SGG-water tube & fire tube boilers
steam and heat generators
pressure vessel & heat exchanger


SGG Since
1980
GARMA GOSTAR
ENERGY ENGINEERING

About Us

Sanaye Garma Gostar (SGG)

(Garma Gostar Industries) was founded by **Mirkhan Aghazadeh** on November 3,1980.

SGG is a leading process plant engineering and construction company which designs and manufactures the most challenging process plant equipment.
We integrate processing solution, system components and process control into turnkey production plants.
As an EPC contractor our project services include process analysis, engineering and construction of turnkey production plants, qualification and commissioning as well as maintenance and training.
We are primarily involved in supply of steam generation unit for processing liquids, pressure vessels, heat exchangers and … in Oil, Gas, Petrochemical, Refinery, Power Plant, Steel, Paper, Food and other industries.

Historical profile

The company is a vision of **Mr. Mirkhan Aghazadeh** and he has embedded its position as one of the leading players in process plant industry in Iran.
He established the company under **Sun Boiler Co.** in 1980 in Tehran and changed the company name to **Sanaye Garma Gostar** Co.

Milestone in a success story

1980
SGG was founded in 03.11.1980 and started to manufacture boilers for central heating systems.

1982
SGG started to provide services for various Heavy Industries, such as Oil, Gas and Power Plant.

1985
SGG became partner with a west European company for design and construction fire tube shell boilers.
The product range, included steam boilers up to 70,000 Lb/hr and hot water boilers up to 35 MBTU/hr.
All of our shell boilers mechanical design and drawing approved by Lloyd´s Register and based on performance acceptance and guarantee of SGG.

1988
License agreement with Mitsui Babcock UK for design and manufacturing water tube boiler, SGG developed its activities in the field of water tube boiler and know-how of Bi-drum type water tube boilers.

1995
SGG became a leading EPC contractor for steam generation plant by utilizing in-house design and simulation from design stage to fabrication, inspection and installation for combined cycle power plants and utilities.
SGG is the first company in Iran to be approved by accordance with ISO9001 and ISO/TS29001.

2004
SGG became partner with a German engineering company for basic design of mono drum water tube boilers up to November 2021.

2022
Currently SGG with 42 years of experience in the fields of design, engineering, procurement, manufacturing, erection and commissioning of water tube and fire tube steam and hot water boilers, owns know-how and technology itself. SGG is able to transfer the know-how and technology of steam and hot water boilers to the applicants all over the world.

Our abilities

SGG designs and manufactures complete turnkey process plant system, our all-around expertise includes consultancy services to the various industries. Over the last 42 years, we have established a sound infrastructure facility which is equipped with latest machines such as high-tech welding machines, plate rolling, cutting, drilling machines, and surface roller.
All our products are tested on well- defined quality parameter to meet the highest demand of our customers.
The first steam boiler was produced in our plant with capacity 500 kg/hr oil fired, fire tube, shell boiler for **Sina hospital** located in Tehran in 1982. After 40 years in operation, the boiler is under operation with desire working condition.

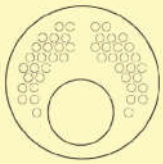
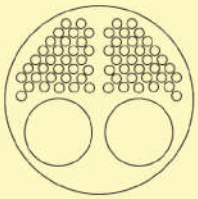
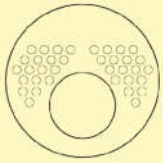
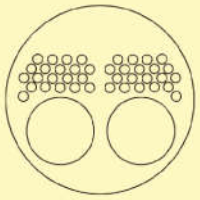
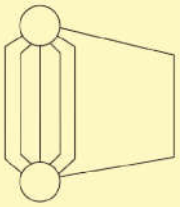
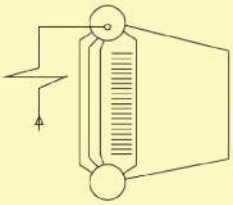
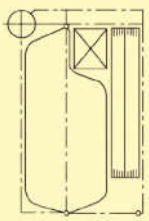
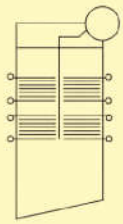
Our clientele

We follow an ethical business approach, placing the requirement of the clients on center stage. This has successfully enabled us to garner the trust of most reputed clients from various industries.
Several of our the most important clients are mentioned in following pages in this catalog.

For further information please contact us through info@garmagostar.com

GARMA GOSTAR Program

Design, Engineering and Manufacturing
Established in Germany & Iran

			Output Kg/h	500	1,000	2,000
						
						
						
						
			Output Gcal/h	0.3	0.6	1.2

The above table gives a general view about a boiler manufacture program surely being the largest one of Asia within these capacity ranges and application fields, that is one of the most famous designer of European countries.
Naturally we will not only manufacture oil or gas fired boilers. The question of the respective fuel does not mean a problem for us. We could design and manufacture suitable boiler plant for almost any fuel available all over the world. The modern firing practice will show that optimal operating results can be also reached by firing residual fuels requiring minimum attendance only. For more information, please ask us required special technical data.

	3,000	5,000	10,000	20,000	30,000	40,000	50,000
	1.8	3.0	6.0	12.0	18.0	24.0	30.0

Up to
300,000 Kg/h

Up to
600,000 Kg/h

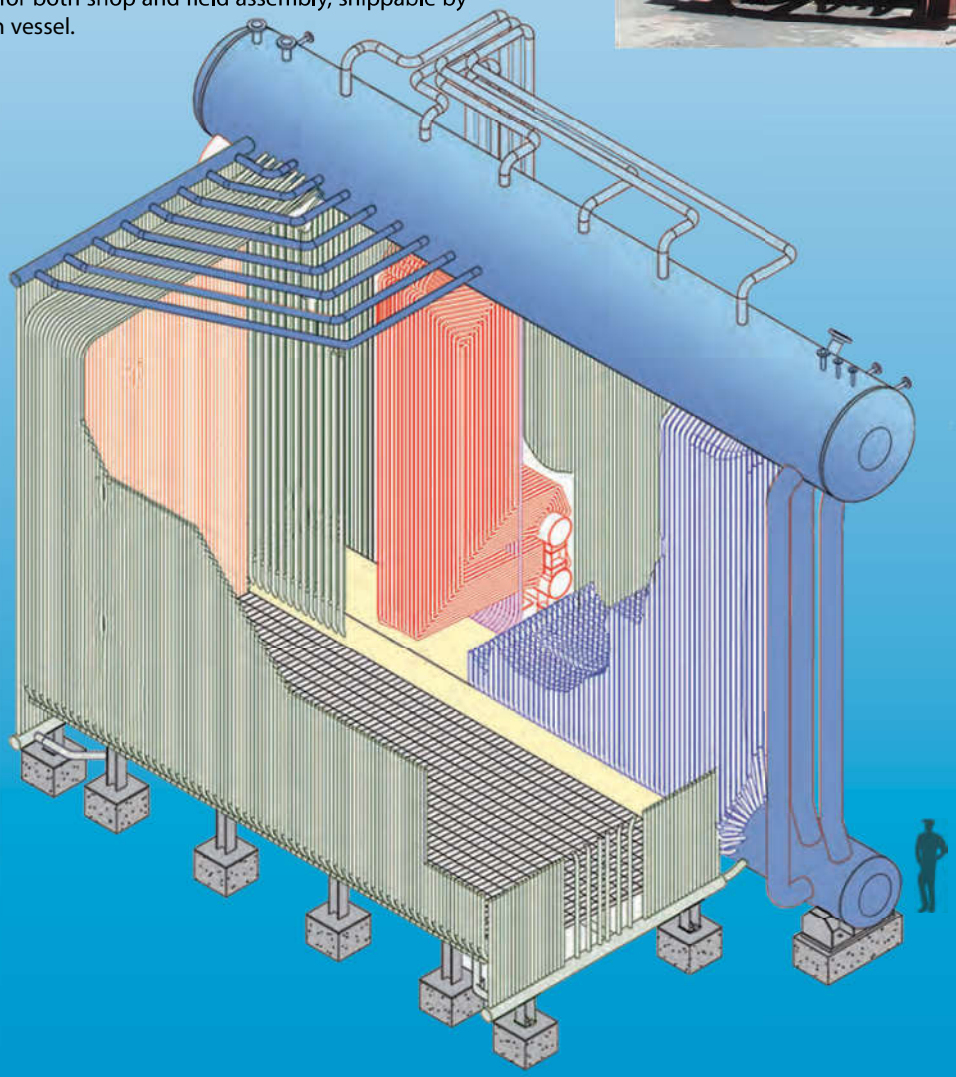
D-type Water Tube Boiler

Proven Design for Reliable & Economical Steam Production

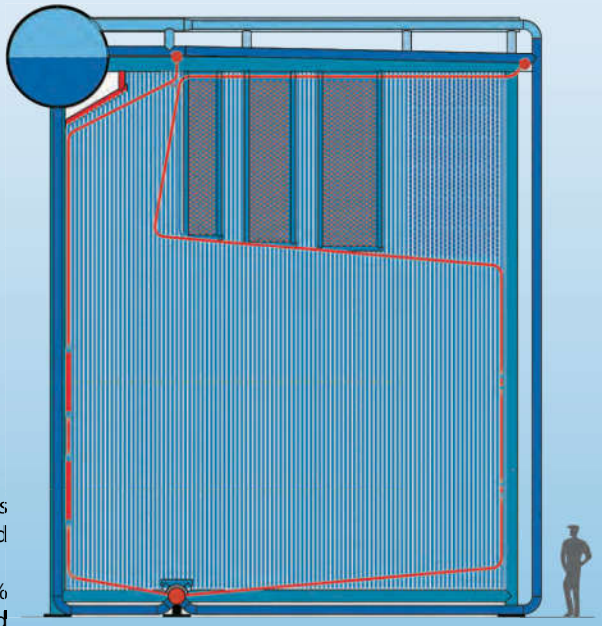
D-type boiler designs offer many benefits not available with competitive units. Dependable performance for a wide variety of industries, D-type water tube boiler continues this tradition of excellence with many units in operation.

Proven D-type construction, which has separate convection and furnace sections, creates proper geometry of the burning chamber resulting in increased combustion efficiency.

Sanaye Garma Gostar (SGG) provides the high capacity and efficiency D-type boiler for various industries. The compact and efficient design of our D-type water-tube boilers allows for economical shipment via truck or ocean vessel. D-type boiler has arranged for both shop and field assembly, shippable by truck or ocean vessel.



Mono Drum-type Water Tube Boiler



First-Class Water Tube Boilers

Features

- Welded wall Combustion chamber
- Vertical generating bank to accommodate dirty fuels
- Rigid pipeframe support-no external steelwork
- 2-Stage controlled superhearter
- Pre-separation of water & steam
- High steam purity
- Single drum with few penetrations
- Rapid strat-up and load changes
- Extended surface economiser
- Drum type feedwater heater

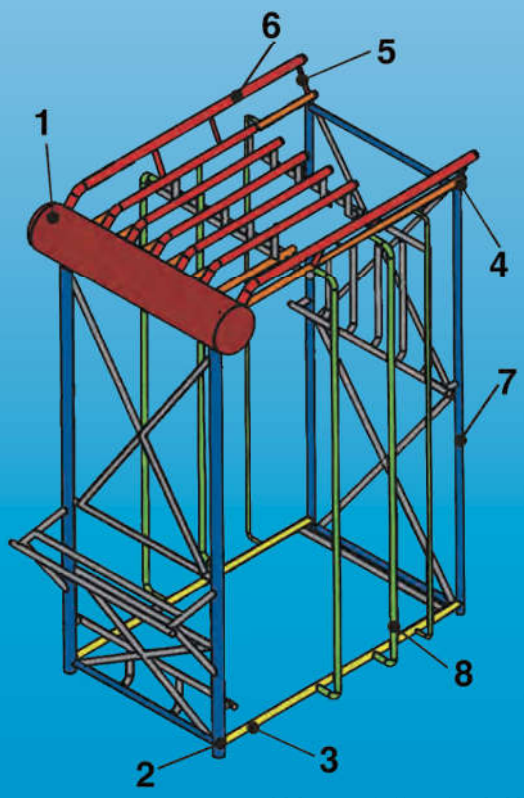
The Boiler Construction

Efficient Heart transfer is achieved entirely without baffles which would otherwise lead to a build up of deposits and consequent maintenance problems.
One of the main features of the Corner-tube Boiler is the 100% welded construction. This gives an extremely ruggedd and reliable construction without the problems associated with large number of expanded tube connections in conventional boilers.
Overly quick load changes on conventional boilers lead to very high thermal and mechanical stresses on this expanded joints and hence to the well known cracking of the ligaments Having an all welded construction allows close pitched tube walls throught thereby reducing refractories to a minimum. This considerably reduces the maintenance requirements on the boiler.

Steam rating from 0.4 to 600 ton/h
Steam pressure from 8 to 136 bar
Steam temperature to 535°C
Larger capacities are possible as well.

The unique design results in a number of advantages inherent to the boiler system:

- Rapid start-up
- Excellent response to fluctuating loads
- Self-supporting structure (earthquake-resistant)
- High purity of steam
- Limited number of joints at the drum
- Option of full pre-assembly in the workshop
- Adaptability to spatial conditions on site



1. drum
2. corner tubes (unheated downcomers)
3. header
4. mixture tubes
5. steam drain tubes
6. overflow tubes
7. corner tubes (unheated return tubes)
8. unheated downcomers

Iranian Offshore Oil Co.

Lavan Island
Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing & Commissioning (EPC)

Unit Technical Specification:
- Twin furnace Fire Tube Steam Boiler
- Capacity: 55,000 lb/hr
- Working Pressure: 16 Bar

Fabrication Facilities
Work Shop No.1

Manufacturing Area: 3200 m^2
Cranes: Lifting Capacity up to 10 ton

Hot forming corrugating machine
20x2200x6000 mm

Three Unit Tube Bending Machine OD up to 4"

High-frequency Welded Finned Tube Machine
Solid and serrated fin
Tube diameter up to 219 mm
Tube length up to 16000 mm

Fabrication Facilities
Work Shop No.2

Manufacturing Area: 3200 m^2
Cranes: Lifting Capacity up to 20 ton

Plate Beveling Machine

Tube Swaging Machine

ESAB - CNC Plasma & Oxy Cutting Machine
14000mm x 4000mm

Fabrication Facilities
Work Shop No.3

Manufacturing Area: 3200 m^2
Cranes: Lifting Capacity up to 40 ton

Haeusler Plate Rolling Machine
Plate thickness up to 140 mm
Plate width up to 3150 mm

Automatic Panel Membrane Wall Welding Machine

Five Unit Radial Drilling Machine
Hole Diameter Up to 110 mm
Table Dimension: 3000x12000 mm

Fabrication Facilities
Work Shop No.4

Manufacturing Area: 4800 m^2
Cranes: Lifting Capacity up to 150 ton

Two Unit Esab Automatic Saw Machine

Orbital Welding Machine

Automatic Circle Welding On Pipe and Pressure Vessel From 2" OD Up to 24"

Fabrication Facilities, Havy Equipments
Work Shop No.5

Manufacturing Area: 2000 m^2
Cranes: Lifting Capacity up to 100 ton

Design, Engineering and Technical Department

Engineers and Technicians

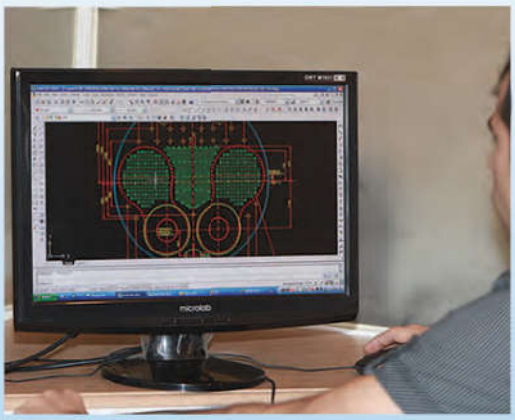
are at your disposal in our planning and constructing departments for the use of **SANAYEH GARMA GOSTAR (SGG)** products.
our performances comprise plans and boiler proposals even for complete boiler stations including control and measuring plants, ready for realization.

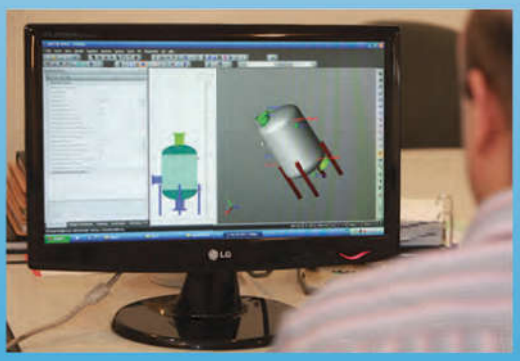
Modern Methods of Production

combined with effective planning, rational production and thorough material control, allow the standard type production of boilers and boiler parts, but likewise individual treatment and utmost care at the production of high capacity boilers and complete plants.

Trained Specialists,

among others experienced high pressure welders, guaranty the high quality and reliabiliy of SGG products.





Inspection, Quality Control & Test plants

Non Destructive Tests

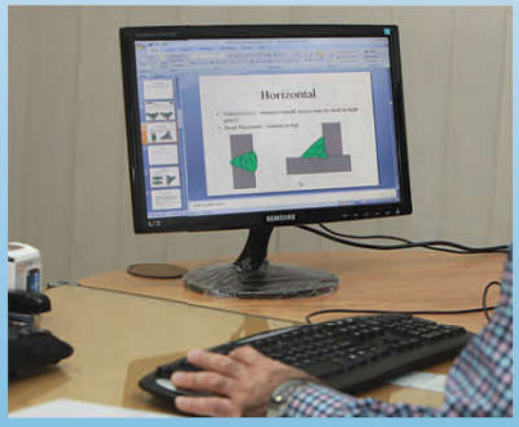
Complete NDT testing including X-ray and ultrasonics testing are at our disposal for developement, test and control of material and manufacturing.

Testing Stand & Trial Plant

A boiler test stand and a trial plant existing at **SGG**, equipped with the most modern control, measuring and supervision devices, permit the testing of modern and non-polluting boiler and firing systems.

Manufacturer Responsibilities

Examinations carried out by the inspecting autority shall not absolve the manufacturer from his responsibility for
compliance with the applicable requirements of standards.



Jam Petrochemical Co.
Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing,
Construction & Civil Work (EPCC)

Unit Technical Specification:

- Mono Drum Steam Boilers
- Capacity: 2x120 Ton/hr
- Working Pressure: 43 Bar
- Super heater outlet tempreture: 430° C

Lavan Island
4Steam Generation Unit

Project Scope of Work:
Engineering, Procurement,
Manufacturing & Commissioning
(EPC)

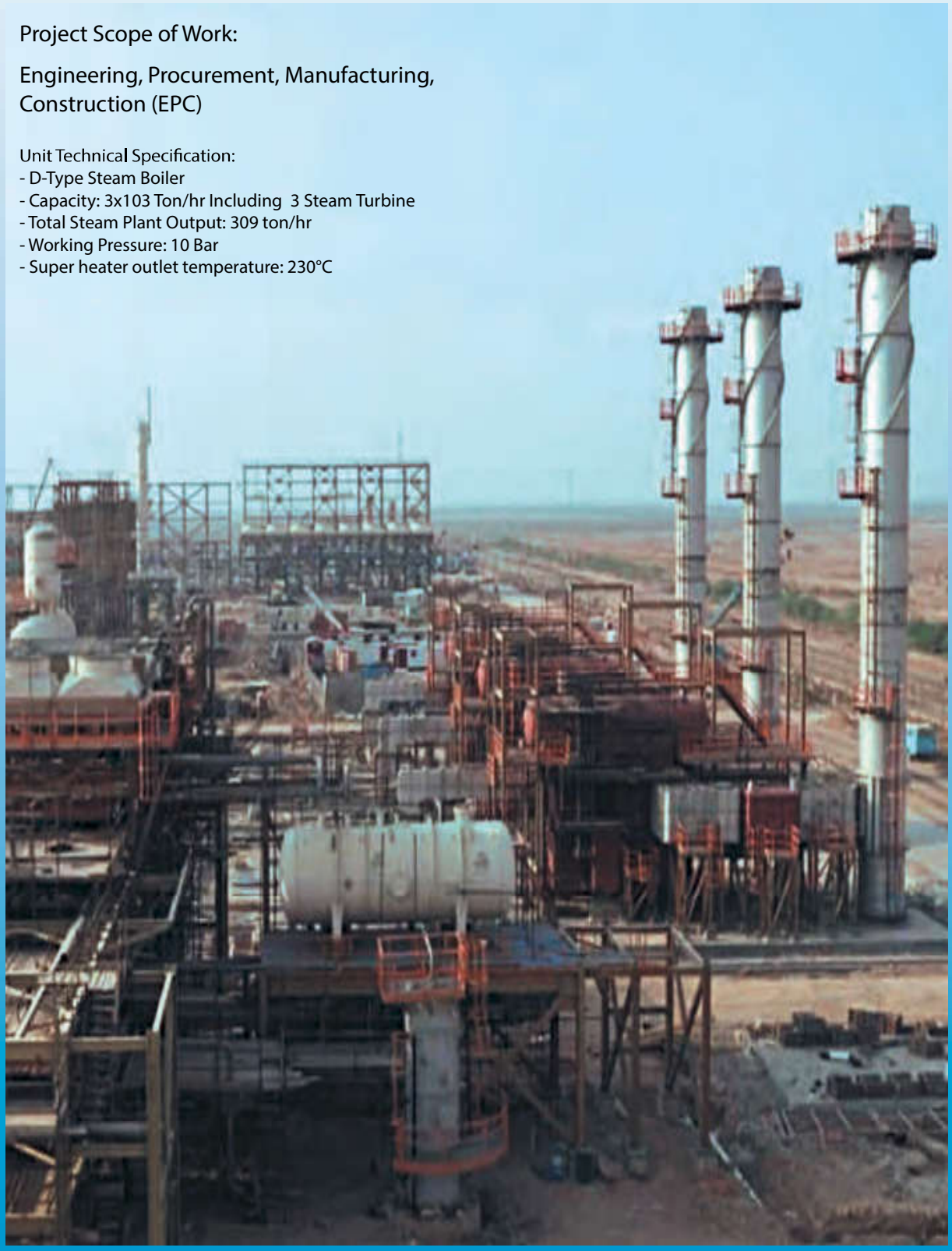
Unit Technical Specification:
- Three D-Type Water Tube Steam Generation Unit
- One Twin furnace fire tube steam Generation Unit with Capacity: 30 Ton/hr

West karoun Area NGL 3200 Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing, Construction (EPC)

Unit Technical Specification:
- D-Type Steam Boiler
- Capacity: 3x103 Ton/hr Including 3 Steam Turbine
- Total Steam Plant Output: 309 ton/hr
- Working Pressure: 10 Bar
- Super heater outlet temperature: 230°C



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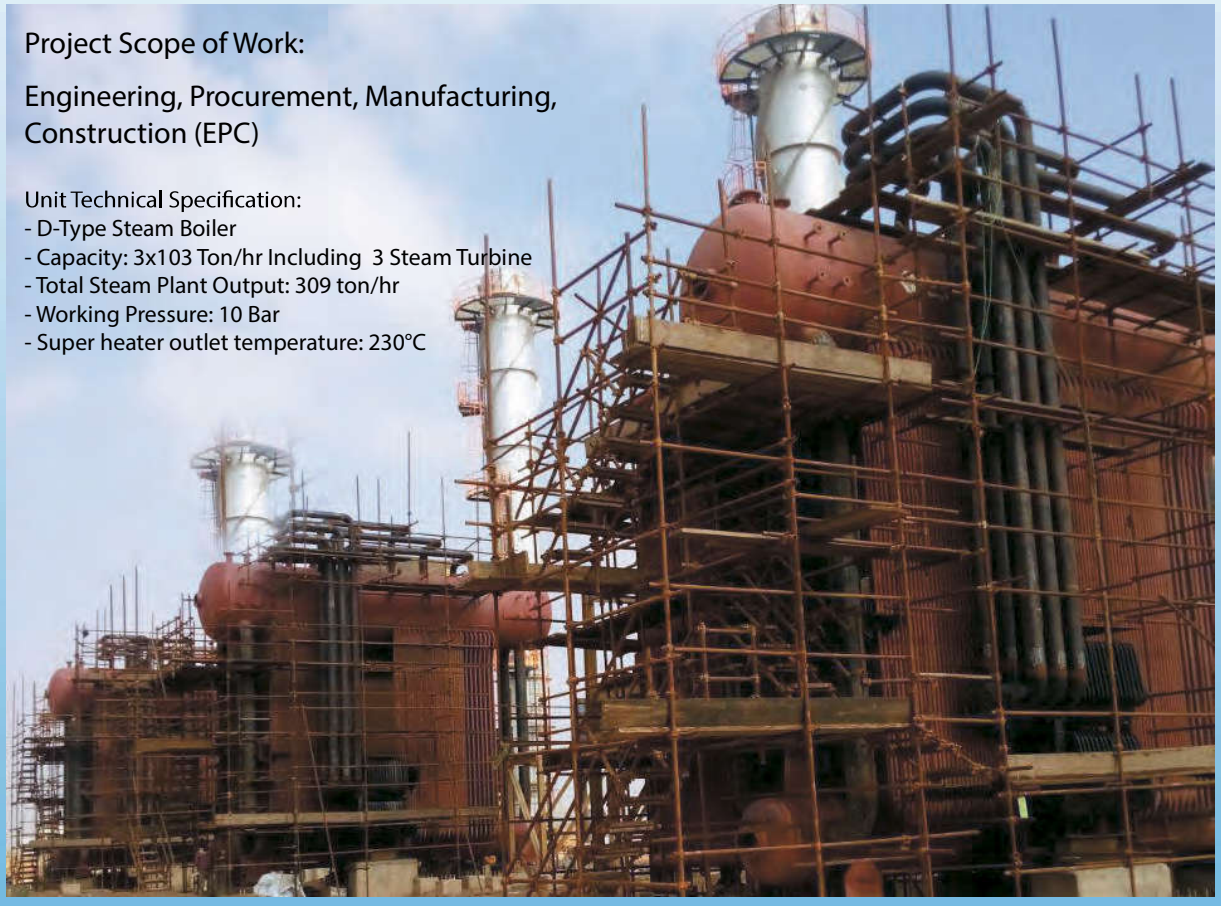


Miandoab Petrochemical Co.
Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing & Construction (EPC)

Unit Technical Specification:
Mono Drum-Type Boiler
Two Boilers with:
- Capacity: 2x20Ton/hr
- Working Pressure: 56 Bar
- Temperature: 396° C

Razi Petrochemical Co.
Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing, Construction & Civil Work (EPCC)

Unit Technical Specification:
- D-Type Steam Boiler
- Capacity: 150 Ton/hr
- Working Pressure: 27 Bar
- Super heater outlet temperature: 288°C

Bandar Abbas Oil Refinery Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing & Construction (EPC)

Unit Technical Specification:

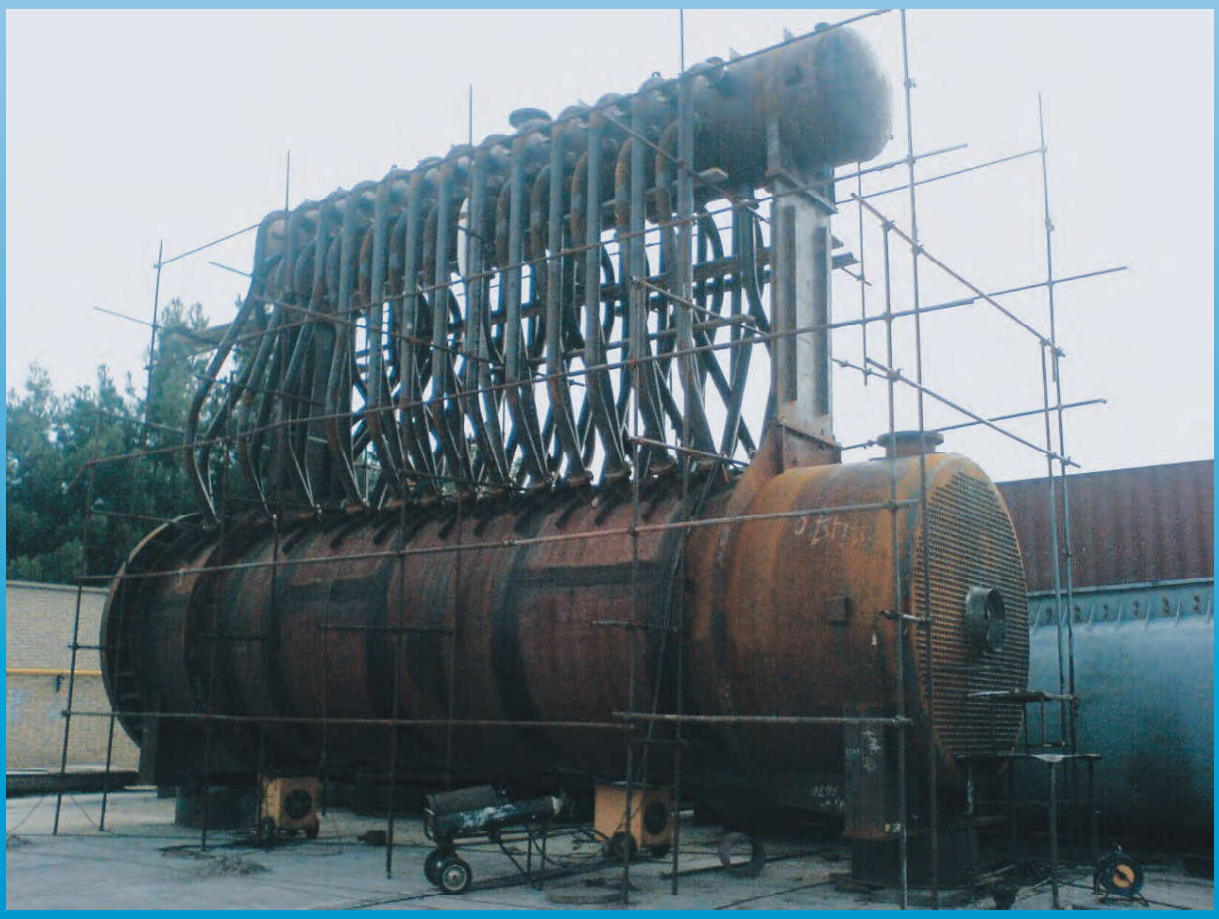
- D-Type Steam Boiler Including Steam Turbine
- Capacity: 175 Ton/hr
- Working Pressure: 45 Bar
- Super heater outlet temperature: 380°C
- Stack Height: 76 m

Khangiran Gas Refinery Water Tube Waste Heat Recovery Unit With Steam Drum

Project Scope of Work:
Engineering, Procurement
& Manufacturing

Unit Technical Specification:

- HRSG Boiler
- Capacity: 100 Ton/hr
- Working Pressure: 315 psig



Pars Oil Refinery Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing & Construction (EPC)

Unit Technical Specification:

- Mono Drum- Type Boiler
- Capacity: 85 Ton/hr
- Working Pressure: 15 Bar
- Super heater outlet temperature: 300° C

Karoun Petrochemical Co.
Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing, Construction & Civil Work (EPCC)

Unit Technical Specification:
- Mono Drum- Type Boiler
- Capacity: 90 Ton/hr
- Working Pressure: 42 Bar
- Super heater outlet temperature: 420° C

Iranian Offshore Oil Co.

Sirri Island
NGL Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing & Commissioning (EPC)

Unit Technical Specification:
- D-Type Steam Boiler
- Two Boilers with Capacity: 55 Ton/hr

Kermanshah Polymer Co.
Steam Generation Unit

Project Scope of Work:

Engineering, Procurement, Manufacturing & Construction (EPC)

Unit Technical Specification:
Mono Drum-Type Boiler
Two Boilers with:
- Capacity: 2x50Ton/hr
- Working Pressure: 43 Bar
- Temperature: 430° C

One Boiler with:
- Capacity: 2.5Ton/hr
- Working Pressure: 58 Bar
- Temperature: Saturate

Mono Drum-Boiler: 50 Ton/hr

Mono Drum-Boiler: 2.5 Ton/hr

Twin Furnace Fire Tube Steam Generation for Process Consumption

First Class, High Efficiency, Twin Furnace Three-Pass Wet Back Condor Boilers

GHADIR Petrochemical Co.
Steam Generation Unit
5 x 25 Ton/hr Fire Tube Package Boiler

Project Scope of work:

Engineering, Procurement, Manufacturing & construction (EPC)

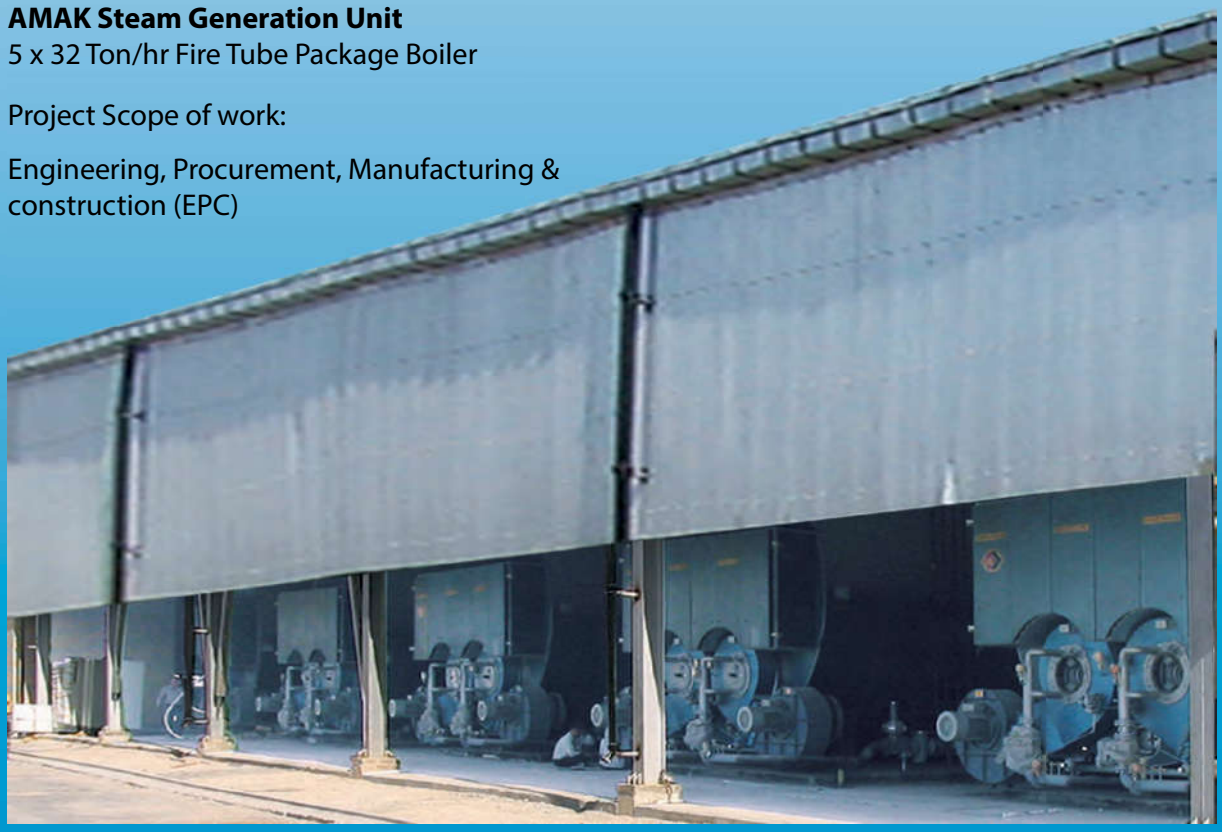
Twin Furnace Fire Tube Steam Generation for Process Consumption

First Class, High Efficiency, Twin Furnace Three-Pass Wet Back Condor Boilers

AMAK Steam Generation Unit
5 x 32 Ton/hr Fire Tube Package Boiler

Project Scope of work:

Engineering, Procurement, Manufacturing & construction (EPC)



Persian Gulf Bid Boland II

1) Condensate De-Oiling Package
2) Activated Carbon Filter Package
3) Walnut Shell Filter package

1) Package included bypass, backwash, differential pressure measurement and agitator.

2) Package included all required instrumentation, electrical equipment and controls.

3) Package included all required skid internals, structure, piping, valves, fittings, ladders and platforms.

Persian Gulf Bid Boland II

Project Scope of Work:
Design, Engineering, fabrication,Testing, Inspection, Packing For Rood Transport and Final Documentation For Skid Mounted Packeges.

Condensate De-Oiling Package

SGG's scope of supply consists of three lines. Each line is composed of two filters in series. The first filter is a coalescing filter designed to remove the most quantity of oil without any risk of clogging. The second filter is an activated carbon filter designed to remove the traces of hydrocarbon. The backwash-feeding pump is included in the package.
The whole package shall be located downstream of low-pressure return condensate.
Steam condensate at Condensate De-oiling Unit outlet meet the following specification in the Bid Boland II project:

- Total Suspended Solids < 0.5 ppm
- Total Dissolved Solids NIL < 0.1 ppm
- Hydrocarbon < 0.3 ppm
- Discharge pressure > 2.6 barg

Engineering, Design, Procurement & Manufacturing of Fixed Equipments

- Mechanical Design
- Process calculation for equipments
- Nace Material with HIC & SSC Tests
- Pressure Rating up to 2500 #
- Simulation of Tower & Strippers

Design Standards:

- ASME
- ANSI
- API
- TEMA
- DIN
- BS
- EN

Design & Engineering Softwares:

- PV Elite
- COMPRESS
- HTRI
-Aspen B-jac
- TANK
- HYSYS
- PRO II
- Nozzle PRO
- ANSYS
- Auto CAD

Engineering, Design, Procurement & Manufacturing

Engineering, Design, Procurement & Manufacturing

Engineering, Design, Procurement & Manufacturing of Fixed Equipments

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Design Standards:

- ASME
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Fixed & Rotary Equipment of Oil, Gas, Petrochemical Industries & Power Plants

- Pressure Vessel with Internal Demister Pad & Eliminator
- Tower & Stripper with Internal
- Shell & Tube Heat Exchanger
- Double Pipe Heat Exchanger
- Separator
- Scrubber
- Chemical Reactor
- Deaerator
- Storage Tank
- Filter
- Strainer
- Knock out drum
- Recuprator Bundle
- Packed Column
- Mixer
- Agitated Vessel
- Condencer
- Absorber Tower
- Chemical Blender

Manufacturing Capabilities (Ton/Year)

- Fire Tube Boilers	2.000
- Water Tube Boilers	3000
- Pressure Vessels	1.000
- Heat Exchangers & Condencer	800
- Towers & Strippers	700
- Storage Tanks (Shop Build)	3.000
- Chemical Reactors & Blenders	500
- Filters, Strainers & Mixers	800
- Industrial Steel Structures	10.000

Twin Furnace Three-pass wet back fire tube boiler

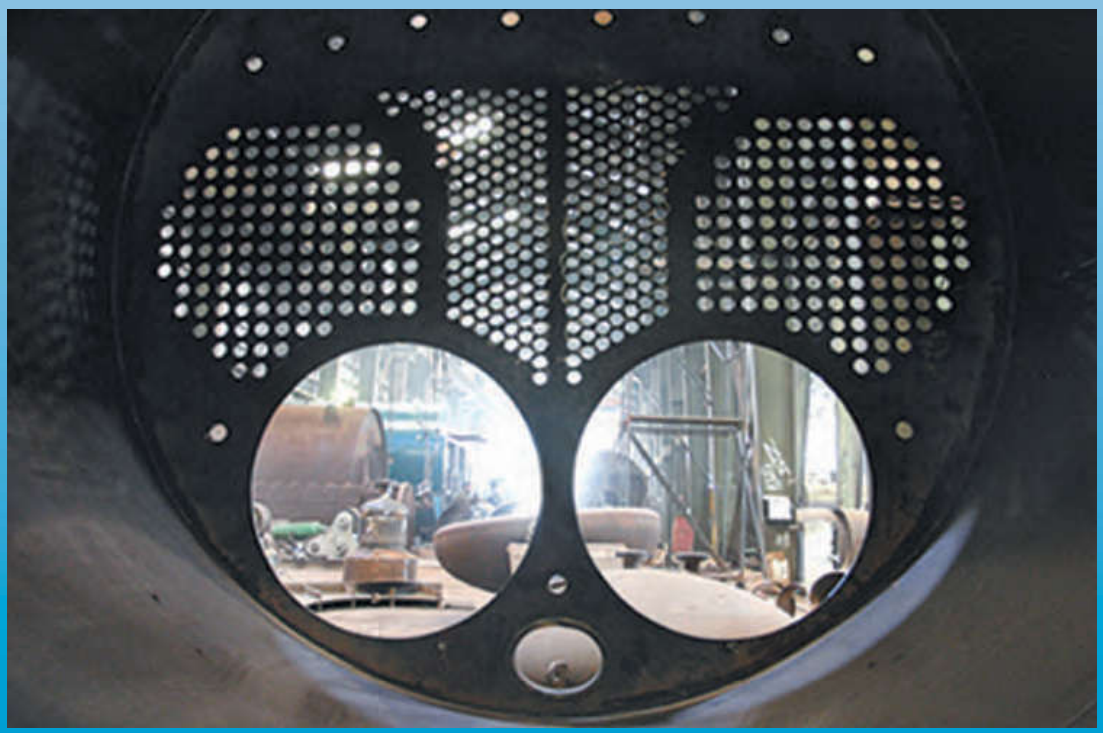
6778th SGG Boiler Reference November 2021

End User: QESHM POWER PLANT

Boiler Technical Specification:

Boiler Type: Twin furnace fire tube steam boiler
Boiler Model: MT55 Condor Boiler
Capacity: 55,000 Lb/hr
Working Pressure: 8.5 Barg
Superheater Outlet Temperature: 230 ℃
Fuel: Oil & Natural Gas
Efficiency: 90.43%
Based On Performance Acceptance
Serial No.: 6778
Manufacturing Date: Nov 2021

Twin Furnace Three-pass wet back fire tube boiler



Sanaye Garma Gostar is a SGG-based technology & Manufacturer focus on safety and economically delivering to the projects

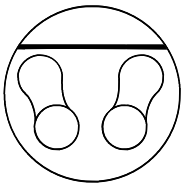
ADVANTAGES OF SGG CONDOR BOILER THREE - PASS WET BACK BOILER WITH FULLY CORRUGATED FURNACE

1) HIGHT THERMAL EFFICIENCY

Excellent overall design coupled with low radiation losses ensures high efficiency over the full turndown range.

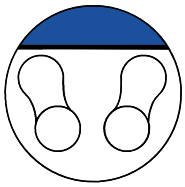
2) VERY HIGH STEAM QUALITY

Large steam release area at the water line and generous steam space gives very high quality and commercialy dry steam.



3) GOOD FLEXIBLITY TO MEET FLUCTUATING LOADS

Fully corrugated furnaces and large steam space allows load to be increased from zero to maximum continuos rating in 2 minutes, without significant drop in the boiler pressure.



4) HIGH STEAM PRESSURE

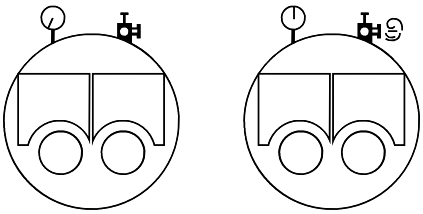
From 150 psig up to 300 psig is possible, depending on the boiler rating.

5) RELIABILITY

No tubeplate overheating or local hot spots, due too good water circulation together with medium gas velocities and easy rating.

6) QUICK STEAM RAISING

From overnight shutting down to maximum continuous output.

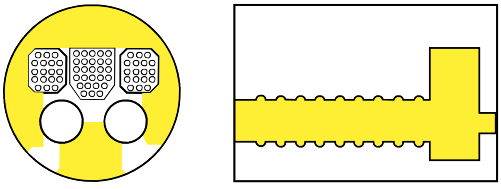


7) ALL FUELS

Firing can be by oil, gas or solid fuels.

8) LOW MAINTENANCE COSTS

With four separate tubeplates, no combustion chamber brickwork and thorough all-round internal inspection possibe. An inspector can enter all the shaded areas shown.



9) SUPERHEATED STEAM OPTION

Superheated steam can be supplied by the addition of an internal superheater.

10) HIGH TURNDOWN

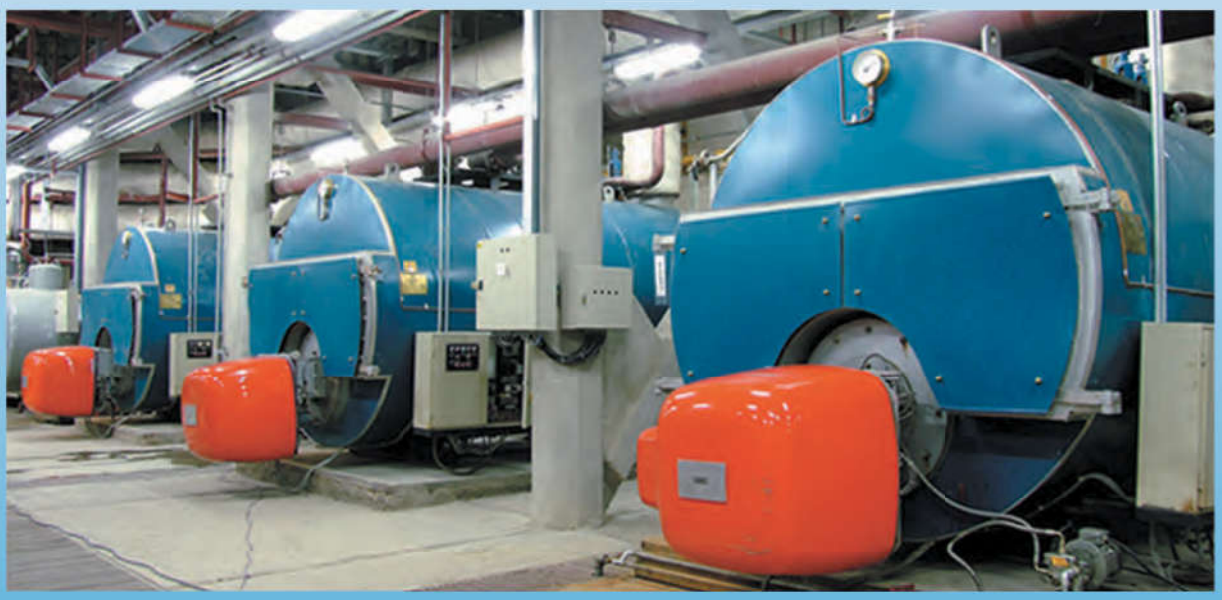
The twin furnaces and twin combustion chambers, coupled with gas division plates in the smoke boxes, enable normal turndown ratios to be doubled, when used in conjuction with a divided burner control panel.

SGG Since 1980

Twin Furnace Three-pass wet back fire tube boiler

More than 7700 boilers and other fixed equipments of **Sanaye Garma Gostar (SGG)** testify our performance and capabilities.

- Single furnace steam boiler up to 25 Ton/hr
- Twin furnace steam boiler up to 50 Ton/hr
- Single furnace hot water boiler up to 55 MBtu/hr
- Twin furnace hot water boiler up to 110 MBtu/hr



Three Condor Twine furnace steem boilers on skids for transport each boiler suturated steem flow Rate 60,000 lb/hr for Caspian Paper Co.

Maxecon

OIL/GAS OR DUAL FUEL FIRED PACKAGE BOILER

maxecon

Available in outputs up to110,000 lb/hr (50,000 kg/hr)

The twin furnace Maxecon boiler for industrial steam or hot water applications is a high quality, reliable boiler with many years operational experience coupled with a record of highly efficient performance and reliability. More than 7700 single or twin furnace Maxecon boilers continue to provide a dependable and efficient service to industry.

When fitted with special control panels single furnace firing for indefinite periods is available. This feature in addition to providing very high turn down ratios permits maintenance work to be carried out on each burner in turn whilst boiler output is maintained at up to 50% of normal rated output on the other furnace.

Superheat

Units can be supplied with superheaters to suit specific applications.

Design

All oil or gas fired Maxecon boilers are designed and constructed in accordance with BS 2790 and meet the requirements of all leading insurance companies.

Fuel

Natural gas, LPG or oil up to a viscosity at 6,500 sec. Redwood No. 1.

Furnaces

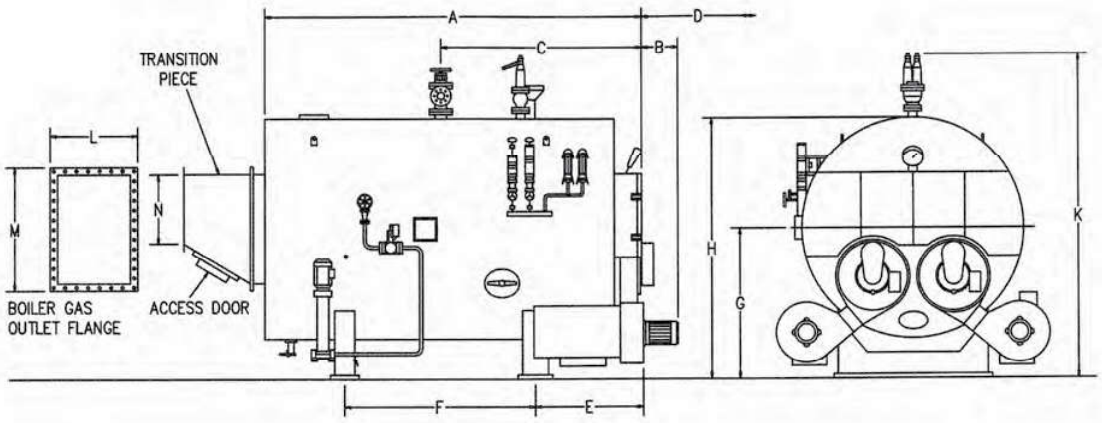
Cylindrical, fully corrugated furnaces of welded construction are attached to each reversal chamber and the boiler front plate by welding.

Tubes

Tubes are 63.5 mm diameter. Stay tubes are welded in. Plain tubes are expanded and are seal welded in the reversal chambers.

Maxecon Boiler

Technical Data



Boiler Output LB/HR (F&A 212˚F) Boiler Output KG/HR (F&A 100˚C)	40,000 18,145	44,000 19,960	50,000 22,680	55,000 24,950	60,000 27,215	65,000 29,485	70,000 31,750
A OVERALL LENGTH OF BOILER	6,200	5,920	5,970	6,200	6,200	6,505	6,505
B BURNER PROJECTION APPROX	550	600	700	750	750	900	900
C FRONT OF BOILER TO MAIN STEAM	3,330	3,050	3,100	3,300	3,300	3,450	3,450
D TUBE WITHDRAWAL LENGTH	4,900	4,620	4,670	4,900	4,900	5,200	5,200
E FRONT OF BOILER TO CENTRE LINE OF CRADLE	1,335	1,365	1,450	1,535	1,535	1,600	1,600
F CRADLE CENTRES	4,040	3,690	3,705	3,870	3,870	4,110	4,110
G F.F.L. TO HORIZONTAL C.L.	2,300	2,520	2,790	2,790	2,950	2,950	2,950
H F.F.L. TO TOP OF BOILER	4,260	4,700	5,060	5,060	5,380	5,380	5,380
J WIDTH	5,000	5,400	5,600	5,600	5,900	5,900	5,900
K HEIGHT TO TOP OF S.V.	5,150	5,600	6,100	6,100	6,400	6,400	6,400
L WIDTH OF GAS OUTLET	1,300	1,500	1,600	1,600	2,000	2,000	2,100
M DEPTH OF GAS OUTLET	1,380	1,600	1,600	1,600	1,700	1,700	1,800
N CHIMNEY DIA. RECOMMENDED	890	940	1,000	1,050	1,100	1,140	1,190
* STOP VALVE N.B.	175	175	200	200	200	250	250
* SAFETY VALVE OUTLET(S) N.B.	1 x 200	1 x 200	1 x 200	1 x 200	2 x 150	2 x 150	2 x 150
BLOWDOWN VALVE N.B.	50	50	50	50	50	50	50
FEED WATER INLET N.B. (Pipework Size)	65	65	80	80	80	80	80
* EMPTY WEIGHT (TONNES)	41	47	52	56	65	68	70
* WORKING WEIGHT (TONNES)	73	83	90	96	111	117	119
Flue gas resistance (mbar)	10.5	11.0	12.0	12.0	12.0	13.0	13.0
MODEL REFERENCE	**MT40**	**MT44**	**MT50**	**MT55**	**MT60**	**MT65**	**MT70**

DIMENSIONS (In Millimeters) ARE GIVEN FOR GUIDANCE AND MAY BE SUBJECT TO CHANGE.
VALVE SIZES AND BOILER WEIGHTS APPLY TO UNITS WITH 150 psig - 10.34 Bar g WORKING PRESSURE.
FURTHER DATA SHEETS FOR OTHER BOILER OUTPUTS ARE AVAILABLE ON REQUEST.

Steampacket

OIL/GAS OR DUAL FUEL FIRED PACKAGE BOILER

steampacket

Available in outputs up to 36,000 lb/hr (16,330kg/hr)

The Steampacket boiler is of three pass, wet back, fully packaged type of fusion welded construction.

Each boiler is constructed in accordance with British Standard Specification 2790 and incorporates full quality assurance. All boilers are subject to inspection by an independent authority during construction and meet the requirements of A.O.T.C. regulations.

Maximum output is achieved from the liberally rated boilers, whilst retaining the compactness, in order to minimise floor space. Adequate access to both steam and water spaces are provided together with front and rear access doors for ease of maintenance.

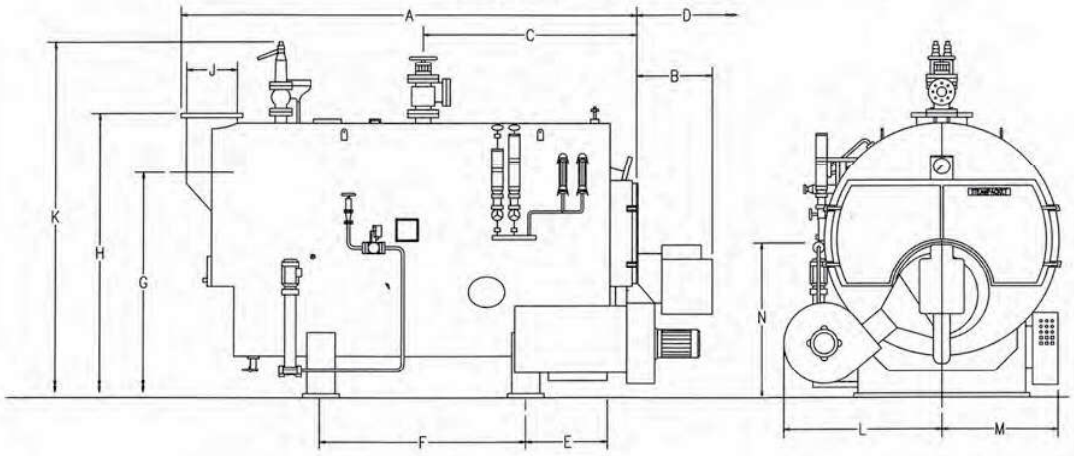
Standard equipment includes rotary cup combustion equipment, steam and water mountings, feed water level controls (units above 16,000 lb/hr have modulating water level controls), feed pump, integral wiring, insulation and cladding.

An extensive stock of spares is available from our main spares depot at Tehran.

This unit has been designed with many years of experience and incorporates most desirable features to ensure good access to all components enabling routine maintenance to be carried out.

Steampacket Boiler

Technical Data



Boiler Output LB/HR (F&A 212˚F) Boiler Output KG/HR (F&A 100˚C)	14,000 6,350	16,000 7,258	18,000 8,163	20,000 9,072	23,000 10,432	26,000 11,791	30,000 13,608	36,000 16,330
A OVERALL LENGTH OF BOILER	5,200	5,300	5,330	5,605	6,085	6,180	6,240	6,700
B BURNER PROJECTION (APPROX)	715	715	725	800	800	800	800	900
C FRONT OF BOILER TO MAIN STEAM	2,100	2,150	2,400	2,400	2,450	2,600	2,600	2,800
D TUBE WITHDRAWAL LENGTH	4,100	4,200	4,200	4,330	4,540	4,600	4,760	4,950
E FRONT OF BOILER TO CENTRE LINE OF CRADLE	850	905	900	990	850	1,030	1,065	925
F CRADLE CENTRES	2,500	2,550	2,600	2,550	2,950	2,650	2,850	3,300
G F.F.L. TO C.L. HORIZONTAL OUTLET	(AVAILABLE TO SPECIAL ORDER)							
H F.F.L. TO TOP OF VERTICAL OUTLET	3,050	3,200	3,300	3,430	3,550	3,700	3,900	4,050
J FLUE GAS OUTLET DIAMETER	510	550	585	615	650	700	750	820
K HEIGHT TO TOP OF S.V.	3,540	3,690	3,800	3,910	4,150	4,300	4,500	4,980
L WIDTH L.H. SIDE	1,850	1,900	2,000	2,200	2,400	2,600	2,700	2,800
M WIDTH R.H. SIDE	1,650	1,700	1,750	1,800	1,850	1,900	2,000	2,150
N F.F.L. TO C.L. BOILER	1,000	1,010	1,075	1,200	1,285	1,360	1,430	
STOP VALVE N.B.	125	150	150	150	175	175	175	200
SAFETY VALVE OUTLET N.B.	125	125	125	150	150	150	150	150
BLOWDOWN VALVE N.B.	40	40	40	40	40	40	40	40
FEED WATER INLET N.B.	50	50	50	50	65	65	65	75
EMPTY WEIGHT (TONNES)	15.0	17.5	19.0	20.5	22.0	23.0	28.5	33.5
WORKING WEIGHT (TONNES)	25.0	28.5	33.0	38.0	40.0	42.5	48.5	54.5
Flue gas resistance (mbar)	**10.5**	**10.5**	**11.0**	**11.0**	**13.0**	**13.0**	**12.0**	**10.5**
MODEL REFERENCE	**S14**	**S16**	**S18**	**S20**	**S23**	**S26**	**S30**	**S36**

DIMENSIONS (In Millimeters) ARE GIVEN FOR GUIDANCE AND MAY BE SUBJECT TO CHANGE.
VALVE SIZES AND BOILER WEIGHTS APPLY TO UNITS WITH 150 psig - 10.34 Bar g WORKING PRESSURE.
FURTHER DATA SHEETS FOR OTHER BOILER OUTPUTS ARE AVAILABLE ON REQUEST.

Steampacket

OIL/GAS OR DUAL FUEL FIRED PACKAGE BOILER

Available in outputs up to 12,000 lb/hr (5443kg/hr)

The Steampacket boiler is of three pass, wet back, fully packaged type of fusion welded construction.

Each boiler is constructed in accordance with British Standard Specification 2790 and incorporates full quality assurance. All boilers are subject to inspection by an independent authority during construction and meet the requirements of A.O.T.C. regulations.

Maximum output is achieved from the liberally rated boilers, whilst retaining the compactness, in order to minimise floor space. Adequate access to both steam and water spaces are provided together with front and rear access doors for ease of maintenance.

Standard equipment includes pressure jet or rotary cup combustion equipment, steam and water mountings, feed water level controls, feed pump, integral wiring, insulation and cladding.

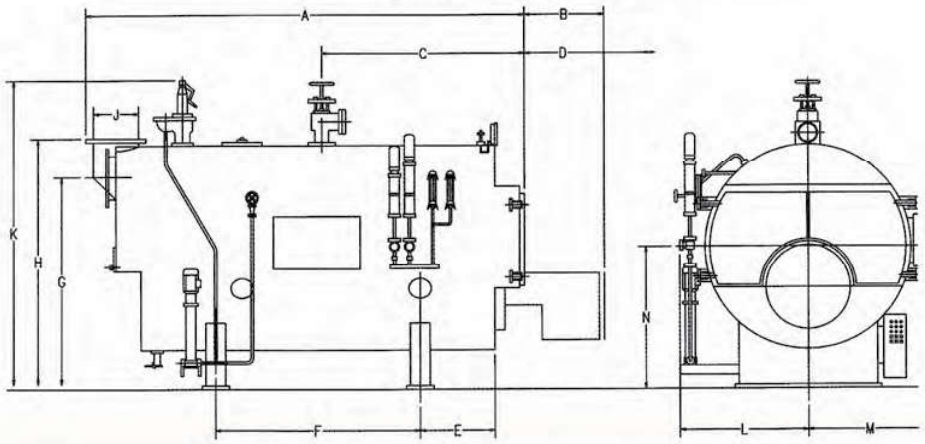
An extensive stock of spares is available from our main spares depot at Tehran.

This unit has been designed with many years of experience and incorporates most desirable features to ensure good access to all components enabling routine maintenance to be carried out.

steampacket

Steampacket Boiler

Technical Data

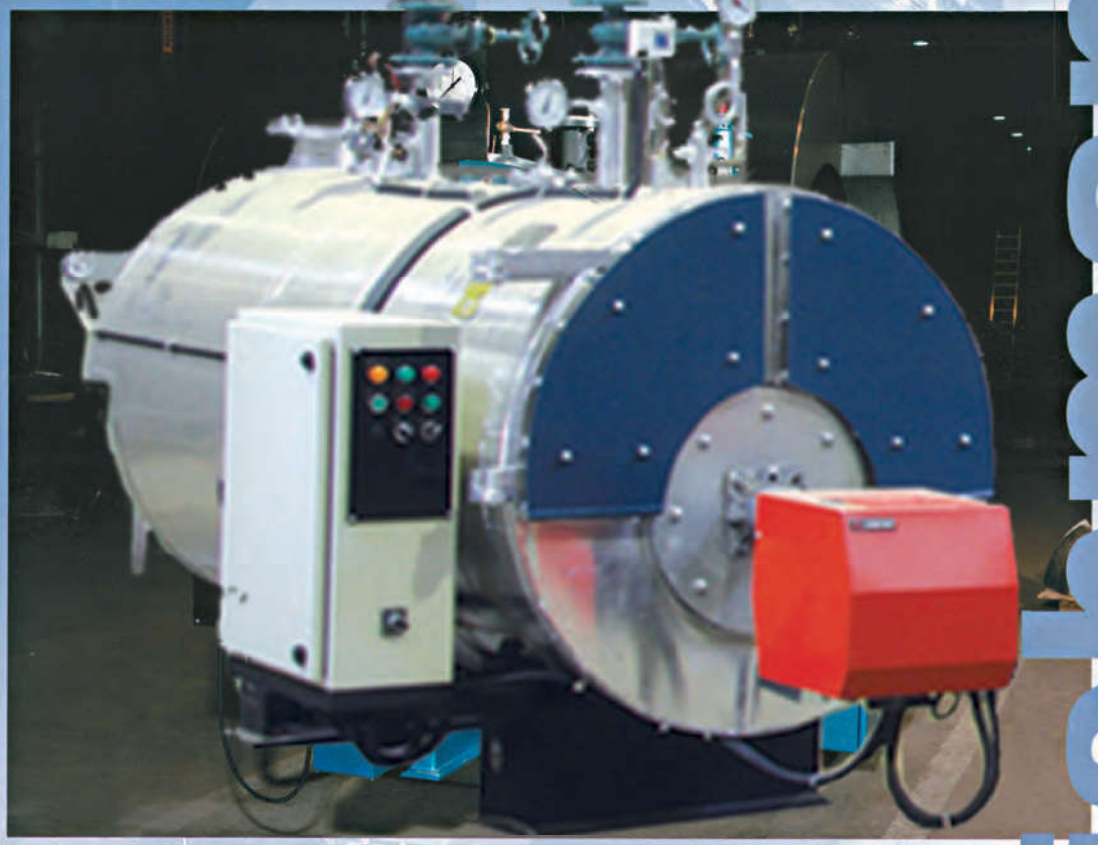


Boiler Output LB/HR (F&A 212˚F) Boiler Output KG/HR (F&A 100˚C)	2,000 907	3,000 1,360	4,000 1,814	6,000 2,722	8,000 3,629	10,000 4,536	12,000 5,443
A OVERALL LENGTH OF BOILER	2,910	3,325	3,385	3,935	4,270	4,740	5,065
B BURNER PROJECTION (APPROX)	600	600	600	600	800	900	900
C FRONT OF BOILER TO MAIN STEAM	1,350	1.590	1,710	1,800	1,895	2,095	2,250
D TUBE WITHDRAWAL LENGTH	2,350	2,750	2,975	3,250	3,530	3,950	4,230
E FRONT OF BOILER TO CENTRE LINE OF CRADLE	605	630	655	750	735	700	800
F CRADLE CENTRES	1,150	1,500	1,650	1,700	2,000	2,500	2,530
G F.F.L. TO C.L. HORIZONTAL OUTLET	(AVAILABLE TO SPECIAL ORDER)						
H F.F.L. TO TOP OF VERTICAL OUTLET	1,790	1,855	1,975	2,230	2,400	2,550	2,680
J FLUE GAS OUTLET DIAMETER	200	230	265	330	380	430	470
K HEIGHT TO TOP OF S.V.	2,090	2,240	2,370	2,675	2,845	3.060	3,210
L WIDTH L.H. SIDE	1,030	1,090	1,145	1,280	1,365	1,435	1,510
M WIDTH R.H. SIDE	1,030	1,090	1,145	1,280	1,365	1,435	1,510
N F.F.L. TO C.L. BOILER	1,000	1,010	1,075	1,200	1,285	1,360	1,430
STOP VALVE N.B.	65	80	80	100	100	100	125
SAFETY VALVE OUTLET N.B.	50	65	65	80	100	125	125
BLOWDOWN VALVE N.B.	25	25	25	32	32	50	50
FEED WATER INLET N.B.	25	25	25	32	32	50	50
EMPTY WEIGHT (TONNES)	3.85	4.3	5.45	7.1	9.05	11.25	12.95
WORKING WEIGHT (TONNES)	5.85	7.00	8.75	11.80	15.00	18.90	21.90
Flue gas resistance (mbar)	5.0	8.5	7.5	7.0	9.0	10.0	10.5
MODEL REFERENCE	**S2**	**S3**	**S4**	**S6**	**S8**	**S10**	**S12**

DIMENSIONS (In Millimeters) ARE GIVEN FOR GUIDANCE AND MAY BE SUBJECT TO CHANGE.
VALVE SIZES AND BOILER WEIGHTS APPLY TO UNITS WITH 150 psig - 10.34 Bar g WORKING PRESSURE.
FURTHER DATA SHEETS FOR OTHER BOILER OUTPUTS ARE AVAILABLE ON REQUEST.

Cornishman

OIL/GAS OR DUAL FUEL FIRED PACKAGE BOILER



cornishman

Available in outputs up to 10 million BTU/hr (2,930KW)

The Cornishman boiler is a three pass, wet back, fully packaged type of fusion welded construction.

Each boiler is constructed in accordance with British Standard 855 or 2790 depending upon system pressure and incorporates full quality assurance. All boilers are subject to inspection by an independent authority during construction.

Maximum output is achieved from the liberally rated boilers, whilst retaining the compactness, in order to minimise floor space. Adequate gas side access is provided by means of front and rear doors for ease of maintenance.

Standard equipment includes pressure jet or rotary cup combustion equipment, safety valve, drain valve, flow temperature and pressure gauges, integral wiring, insulation and cladding.

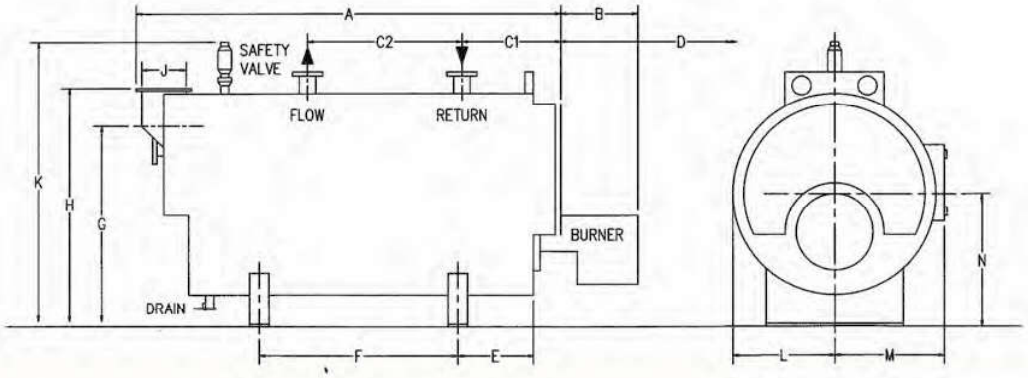
An extensive stock of spares is available from our main spares depot at Tehran.

The Cornishman boiler has been developed following many years experience in supplying hot water boilers to a wide range of both commercial and industrial users, with particular emphasis on internal return water circulation, high combustion efficiency and low pressure drop, to minimise electrical load.

Cornishman Hot Water Boiler

OIL, GAS OR DUAL FIRED DESIGN / THREE PASS WET BACK DESIGN

Technical Data

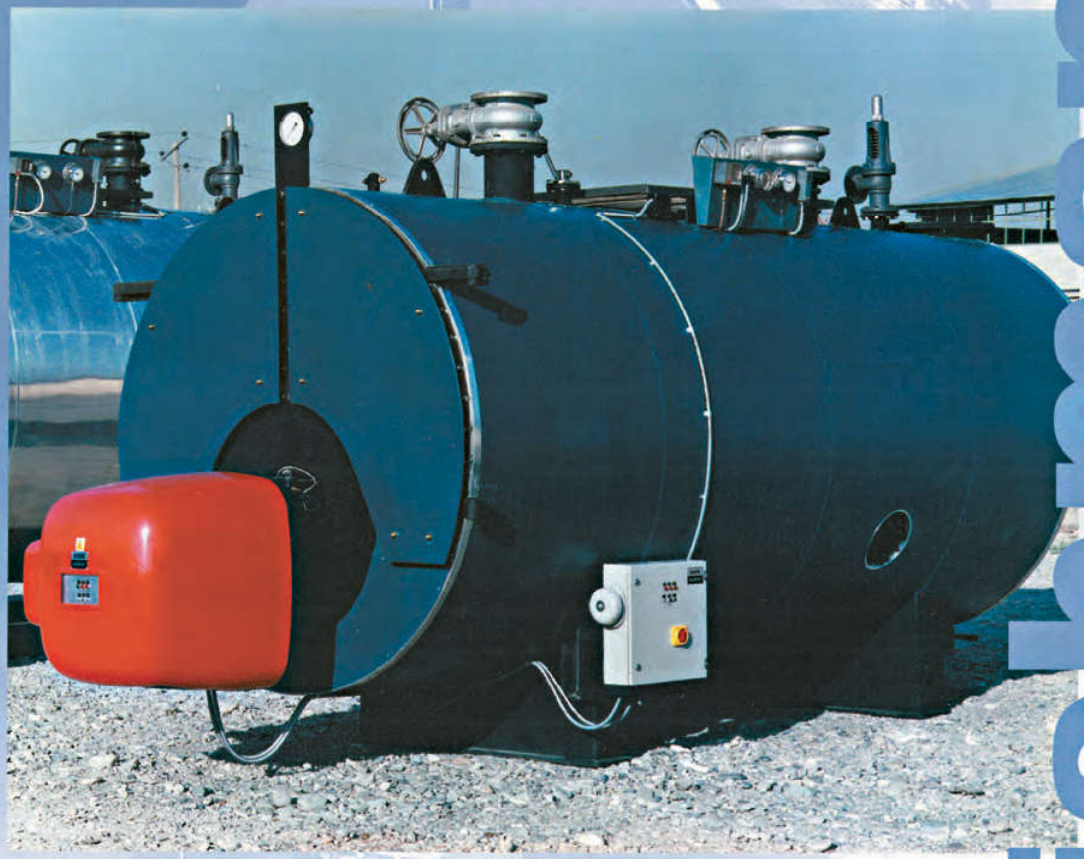


Boiler Output BTU/HR Boiler Output KW	2 x 10^6 586	3 x 10^6 878	4 x 10^6 1176	5 x 10^6 1464	6 x 10^6 1757	8 x 10^6 2343	10 x 10^6 2928
A LENGTH OF BOILER	3030	3310	3550	3850	4050	4350	4670
B BURNER PROJECTION APPROX	600	600	600	700	700	800	900
C1 FRONT OF BOILER TO CENTRE LINE OF RETURN CONNECTION	1210	1360	1465	1610	1735	1735	1735
C2 FLOW AND RETURN CONNECTION CENTRES	750	800	850	900	950	1150	1400
D TUBE WITHDRAWAL AREA	2475	2750	2950	3210	3360	3620	3870
E FRONT OF BOILER TO CENTRE LINE OF CRADLE	685	685	685	735	760	785	835
F CRADLE CENTRES	1350	1600	1800	1950	2000	2250	2450
G CENTRE LINE OF HORIZONTAL FLUE OUTLET	(AVAILABLE TO SPECIAL ORDER)						
H TOP OF FLUE VERTICAL OUTLET	1550	1650	1750	1850	1995	2150	2320
J FLUE GAS OUTLET DIAMETER	200	250	285	320	350	405	450
K TOP OF SAFETY VALVE	2000	2110	2230	2310	2600	2785	2950
L WIDTH LEFT	685	725	800	845	890	965	1025
M WIDTH RIGHT (Including Panel)	900	945	1000	1045	1090	1165	1235
N FLOOR TO BOILER CENTRE LINE	850	900	960	1000	1050	1150	1300
FLOW & RETURN PAD SIZES	100	125	125	150	150	200	200
SAFETY VALVE OUTLET N.B.	50	50	65	65	80	100	100
DRAIN VALVE N.B.	25	25	25	32	32	32	32
EMPTY WEIGHT (Tonnes)	3.2	3.9	4.6	5.5	6.4	8.2	10.1
WORKING WEIGHT (Tonnes)	4.0	5.6	6.7	8.1	9.5	12.2	15.3
Flue gas resistance (mbar)	—	—	5.0	6.0	6.5	7.0	7.0
BOILER REFERENCE	**C2**	**C3**	**C4**	**C5**	**C6**	**C8**	**C10**

DIMENSIONS (In Millimeters) ARE GIVEN FOR GUIDANCE AND MAY BE SUBJECT TO CHANGE.
VALVE SIZES AND BOILER WEIGHTS APPLY TO UNITS WITH 120 psig - 8.3 Bar g WORKING PRESSURE.
DIMENSIONS BASED ON ROTARY CUP TYPE BURNER. JET TYPE BURNER WILL DECREASE WIDTH.
FURTHER DATA SHEETS FOR OTHER BOILER OUTPUTS ARE AVAILABLE ON REQUEST.

Cornishman

OIL/GAS OR DUAL FUEL FIRED PACKAGE BOILER



cornishman

Available in outputs up to 35 million BTU/hr (10,255KW)

The Cornishman boiler is a three pass, wet back, fully packaged type of fusion welded construction.

Each boiler is constructed in accordance with British Standard 2790 depending upon system pressure and incorporates full quality assurance. All boilers are subject to inspection by an independent authority during construction.

Maximum output is achieved from the liberally rated boilers, whilst retaining the compactness, in order to minimise floor space. Adequate gas side access is provided by means of front and rear doors for ease of maintenance.

Standard equipment includes pressure jet or rotary cup combustion equipment, safety valve, drain valve, flow temperature and pressure gauges, integral wiring, insulation and cladding.

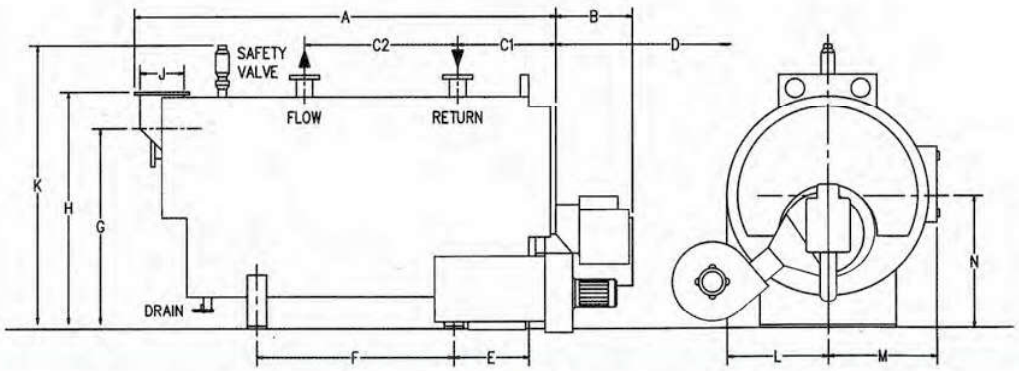
An extensive stock of spares is available from our main spares depot at Tehran.

The Cornishman boiler has been developed following many years experience in supplying hot water boilers to a wide range of both commercial and industrial users, with particular emphasis on internal return water circulation, high combustion efficiency and low pressure drop, to minimise electrical load.

Cornishman Hot Water Boiler

OIL, GAS OR DUAL FIRED DESIGN / THREE PASS WET BACK DESIGN

Technical Data

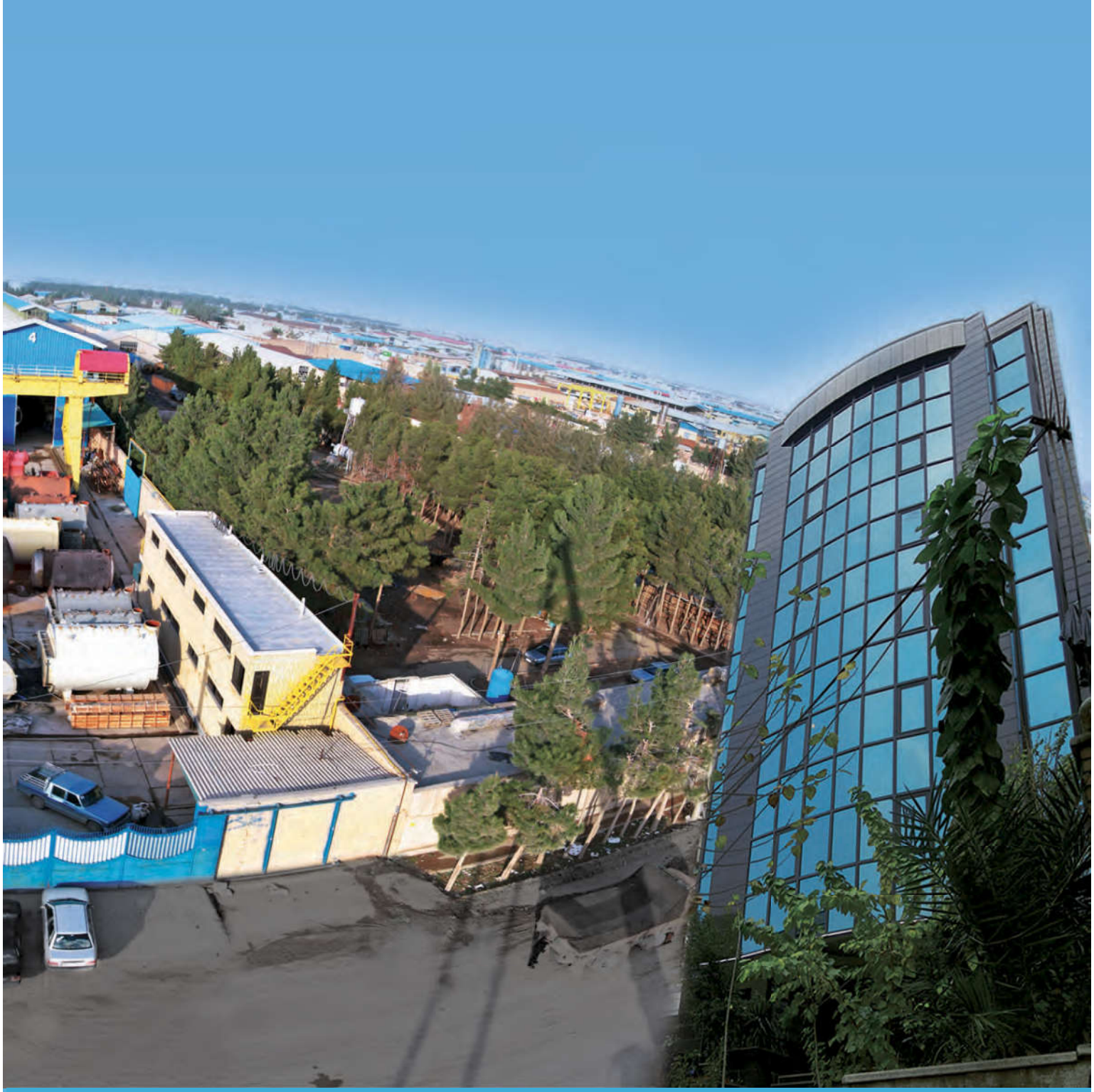


Boiler Output BTU/HR Boiler Output KW	12 x 10^6 3514	15 x 10^6 4392	17 x 10^6 4978	20 x 10^6 5856	22 x 10^6 6442	24 x 10^6 7027	27 x 10^6 7906	30 x 10^6 8784	35 x 10^6 10248
A LENGTH OF BOILER	4950	5200	5550	5860	6000	6120	6140	6450	6780
B BURNER PROJECTION (APPROX)	1100	1050	1000	800	800	800	800	1100	1100
C1 FRONT OF BOILER TO CENTRE LINE OF RETURN CONNECTION	1200	1200	1200	1256	1250	1250	1400	1500	1500
C2 FLOW AND RETURN CONNECTION CENTRES	2000	2000	2200	2400	2400	2400	2400	2400	2400
D TUBE WITHDRAWAL AREA	3900	3900	4100	4150	4500	4500	4800	4800	4800
E FRONT OF BOILER TO CENTRE LINE OF CRADLE	1015	1015	1015	1015	770	780	835	860	905
F CRADLE CENTRES	2300	2700	2950	3150	3250	3350	3450	3550	3690
G CENTRE LINE OF HORIZONTAL FLUE OUTLET	(AVAILABLE TO SPECIAL ORDER)								
H TOP OF VERTICAL FLUE OUTLET	2600	2730	2840	2960	3085	3125	3325	3425	3630
J FLUE GAS OUTLET DIAMETER	500	560	590	640	670	700	740	780	830
K TOP OF SAFETY VALVE	3380	3450	3640	3820	3920	4020	4070	4150	4350
L WIDTH LEFT	1860	1800	1900	1970	2020	2060	2120	2160	2240
M WIDTH RIGHT	1250	1380	1390	1420	1460	1500	1550	1375	1470
N FLOOR TO BOILER CENTRE LINE	1450	1500	1570	1650	1725	1725	1865	1925	2040
FLOW & RETURN PAD SIZES	200	200	250	250	250	300	300	300	300
SAFETY VALVE OUTLET N.B.	125	125	125	150	150	150	150	200	200
DRAIN VALVE N.B.	32	32	40	40	40	40	40	40	40
EMPTY WEIGHT (TONNES)	12.2	13.3	14.4	15.6	16.8	18.6	21	23	28
WORKING WEIGHT (TONNES)	18.3	23	27	29	31.2	34	37	41	47
Flue gas resistance (mbar)	7.5	8.0	8.0	8.0	8.0	10.0	10.0	11.0	12.5
BOILER REFERENCE	**C12**	**C15**	**C17**	**C20**	**C22**	**C24**	**C27**	**C30**	**C35**

DIMENSIONS (In Millimeters) ARE GIVEN FOR GUIDANCE AND MAY BE SUBJECT TO CHANGE.
VALVE SIZES AND BOILER WEIGHTS APPLY TO UNITS WITH 120 psig - 8.3 Bar g WORKING PRESSURE.
DIMENSIONS BASED ON ROTARY CUP TYPE BURNER. JET TYPE BURNER WILL DECREASE WIDTH.
FURTHER DATA SHEETS FOR OTHER BOILER OUTPUTS ARE AVAILABLE ON REQUEST.

SCAN ME

Factory Location



SCAN ME

Central Office Location

GARMA GOSTAR
ENERGY ENGINEERING

TÜV INTER GERT SAAR
ISO 9001:2008
ISO/TS 29001:2010

Lloyd's Register

YOUR PARTNER IN

AFFORDABLE
STEAM & HEAT GENERATOR



GARMA GOSTAR
ENERGY ENGINEERING

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