



**We offer the expertise of a very Large Company  
with accessibility of a small company  
at very Reasonable Costs.**





## Our Motto

*To Engineer, Fabricate, Guarantee our Products, Deliver and Erect them at the right time is what we shall Excel at.*

## Welcome to TPB

TPB is a Manufacturer & Erector of IBR Approved High Temperature Steam Boiler Pressure Parts, Boiler Components and **Fabricator of Replacement Boiler Tubes**, Water Wall Tubes and Panels, Superheater & Economizer Tubes/ Coils and Assemblies, Wall or Steam headers, and other Boiler Pressure Parts and Heavy Structures for Large Steam Generator are Custom Fabricated to Precisely Fit your Boiler.

Our Promoters and Promoter Skilled Workers with **collective experience of 50 + years** have a very deep knowledge and wide experience of Fabrication, Erection, Bending & Welding of all kinds of Plates, Tubes and Pipes like Seamless, ERW, and Rifle-Bore made of various kinds of Steels like Carbon Steels, Alloy Steels, and Stainless Steels in any Size and Length and to any Specification.

## Facilities

We have capacity to manufacture any Equipment made from any type of steel having thickness of up to 50 mm. and any type of Tube/Pipe Bending up to 100 mm NB (114.3mm OD.) X Sch 160. All Fabrication facilities are available using state of art manufacturing **Equipments at our 4000 Sq. Mtr. factory** and Innovations by our **Skilled Manpower in Plate/Tube Bending, Welding, Coiling, Assembling and Heat-Treatment** allows fast delivery of component without reducing its quality requirements.

We have excellent Managerial & Technical Personnel with support from a team of Engineers, Supervisors and of skilled and semiskilled workers for site and factory jobs and Design, Production and Quality are maintained by our Experts in their Fields.

We also **specialize in manufacturing Short Radius Tube Bends with  $R \geq 0.6D$** , Heat-Exchangers, Steam Piping, Condensate Piping, Exhaust Gas Piping and any Type of Ducting Systems.

We have in house facility of CNC Bending & Heat treatment for fabrication of Economiser Coils, Superheater Coils, Waterwall panel, Boilers Bank tube, Boiler tube Bends Etc.

## Quality:

Our stringent Quality Control Process have been developed over many decades of experience and **each Bend, Weld and Assembly produced is Serialized** and subjected to 100% Check and Recorded for Traceability with the main area of focus being Raw Materials, Ovality and Thinning at Bends, Welding Joints with Radiography/X- Rays, Dimensional Accuracy of the Assembly, Pressure Testing and finally Painting and Packing.

## Fabrication Code:

We not only follow the latest Material and Fabrication codes like ASME, BS, DIN, VGB, JIS, NF, GOST, ISO, EN etc. but we internally excel the requirements of these Codes.

**All Boiler pressure parts are stamped in accordance with Indian Boiler Regulation / ASME Code/VGB/BS/EN etc. according to our clients requirement.**





**SUPERHEATERS** are the most critical Boiler Component of the modern day Thermal Power Plant and are subject to very high metal temperatures. In fact the capacity of the Superheater to work without failure at higher Temperatures is what determines the Boilers Capacity and it effects improvement in economy by reducing corrosion, erosion and steam consumption of the steam turbine.

We have fabricated thousands of Superheaters - **Radiant, Pendant, Final, Fluidized bed type, Reheaters** for all kinds of Boilers US, Germany, France, Belgium, Russian, UK, Swedish, Indian origins of GE, C.E., B&W, Alstom, Mitsubishi, BHEL, IJT, WIL, Thermax etc. having complicated very close and compact shapes with tube sizes ranging from 32mm OD to 76.2mm OD and thickness from 3 mm to 12 mm in all types of Boiler quality steel grades from Carbon, Alloy, Stainless Steels for metal temperature ranging up to 656°C and for Boilers of 10 to 500 MW.



## ECONOMISERS:

These are Boiler feed-water heaters in which the heat from waste flue gases is recovered to raise the temperature of feed water supplied to the boiler, thereby increasing the Fuel economy, Steaming capacity, Life of the boiler and reducing Pollution.

We have fabricated various types **Economizer Coils (Plain Tubular Economizers, Finned Economizers, Cast Iron Gilled Economisers), Feed Water Heaters, Evaporator Coils** etc.

The main problem faced by Boiler engineers is the Erosion of the Eco-coil tubes and mainly at bends. We offer innovative solutions to extend the life of the coils by providing **Cassette baffles for Bends, Half Tube Sleeves** for upper tubes, SS full sleeved Tubes etc.

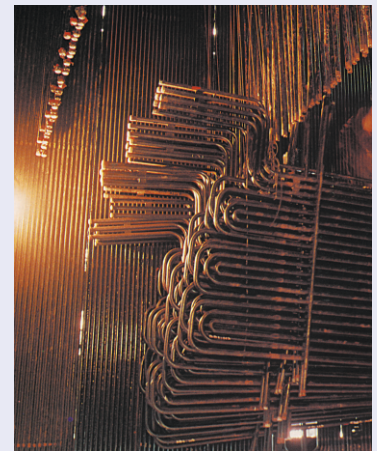


## BEND PROCESS & FABRICATION CODE

Followed are ASME BPVC, BS-1113, VGB, ISO, IBR etc.

## BOILER BANK TUBES:

Boiler bend to shape tubes or Steam generating tubes is where water is converted to Steam. Boiler Bank Tubes carry a mixture of water and steam. Fabricated from Tubes in various sizes and shapes, Bending of these tubes is generally to larger Radius hence they need some **Tube Bending Expertise to avoid Wrinkles, surface cracking or irregularities**, ensuring long life of tube resulting in smooth and efficient operation of the boiler. These tubes for replacements in boilers have been supplied by us to various industries like Sugar, Refineries, Steel Plants, Small and large Power Plants. These shaped tubes are generally fabricated from Seamless/ERW Tubes. The sizes of tubes having different shapes vary from 114.3 mm OD. X 8 Gauge to 50.8 mm OD. X 5.60 mm Thick **with Swaged Ends**.



## Tube Bending Systems:

**Cold Bending:** We have adopted the American Mandrel system of pull/push tube over mandrel - Cold Bending of tubes which ensure much smoother Profile of Tube Bends with **improved Ovality and Thinning** thus prolonging their life, resulting in substantial economic advantage to the customer. We use **CNC Automatic Boiler Tube Bending Machine** to ensure Serialized Bending at a high rate of production of 200 Bends per day.

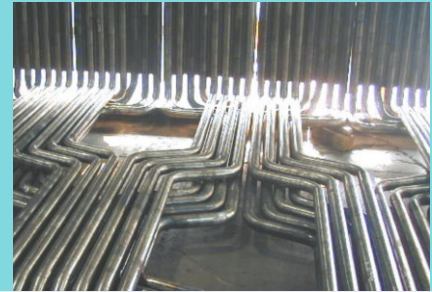
Tube Size range Min.- 19.05 mm OD x 2 mm thk. Max. 114.3 mm OD x 33 mm thk. Bending Radius Min. 1.25 x OD to Max. 6.0 x OD.

**Hot Bending:** We can give Shorter Radius bends up to Min.  $R = 0.6 \times OD$ . By **Hot Squeezing** of the above cold formed Bends in our 300 M.T Hydraulic Press using **Specialized Press dies with Centralizers** Keeping Metal Temperature above 860°C.

## WATER WALL PANELS WITH STEAM HEADERS:

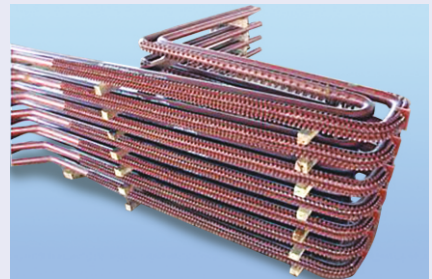
Water wall panels are used in modern day boilers in place of Steam Generating Tubes to reduce heat loss due to their gas tight nature and reduce insulation costs. We fabricate water wall panels using **automatic Fin to Tube welding** machines and large Tube Panel benders to achieve desired shape of panels which have Swaged Ends, Stub Welded to Headers. We supply Panels with **integrated manhole openings** in the panels.

We have fabricated panels made of Rifle Bore Tubes in Lengths of upto 24 mtrs. X max. 28 tubes (2 mtrs. wide).



## STUDDED TUBES FOR FLUIDIZED BED COILS:

Studded Tubes are used to increase heat Transfer Surface Area and to slow down Erosion of Boiler Tubes in Fluidized Boiler Furnaces. The Coils are **Bed Evaporator Coils**. They are also used in Refineries as **Reheater Coils**. There is very high Erosion of the Tubes due to Low quality **Fluidized Bed** materials or High Velocity Flue Gas. In order to improve the life of bed coil tube, **studding** is done on the most Vulnerable area of bed coil. We can also give Tungsten Carbide Coating instead of studs on the Tubes specially Infront of the Nozzles so that a very High Hardness is achieved to Resist Erosion of the Tubes. We also do some expensive coating which have given **Bed Coil Life** of over 10 to 15 years for some of our clients.



## RAW MATERIALS STOCKS:

We carry an **optimum stock of a range of Boiler Tubes and Pipes** to cater to our clients Emergency Boiler Shut down replacement jobs and we also supply these straight tubes with MTC to our regular clients for smaller quantities not serviced by the large tube and pipe manufacturers.

Some Common Formulae for back of the envelope calculations  
(Not for Design Purposes)  
1) Hydro. Test Pressure =  $100 \times (S/t/D)$  kg/sq. cm  
2) Tube weight =  $(D-t) \times 0.02466$  Kg/mtr  
Where S = Min. Specified Yield Strength Kg/sq. mm  
t = Min. thickness of Tube mm  
D = OD of Tubes mm

STRESS				
Pa	Mpa(N/mm <sup>2</sup> )	kgf/mm <sup>2</sup>	lbf/in <sup>2</sup>	
1	1x10 <sup>-6</sup>	1.01972x10 <sup>-7</sup>	1.45038x10 <sup>-4</sup>	
1x10 <sup>6</sup>	1	1.01972x10 <sup>-1</sup>	1.45038x10 <sup>2</sup>	
9.80665x10 <sup>6</sup>	9.80665	1	1.42233x10 <sup>3</sup>	
6.89478x10 <sup>3</sup>	6.89476x10 <sup>-3</sup>	7.03070x10 <sup>-4</sup>	1	
LENGTH				
m	inch	feet	yard	mile
1	3.937x10	3.281	1.094	6.214x10 <sup>-4</sup>
2.540x10 <sup>2</sup>	1	8.333x10 <sup>2</sup>	2.778x10 <sup>2</sup>	1.578x10 <sup>-5</sup>
3.048x10 <sup>-1</sup>	12	1	3.333x10 <sup>-1</sup>	1.894x10 <sup>-4</sup>
9.144x10 <sup>-1</sup>	36	3	1	5.682x10 <sup>-4</sup>
1.609x10 <sup>3</sup>	6.336x10 <sup>4</sup>	5.280x10 <sup>3</sup>	1.760x10 <sup>3</sup>	1

Nominal Pipe Size INCH	O.D. MM	Standard		Extra Strong		Double Extra Strong		Schedule 10		Schedule 20		Schedule 30		Schedule 40		Schedule 60		Schedule 80		Schedule 100		Schedule 120		Schedule 140		Schedule 160		
		Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	Wall	Wt.	
1/2	21.34	2.77	1.26	3.73	1.62	7.47	2.54							2.77	1.26			3.73	1.62							4.75	1.95	
3/4	26.67	2.87	1.68	3.91	2.19	7.82	3.63							2.87	1.68			3.91	1.219							5.54	2.89	
1	33.40	3.38	2.50	4.55	3.23	9.09	5.45							3.38	2.50			4.55	3.23							6.38	4.23	
1 1/4	42.16	3.56	3.38	4.85	4.46	9.70	7.75							3.56	3.38			4.85	4.46							6.35	5.60	
1 1/2	48.26	3.68	4.05	5.08	5.40	10.2	9.54							3.68	4.05			5.08	5.40							7.14	7.23	
2	60.32	3.91	5.43	5.54	7.47	11.1	13.44							3.91	5.43			5.54	7.47							8.71	11.10	
2 1/2	73.02	5.16	8.62	7.01	11.40	14.0	20.39							5.16	8.62			7.01	11.40							9.52	14.90	
3	88.9	5.49	11.26	7.62	15.25	15.2	27.65							5.49	11.26			7.62	15.25							11.1	21.30	
3 1/2	101.6	5.74	13.56	8.08	16.62	16.15	34.00							5.74	13.56			8.08	16.62									
4	114.3	6.02	16.06	8.56	22.29	17.1	40.99							6.02	16.06			8.56	22.29			11.1	28.25			13.5	33.51	
5	141.3	6.55	21.76	9.52	30.92	19.0	57.37							6.55	21.76			9.52	30.92			12.7	40.24			15.9	49.04	
6	168.3	7.11	28.23	11.0	42.53	21.9	79.11							7.11	28.23			11.0	42.53			14.3	50.20			18.2	67.47	
8	219.1	8.18	42.49	12.7	64.57	22.2	107.70		6.35	33.28	7.04	36.76	8.18	42.49	10.3	53.07		12.70	64.57	15.1	75.79	18.2	90.67	20.6	100.89	23.0	111.18	
10	273.0	9.27	60.24	12.7	81.46				6.35	41.73	7.80	50.96	9.27	60.24	12.7	81.46		15.1	95.84	18.2	114.59	21.4	132.85	25.4	154.97	28.6	172.11	
12	323.8	9.52	73.76	12.7	97.36				6.35	49.68	8.38	65.14	10.3	79.31	14.3	108.97		17.4	131.81	21.4	159.67	25.4	186.75	28.6	207.87	33.3	238.60	
14	355.6	9.52	81.21	12.7	107.28				6.35	54.63	7.92	67.98	9.52	81.21	11.1	126.51		19.0	157.94	23.8	194.64	27.8	224.36	31.8	253.32	35.7	281.49	
16	406.4	9.52	93.13	12.7	123.18				6.35	62.56	7.92	77.92	9.52	93.13	12.7	123.18		16.7	160.04	21.4	203.26	26.2	245.34	30.9	286.33	36.5	332.72	
18	457.2	9.52	105.05	12.7	139.07				6.35	70.53	7.92	87.85	11.1	122.12	14.3	155.90		20.6	232.54	24.9	309.55	34.9	363.33	39.7	408.21	45.2	459.18	
20	508.0	9.52	116.97	12.7	154.94				6.35	78.47	9.52	116.97	12.7	154.97	15.1	183.74		24.6	247.29	26.2	310.91	32.5	381.20	38.1	441.06	44.4	507.63	
24	609.6	9.52	140.81	12.7	186.75				6.35	94.37	9.52	140.81	14.3	209.54	17.4	254.24		24.6	354.62	30.9	441.30	38.9	546.84	46.0	639.18	52.4	719.16	
																										59.5	806.74	

## Recommended Metal Temperatures for Boiler Tube Grades.

Max. Metal Temperature	475°C 885°F				500°C 930°F				550°C 1020°F	560°C 1040°F	575°C 1065°F	600°C 1110°F				625°C 1155°F	650°C 1200°F
ASTM	Gr. A A192	Gr. B		Gr. C													
A 106																	
A 192																	
A 209-A 210		Gr. A-1		Gr. C		T1											
A213-A335						P1		T2/P2		T12/P12		T11/P11		T22/P22		T9/P9	
BS	360	410	440-460	490 Nb	243					620		621		622		629	
3059-3602-3604												660				762	
DIN	17175	St35.8	St45.8	17Mn4	19Mn5	15Mo3	16Mo5	15NiCuMoNb5	1.6368	13CrMo44		10CrMo9 10	14MoV63			X12CrMo91	X20CrMoV121
	1.0305	1.0405	1.0461	1.0482	1.5415	1.5423				1.7335		1.7380	1.7715			1.7386	1.4922
GOST	TY 143-460-75	20								15XM	12X1MF				15X1M1F		
JIS	G 3456 G3458	STPT38	STPT42	STPT49			STPA12	STBA12		STPA20	STBA20	STPA23	STBA24			STPA26	STBA26
G3461 G3462																	
NF A49-213	TU37-C	TU42-C	TU48-C	TU52-C	TU15D3					TU15CD2.05	TU13CD4.04					TU210CD9	TU210CDNbV9.2

Typical Steel Grades of Tubes fabricated by us.

## WATER COOLED DUCT

We can fabricate any Steel component/equipment based on your drawing and with high dimensional accuracy to give you ease in replacement and ready to fit components shortening the down time.



We have the expertise to do **Reverse Engineering for your replacement boiler tube and pressure part projects** and we can suggest modification of design or change of materials to improve boiler efficiency or to reduce repetitive tube failures based on our 500 man-years of practical experience.

### RAW MATERIALS USED:

ERW/SEAMLESS Boiler Tubes and Pipes

SIZES ranging from 12.7mm to 610 mm OD and thickness from 0.8 mm to 76 mm and all Ganges, Schedules, each tube Length upto 24 Mtrs.

STEEL GRADES in Carbon, Alloy and Stainless Steels

ASTM A 53, ASTM A 106, API 5L GRADE A, B, C.

ASTM A 179, ASTM A 192, ASTM A 210-Gr A1, C (Rifle Bore Tubes)

ASTM A 161, ASTM A 199, ASTM A 200, ASTM A 209,

ASTM A 213, ASTM A 335, ASTM A 423

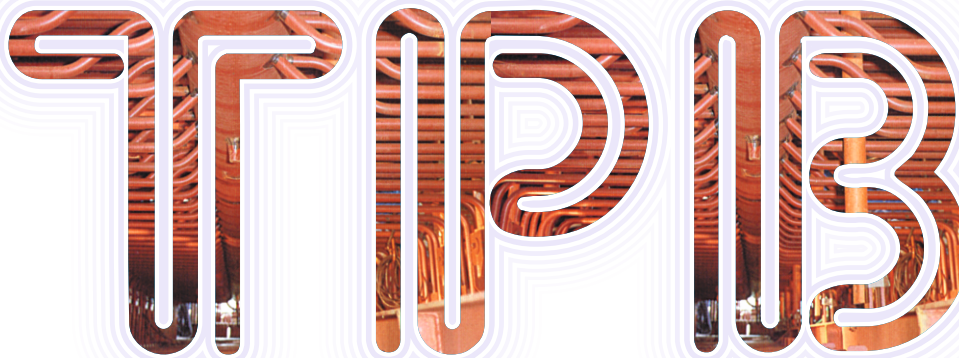
GRADES: T1 /T2/ T11 / T12 / T22, T5, T9, T91, T92

DIN 17175 / EN10216-2 / St. 35.8 / 45.8 / P235 GH / 16Mo3 / 13CrMo4-5 / 10CrMo9-10 / X20Cr MoV11-1 / DIN-2391/2448 Etc.

BS : BS 3059 Ptl/PtII-S2-C2 Gr320, 360 440, 243, 620-460, 622-490.

GOST SPEC: 12X1MF,

A 213, A312, TP 347 H, 304 H, 316L, 321 H, 446, TP 347 HFG, TP310 CbN, Super 304 H etc.etc.



TUBES

PIPES

BOILERS

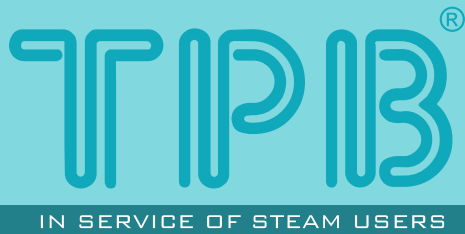
### OUR PRODUCTS

EVAPORATORS AND ECO. COILS  
REHEATERS AND SUPER HEATERS  
BED COILS - STUDDER / PLAIN  
BANK TUBES / HEADERS  
BOILER MAINTENANCE &  
ERECTION  
SPIRAL COILS  
HELICAL COILS  
SAMPLE COOLERS  
SEAMLESS PIPES  
BOILER TUBES

### CLIENTS:

We have serviced almost every Sector directly or indirectly both Public and Private in India, Far East, Middle East, Africa, Europe in  
Power Generation,  
Petrochemicals,  
Refineries,  
Fertilizers,  
Steel Plants,  
Aluminum/Copper/Zinc Smelters,  
Sugar Factories,  
OEM Boiler Manufacturers,  
Paper Factories,  
Cement Plants,  
Chemical Process Industries,  
Ship-Yards.





## **OTHER PRODUCTS**

Steam Headers, Steam Drums, De-Superheaters,

Spiral coils, Helical coils, HP/LP Tube Nest Steam Condensers, Spiral Finned Tubes

Steam Piping and other Tubular fabricated products for Refineries etc. like Sample Coolers, Condensate Pots, Studded Fired Heater Tubes, Steam Condensers, Heat Exchanger U-Tubes etc.

Air PreHeaters Tubular /Baskets, Air Intake Modules for Gas Turbines.

Water Cooled Ducts, Hoods, Stacks of Metal Smelters.



**When you need answers, call us “The Boiler Tube Experts.”**

**Nobody has time for boiler problems. Boilers seem to sense this and always fail when you can least afford it. So you want fast service, a prompt quote, a reliable delivery and tubes that fit.**



**TPP BOILERS PVT. LTD.**

**An ISO-9001-2015 COMPANY  
(IBR APPROVED)**

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