tariffs with lowest level at 86% .

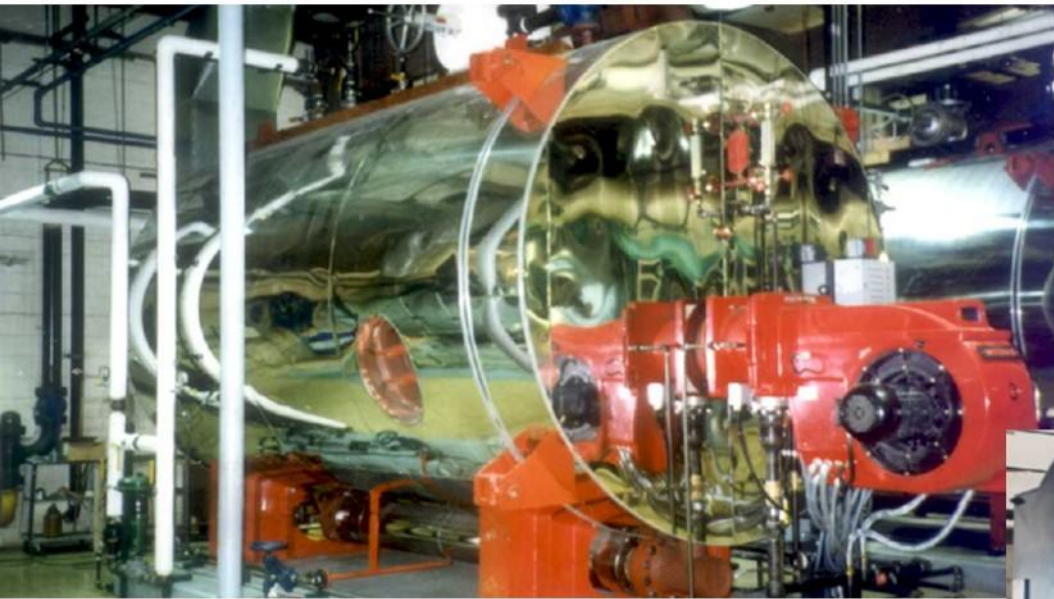
Without complicated Control systems now being used unsuccessfully by other manufacturers to reach the 86% Tariff level, The reverse Flue design achieves the desired results.

With O<sub>2</sub> levels at 2%--Carbon Monoxide levels between 1-10 ppm at all firing rates including modulation, the Revomax HDR design is hard to beat by any other boiler design.



The design of the **REVOMAX HDR** is unique in other areas as well:

- ▶ Water cooled Reversing Chamber is finned at the rear for dispersing the radiant heat of the furnace and minimizes any loss.
- ▶ A multiple hole feed water distribution pipe injects water through the steam chamber ensuring even & stress free water distribution inside the boiler.



### Standard Boiler items:

European SS Feed Water Pump sets with piping and valves.  
Magnetic Level Gauge Glass.  
Reflex Type level gauge.  
High Quality Valves & Fittings.  
High Quality European Burner meeting EU Emission standards of Air Quality.  
European Controls.  
Economiser.

### **REVOMAX HDR:**

Easy installation  
operation and maintenance  
User friendly

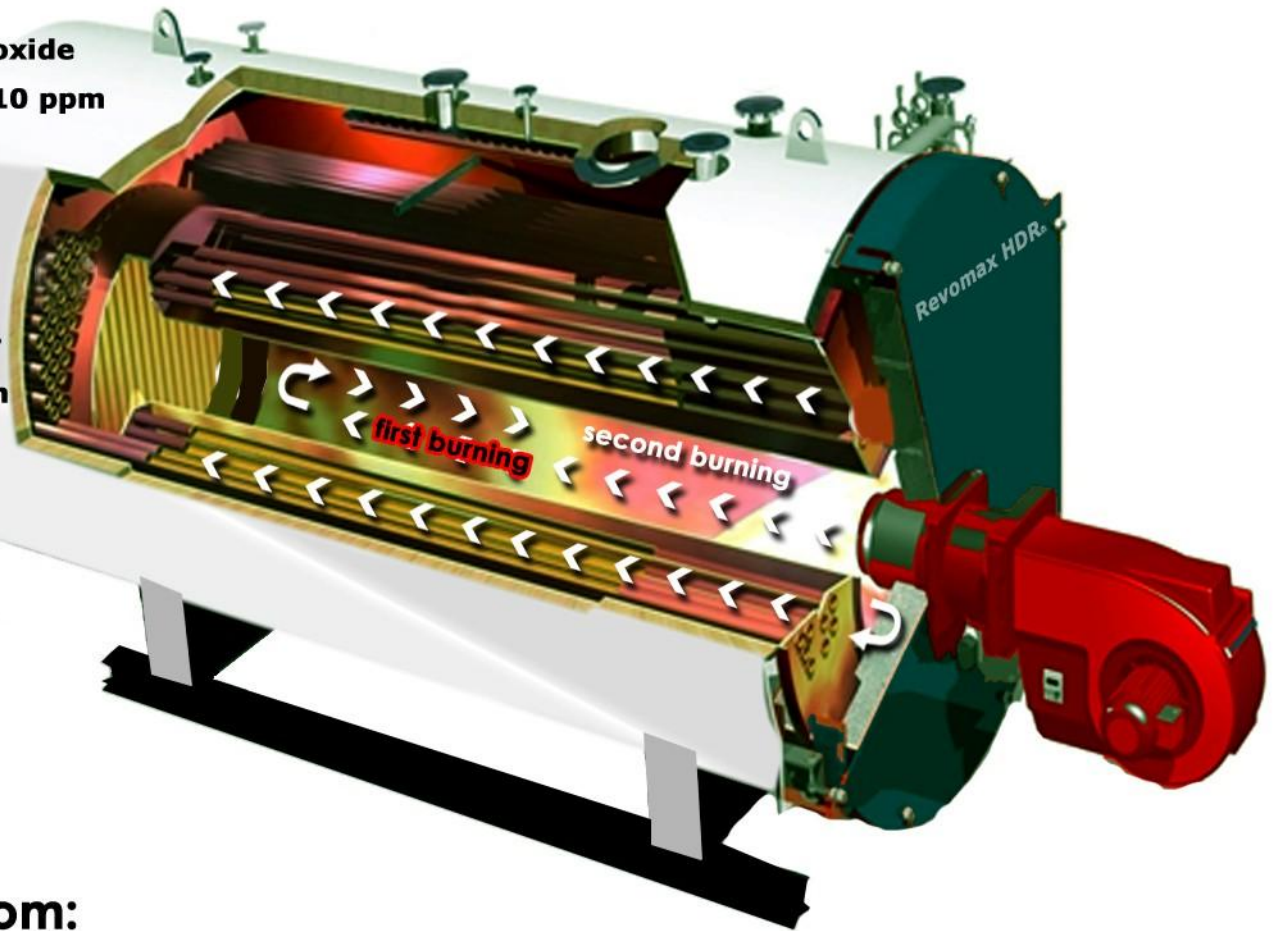
### **Optional Equipment:**

SS Condensing Economisers can be supplied.  
Sound containment canopy at burner.  
Complete systems including boilers, feedwater tanks, deaerator, condensate tank blow down tanks, etc. from Gresham's.  
Steam Flow/fuel flow monitoring & recording with remote alarms.

**5** year Pressure vessel guarantee: proof of unmatched design.

**Carbon Monoxide  
Output = 0-10 ppm**

**Over entire  
operating  
range-  
unmatched  
by any other  
boiler design**



**Sizes from:  
500 kg/hr. to 15,000 kg/hr.**

**REVOMAX HDR.....**

**UNMATCHABLE TECHNOLOGY FROM SWITZERLAND.....  
The home of....**



**ROLEX**



**VICTORINOX**

**LIEBHERR**

**..... and many more.**

ADVANTAGE ▼ GUARANTEED

**GRESHAM'S**  
THE ENERGY-ENVIRO SPECIALISTS

1947-2047  
100

Innovation | Integrity | Value



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