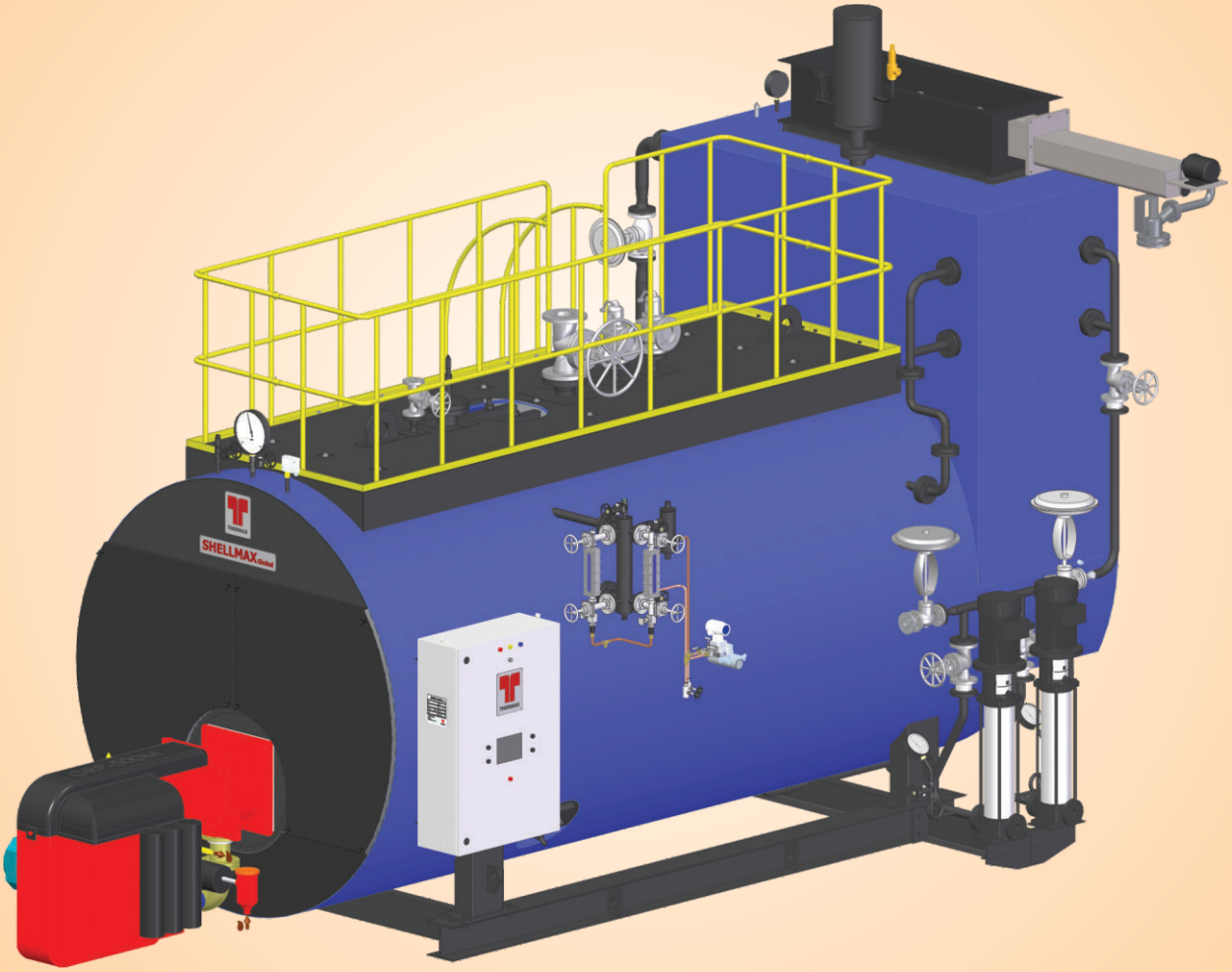
THERMAX

Shellmax Global®

Fully Packaged 3 Pass Smoke Tube Boiler



Capacity Range
1 TPH to 16 TPH

Standard Design Pressure
10.54 & 17.50 kg/cm² (g)

Heating Business

Improving your business is our business

Thermax is an engineering major providing sustainable solutions in the areas of energy and environment. Spanning over 86 countries, clients make use of Thermax's business-to-business solutions for heating, cooling, power and cogeneration plants; waste heat recovery units; systems for water & wastewater management and air pollution control; performance improving chemicals.

Thermax's operations are supported by ongoing Research & Development, tie-ups with global technology majors, an international sales & service network spread over 27 countries and state-of-the-art manufacturing facilities in 14 locations including India, Indonesia, China, Poland, Denmark and Germany.

As a part of Thermax, Heating business - a strategic business unit offers packaged boilers, thermal oil heaters, waste heat recovery boilers, hot water and air generators. These are available in modular construction as a standard package configuration or a custom design for specific requirements. Innovated by a strong R&D that focuses on customer applications, we offer a range of heating systems designed to combust wide range of solid, oil & gas fuels including biomass and heavy liquid fuels. Heating SBU helps small and medium firms & fortune 500 companies to reduce energy cost with a worldwide presence of oil & gas based systems in Middle East and Europe, biomass and solid fuel fired equipment in South East Asia and Africa.

Shellmax Global™ Introduction

Continuing the legacy of product innovation Thermax is now introducing the next generation of Shellmax™ - Shellmax Global™ series. These boilers are fully packaged, smoke tube type, 3 pass, light oil / gas fired boilers. They are conceptualized keeping in mind best in class efficiency, meeting global standards, low cost of ownership & world class aesthetic. With new series we are introducing unique patented design of heat recovery unit offering best in class efficiency and fuel flexibility. Ending the era of relay based panels we are providing PLC based IOT compatible smart controller as standard offering.

Plug & Play

- Save installation time & cost
- Minimium civil work.
- Factory insulated Boiler Skid.
- Pre wired and pre assembled and upto 10 TPH,

Compact Footprint

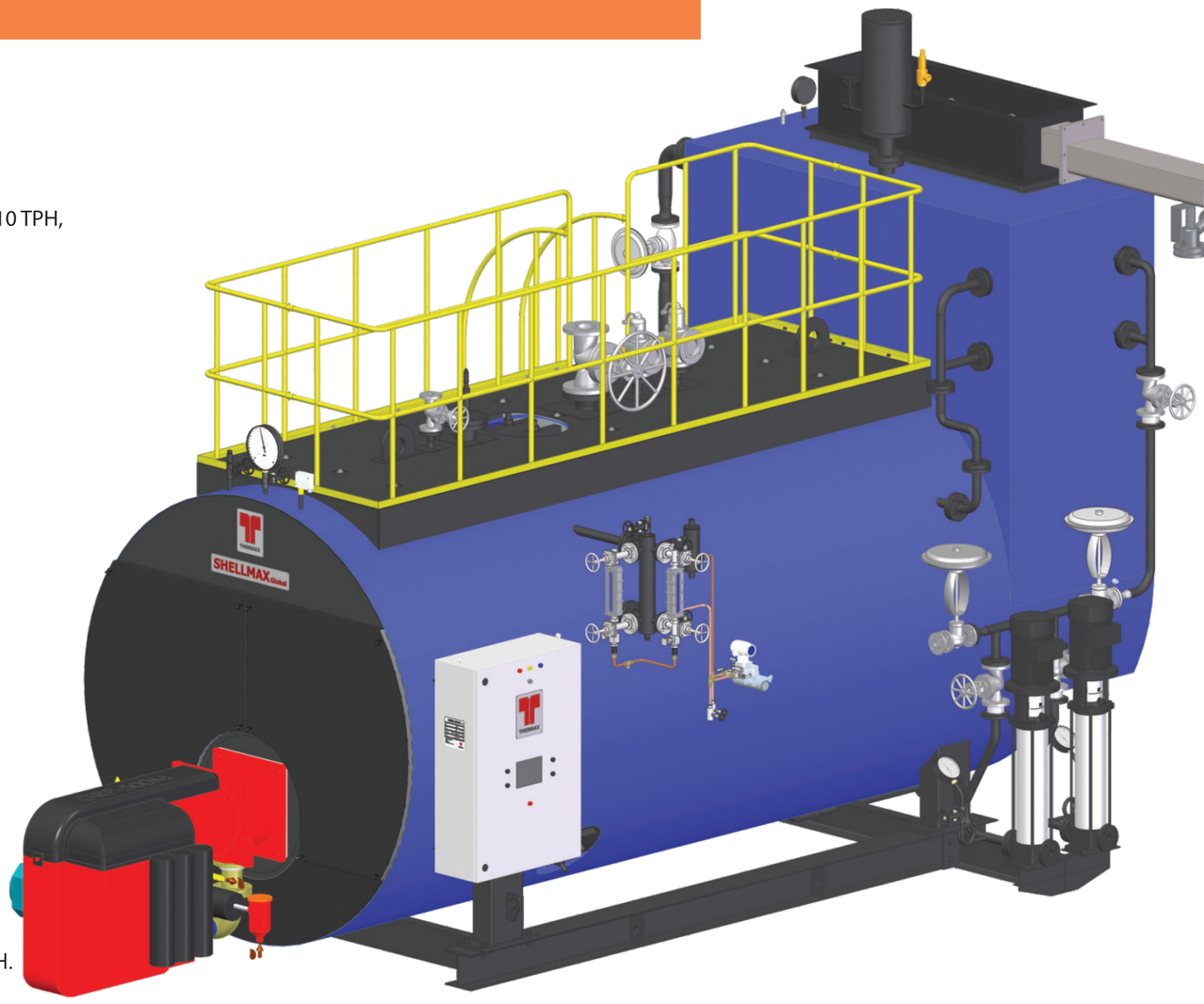
- 100% skid mounted unit.
- World class aesthetics.
- Ergonomic design.
- Robust lagging.

THERMOWIZ™

- Unleashing new PLC with HMI.
- IOT enabled, with remote monitoring.
- Connect over Web & Android.

Burner

- Monoblock for FO upto 10 TPH.
- Monoblock for Gas & LO upto 16 TPH.
- Enhanced Safety.
- Highest combustion efficiency.



EFFIMIZER®

- Extra efficiency, save fuel cost at all loads.
- Assured Fuel flexibility.
- Save space, ducting, piping & installation cost.

upto
95% η

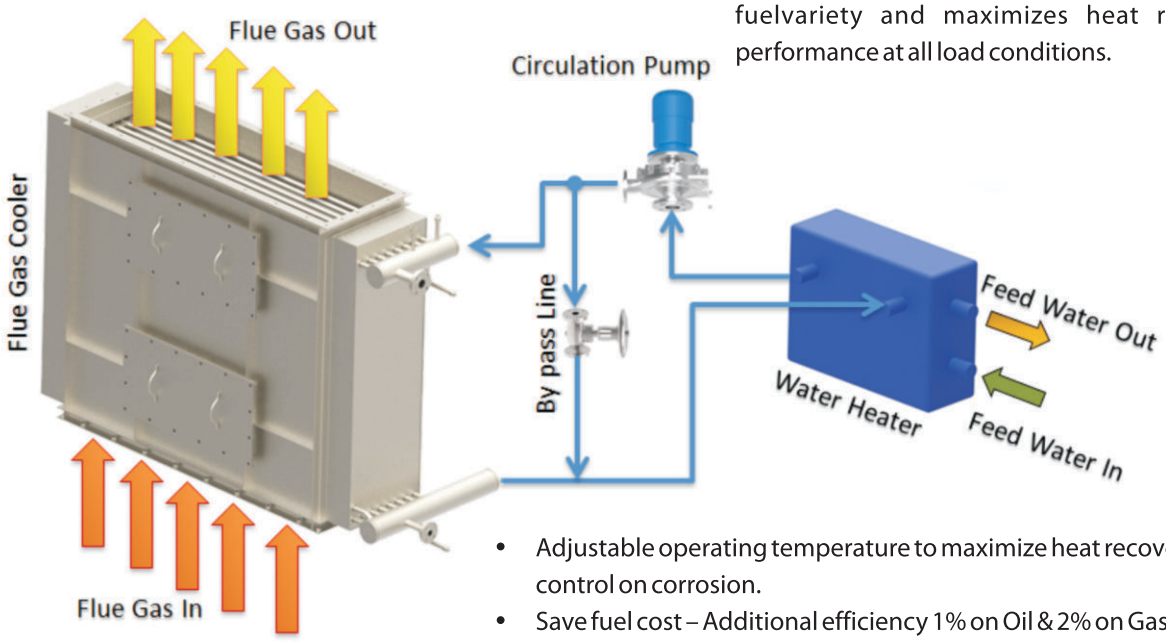
Probe Level Controller

- Improve uptime
- Simple installation
- Enhanced safety
- Energy efficient

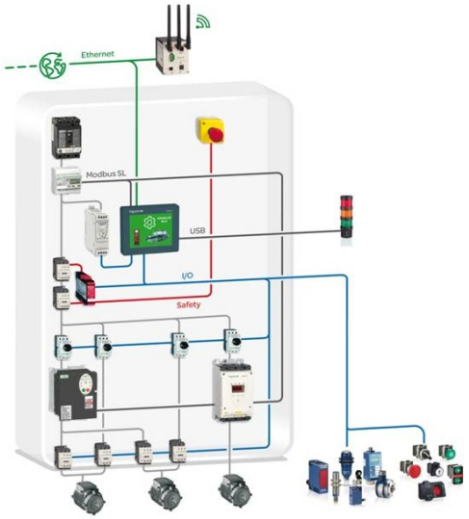
- Maximum Uptime – Zero moving parts & no electro-mechanical interface.
- Energy Efficient – Blow-down is not required.
- Compact & easy to install hence saves complicated piping.
- Self monitoring controller complies with SIL 3.
- CE marking, meets EC directive 97/23/EC.

Heat Recovery System - EFFIMIZER®

Thermax is pleased to introduce unique heat recovery solution, which adjusts to change in fuelvariety and maximizes heat recovery performance at all load conditions.



- Adjustable operating temperature to maximize heat recovery with control on corrosion.
- Save fuel cost – Additional efficiency 1% on Oil & 2% on Gas, as compared to conventional HRU.
- Fuel flexibility – Suitable for variety of fuels like Heavy Oil, Light Oil & Gaseous fuels.
- Improved uptime – No boiler stoppage for tube failure.
- Reliability & long life – Higher resistance to corrosion by pitting.
- Patent pending technology.



Thermowiz™

Experience the power of technology with Thermax, upgrade your system today with Thermowiz™ Smart Controller that will end the era of relay based panels

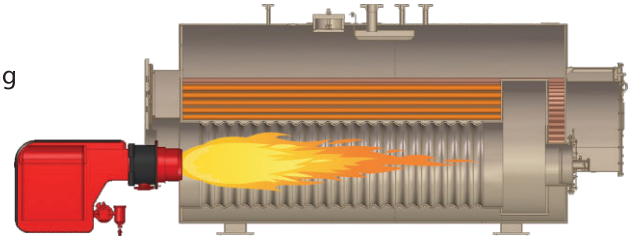
- User comfort – Touch screen graphical operator interface.
- Program modification – Download programs through USB drive.
- Data logging on USB drive.

Additional Features on request

- Networking – Embedded ports on Ethernet, Serial, CAN Open protocols.
- Stay connected – via Web-gate using PC browser. Remote access on Smart Phones / Tablets.

Furnace

- Liberally sized furnace (high volume) helps in achieving higher combustion efficiency & longer life of the boiler.
- Suitable for variety of burners.
- Low VHRR ensures lower emissions & higher efficiency.
- Higher HTA, lower exit temp ensures longer life.



Unique offering from Thermax – Corrugated Furnace* for reliability & longer life

The furnace of boiler is subject to high pressure, differential temperature across wall which causes bending stress due to differential expansion. Further, load fluctuations & pressure variation create enormous thermal cycling across the furnace, International codes for boiler design have recommended corrugation to improve mechanical strength of boiler by increasing the moment of inertia. Corrugated furnace are applicable 8 TPH capacity and above

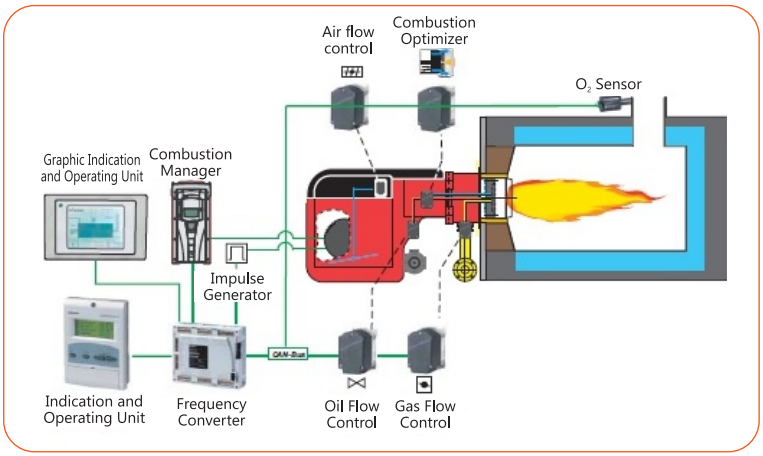
A. Each corrugation acts as point of support, increasing the moment of inertia.
B. Corrugation provides adequate flexibility to take care of differential expansion between furnace & tubes.
C. Uniformity does not allow high stress concentration at discreet points, unlike bowling hoops / stiffener rings.
D. The entire corrugation process is carried out at in-house facility, at normalizing temperature (hot forming at 950° to 980°C) to make sure the grain structure in the steel is oriented close to the parent metal to assure physical properties

* For specific sizes

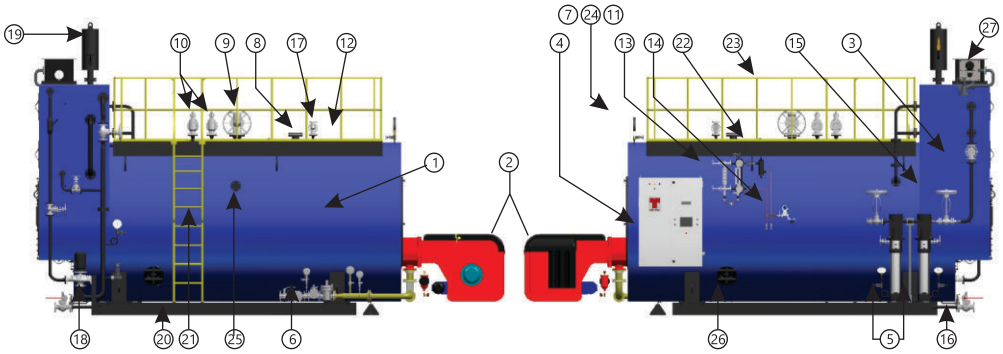
Burner

Fundamentals of burner design & manufacturing are efficiency, safety, service & environment friendliness. Shellmax Global series of boilers are provided with pressure jet, mono-bloc type burners..

- Mono block for LO + GAS upto 16 TPHFor 12 TPH onwards, dual block for FO & FO-NG fired units from 12 TPH onwards
- Safe & reliable – Designed as per international standards EN 676, EN 267.
- Meeting stringent emission norms.
- Sourced from specialist manufacturers, having extensive R&D and testing facilities.
- Advance technologies like ECR, O2/CO trimming, Low NOx, speed control for CA fan are available on request.



Scope Of Supply

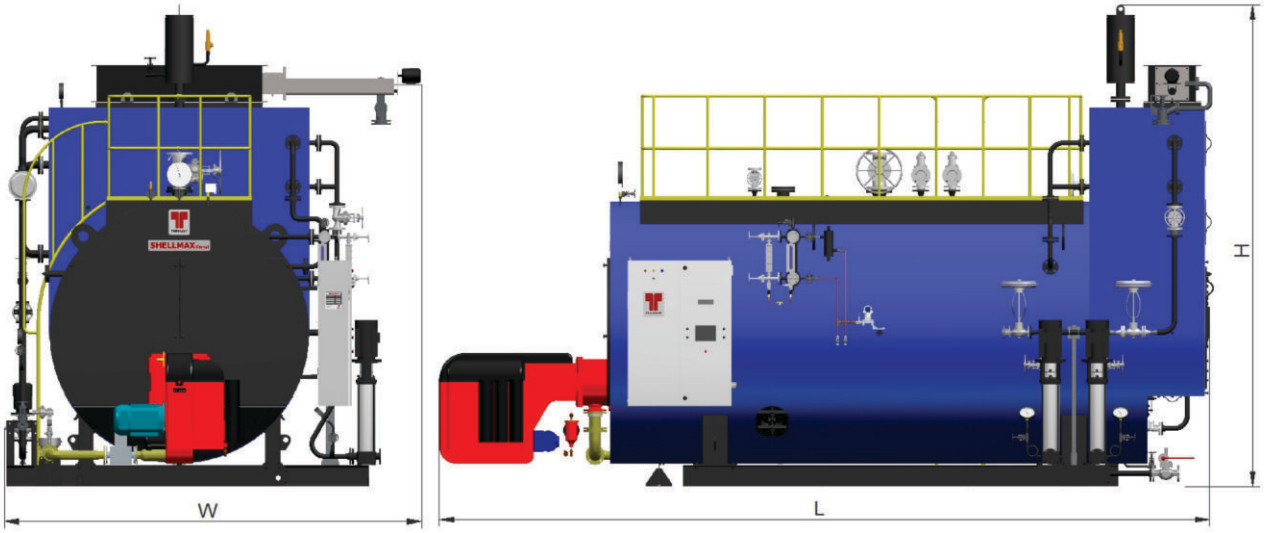


1	Unit Assembly	8	Level controller	15	Feed Control Valve	22	Platform
2	Burner	9	MSSV	16	Blow down Valve	23	Railing
3	Effimizer	10	Safety Valves	17	Air Vent Valve	24	Inspector's Pr. Gauge
4	Thermowiz	11	Main Pr. Gauge	18	Circulation Pump	25	Nozzle for ABS
5	Feed Pumps	12	Lifting Hook	19	Expansion Vessel	26	Headhole
6	Gas Train	13	Level Gauge	20	Skid	27	Soot blower for FO fired units
7	Pr. Tansmitter	14	Level Transmitter	21	Ladder		
28	For 12 TPH onwards a) OPH and combustion air system for FO b) OPU for LO / LO-NG			29	12 TPH onwards - control panel will be foot mounted		

Technical Specifications

Parameter for Shell Max Global with Effimiser													
PARAMETER	Unit	1	1.5	2	3	4	5	6	8	10	12	14	16
Output F & A 100 ^{0} C	Kg/Hr	1000	1500	2000	3000	4000	5000	6000	8000	10000	12000	14000	16000
Design Pressure	Kg/cm2	10.54/17.50											
Thermal Efficiency on NCV (as per BS 845 Part -1)													
FO	%	93	93	93	93	93	93	93	93	93	93.5	93.5	93.5
LO (HSD/ LDO)	%	94	94	94	94	94	94	94	94	94	94	94	94
NG	%	95	95	95	95	95	95	95	95	95	95	95	95
Fuel consumption													
FO	kg/Hr	60	90	120	180	240	300	360	480	600	726	847	968
LO	HSD- Kg/Hr	54	82	109	163	218	272	326	435	544	664	774	885
	LDO- Kg/Hr	56	84	112	168	224	280	336	448	560	683	797	911
NG	NM3/Hr	66	99	132	198	264	330	396	528	660	811	946	1081
Connected load													
FO	SVLOP 10.54 - KW	12.62	12.62	13.62	23.92	24.87	25.87	35.37	40.87	50.37	65.07	79.87	87.87
	SVLOP 17.5 - KW	13.42	13.42	14.42	26.42	27.37	29.37	38.87	50.37	59.87	65.37	81.87	89.87
LO	SVLOP 10.54 - KW	4.75	5.45	8.75	11.05	14	15	19.2	24.7	30	55.5	55.5	63.5
	SVLOP 17.5 - KW	5.55	6.25	9.55	13.55	16.5	18.5	22.7	34.2	39.5	59.5	63	71
NG	SVLOP 10.54 - KW	4.75	5.45	7.25	9.55	12.5	13.5	17	22.5	26	50	50	58
	SVLOP 17.5 - KW	5.55	6.25	8.05	12.05	15	17	20.5	32	35.5	54	57.5	65.5
LENGTH (L)	Meter	4.194	4.694	4.718	5.264	5.364	6.528	7.21	8.13	8.432	9.248	9.604	10.194
HEIGHT (H)	Meter	3.512	3.642	3.732	3.903	4.223	4.533	4.528	4.858	5.329	5.146	5.877	6.202
WIDTH (W)	Meter	3.24	3.33	3.326	3.44	3.669	3.462	3.605	3.753	3.939	5.086	5.56	5.81
Flooded weight of boiler skid (TON)	Ton	9.65	12.51	12.73	17.2	22.019	24.16	28.91	34.82	44.63	51.161	64.432	81.058

Note – Efficiency as per BS 845 Part 1 - Indirect method, at full load. Connected loads mentioned are excluding standby. Expansion vessel, soot blower system, burner, ladder & railing shall be sent in knockdown condition. 14 & 16 TPH unit shipment will be in 2 modules comprising boiler & effimiser



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Thermax Business Portfolio

- Heating
- Cooling
- Power
- Air Pollution Control
- Chemicals
- Water and Wastewater Solutions
- Solar
- Specialised Services