

TEXMACO RAIL & ENGINEERING LIMITED

An Industry for Industries



PROCESS EQUIPMENT DIVISION

CONTENTS

Subject	Page no.
Introduction	3
Infrastructural Facilities & List of Machineries	4
Important Orders Executed	5 & 6
Major Product Specifications	7 to 17

INTRODUCTION

Texmaco has 5 manufacturing units extending over 170 acres, located at Belgharia, Agarpara, Panihati and Sodepur in and around Kolkata.

The Company manufactures a diverse range of products. It is the largest manufacturer of Railway Freight Cars, and Hydro-mechanical Equipment /Steel Structures. Over the years, it entered into technical collaboration with renowned Multinationals of Japan, U.S.A, U.K, Germany, Australia, Austria, Holland, etc. for developing and expanding its product portfolio.

The State-of-the-Art Steel Foundry of the Company is the largest in the Country, set up by the world renowned M/s. Kunkel Wagner, Germany, with a capacity upto 30000 Tonnes of quality Castings per year.

The company also specializes in manufacturing of Pressure Vessel Equipment. It has catered to the bulk requirements of process plant equipment by a large number of prestigious public and private sector companies throughout the country. Following are some of the products the company has manufactured, supplied and commissioned:

- Bullets and Mounded Tanks;
- Gas Receivers and Buffer Vessels;
- Horton Spheres;
- Double-walled Cryogenic Vessels and
- Heat Exchangers etc

The Pressure Vessels are manufactured in carbon steel and stainless steel as per ASME, Section – VIII, Division 1 & 2 / BS-5500 / IS-2825 Rules, under the inspection of international repute like Lloyds, BVIS etc.

INFRASTRUCTURAL FACILITIES

1. The manufacturing area available:

Space	Approx. Area in Sq. Mt.	
	Agarpara Works	Sodepur Works
Open area	1,00,000	93,000
Covered area	74,000	25,000

2. LIST OF MACHINERIES

<u>S.No.</u>	<u>Machines</u>	<u>Capacity</u>
(a)	Dished End Spinning	- For 4 meters dia : <u>Maximum thickness</u> 22mm - For Carbon Steel 16mm - For Stainless Steel
(b)	Hot pressing of Dished Ends	- Up to 3m dia and 52mm thickness
(c)	Stress Relieving Furnace	- 12m (W) X 14m (H) X 59m (L) oil fired
(d)	Presses	- 250, 400, 1000 & 1250 tonnes
(e)	Plate Bending Machines	- (i) 3 Roller Bending Machine cap. 40mm thick and 4m wide. (ii) Largest CS Plate upto 105mm thickness and 3m wide.
(f)	Rotators	- 10T, 20T and 50T.
(e)	Welding Machines	- Boom Welding Machines, MIG, TIG, CO ₂ and Arc Welding Machines.
(g)	NDT Testing	- In-house NDT testing facilities which include Radiography, ultrasonic testing, magnetic particle testing and DP testing etc.

IMPORANT ORDERS EXECUTED

The Company has supplied a wide range of Pressure Vessels to a large number of clients located at various parts of India. The select few have been listed below where the vessel is ODC or of specialized design or a critical equipment for the user industry.

The salient particulars of the orders executed in terms of weight, thickness, intricacy of fabrication etc. are furnished below:

1. Large over-dimensional Vessels :

<u>Client</u>	<u>Equipment</u>	<u>Size</u> <i>(Dia x Length)</i>
(a) Panipat Refinery	Flare Knock-out Drum	4.7m dia x 17.2m
(b) Panipat Refinery	Coker Fractionator Overhead Receiver.	4.3m dia x 10.2m
(c) Gujarat Refinery	150KL Liquid Nitrogen Vessel (largest ever made in India)	3.9m dia x 20.1m
(d) ISRO, Bangalore	125KL LIN Vessel	3.9m dia x 14.0m

2. Heavy Vessels & Equipment :

(a) TISCO, Jamshedpur	200m ³ GOX & GAN Vessels	116MT Wt. & 94MT Wt <i>(4.01M dia x 19.4M)</i>
(b) SAIL, Durgapur	200m ³ GOX Vessels	105MT Wt. <i>(3.09M dia x 28.5M)</i>

3. Spherical Vessels :

(a) Indian Oil Corpn. Ltd., Durgapur	1400m ³ Horton Spheres for LPG Storage – 5 nos.	190MT Wt. <i>(14.5M dia)</i>
(b) Indian Space Research Organisation, Trivandrum	2200m ³ Horton Spheres for maintaining vacuum – 3 nos	216MT Wt. <i>(16.13M dia)</i>

Contd.....

IMPORANT ORDERS EXECUTED *Cont.....*

4. Cryogenic Vessels :

(a)	<u>VITT/VIST (Double-walled Vessels) :</u>	<u>Qty.</u>
	<i>(The inner vessel is made of SS and the outer vessel is made of CS)</i>	
(i)	BOC (I) Ltd. 150 KL Cryogenic Storage Tank	2 Nos.
(ii)	- do - 125 KL	1 No.
(iii)	- do - 75 KL	2 Nos.
(iv)	- do - 50 KL	1 No.
(v)	- do - 35 KL	1 No.
(vi)	- do - 15 KL	22 Nos.
(b)	Cold Box A/c BARC for Kalpakam Nuclear Plant	1 No.

Major Product Specifications

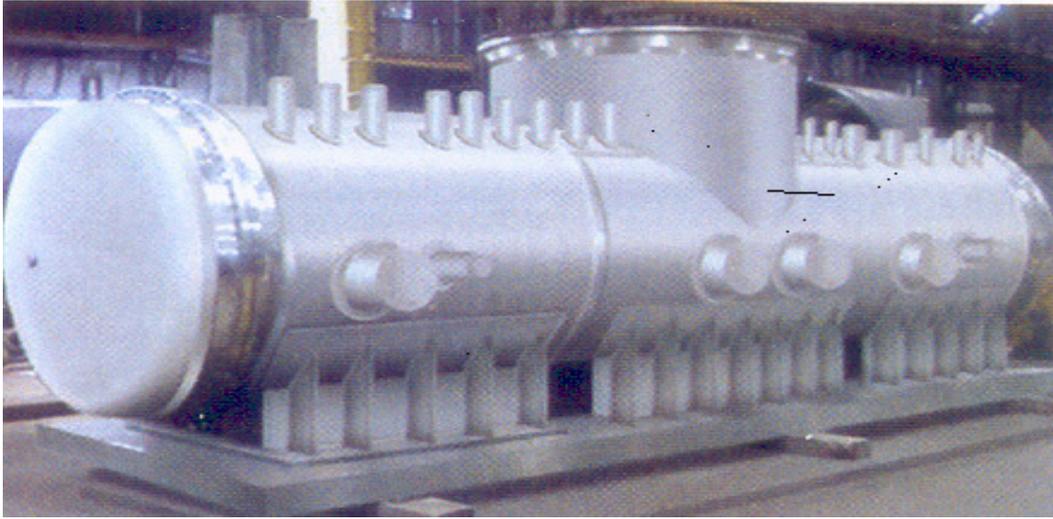
BUFFER VESSEL :



Equipment	:	200 M ³ GASEOUS NITROGEN BUFFER VESSEL
Client	:	TISCO
Application	:	For lancing operation of steel melting.
Code of Construction	:	PD : 5500 & SMPV Rules – 1981
Diameter & length of Vessel	:	3900 MM ID, 19.24 M ;
Thickness of Vessel Shell	:	56 MM;
Material of Construction	:	SA : 516, Gr.70 ;
Vessel Orientation	:	Vertical.
Operating Pressure	:	45.0 kg / cm ² g.
Design Temperature	:	60°C.
Post Weld Heat Treatment	:	Stress relieved.
Empty Weight	:	116.0 MT
Inspection	:	BVIS.

TANK CAR, TYPE ' BTCS' :

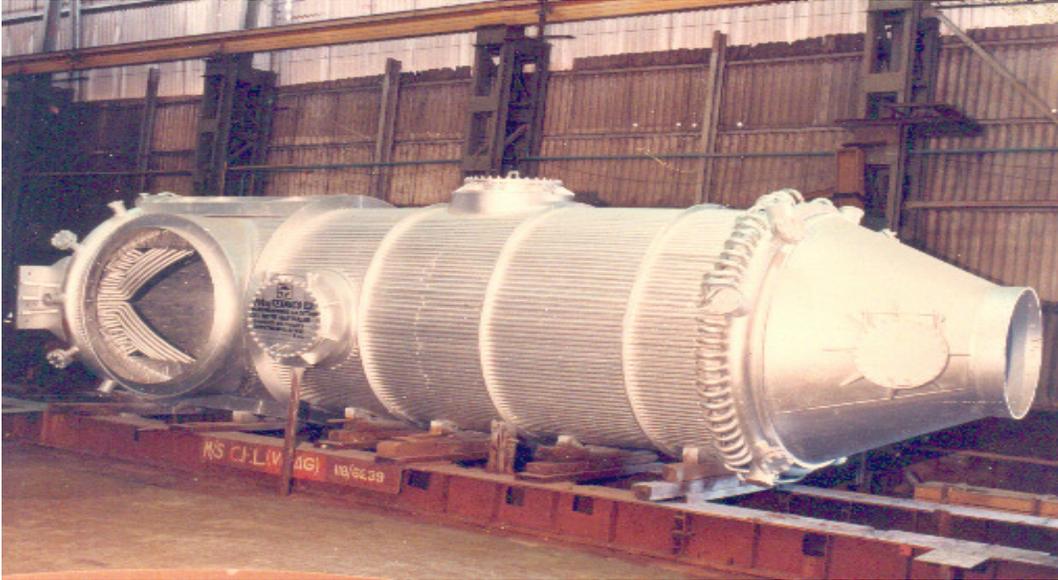
Equipment	:	BTCS TANK
Client	:	Vedanta Alumina Ltd., Orissa
Application	:	Caustic Soda Lye 50% (SP. Gr.1.5)
Code of Construction	:	IS - 2825 ;
Diameter & Length of Vessel	:	2300 MM ID, 9.78 M ;
Thickness of Drum	:	10 MM.
Material of Construction	:	IS -2062, Fe – 410 W ;
Vessel Orientation	:	Horizontal
Operating Pressure	:	2.0 kg/cm² g.
Design Temperature	:	55°C.
Empty Weight	:	24.77 MT
Inspection	:	RDSO

COLD BOX :

Equipment	: COLD BOX ;
Client	: Bhaba Atomic Research Centre
Application	: Heavy water distillation column.
Code of Construction	: ASME Sec.VIII, Div.1
Diameter & length of the Vessel	: 1800 MM ID, 7.6 M (Horizontal Section) 1326mm dia , 22 M height (Vertical column)
Thickness of Vessel Shell	: 12 MM.
Material of Construction	: SA : 240, Type – 304 L.
Vessel Orientation	: Horizontal & Vertical.
Operating Pressure	: 1×10^{-6} millibar.
Design Temperature	: (-) 193°C.
Testing & Finish	: Helium Leak testing and electro finishing.
Inspection	: LRIS.

FLARE KNOCK OUT DRUM :

Equipment	: FLARE KNOCK OUT DRUM ;
Client	: IOCL, Panipat Refinery
Application	: Hydro Carbon Product Storage
Code of Construction	: ASME Sec.VIII, Div.1
Diameter & length of the Vessel	: 4.65 M Dia, 17.2 M Length
Material of Construction	: SA : 516, Gr.70 ;
Vessel Orientation	: Horizontal
Operating Pressure	: 3.0 kg/cm² g.
Design Temperature	: 290°C.
Empty Weight	: 46.5 MT
Inspection	: EIL.

WASTE HEAT BOILER :

Equipment	:	WASTE HEAT BOILER
Client	:	Coromandal Fertilizer Ltd.
Application	:	Steam generation
Code of Construction	:	Indian Boiler Regulation
Diameter & Length of Vessel	:	3000 MM ID, 12.8 M ;
Material of Construction	:	SA : 516, Gr.70, Membrane Wall
Vessel Orientation	:	Vertical.
Operating Pressure	:	43.9 kg/cm² g.
Design Temperature	:	283°C.
Inspection	:	CIB, West Bengal.

BUFFER VESSEL :

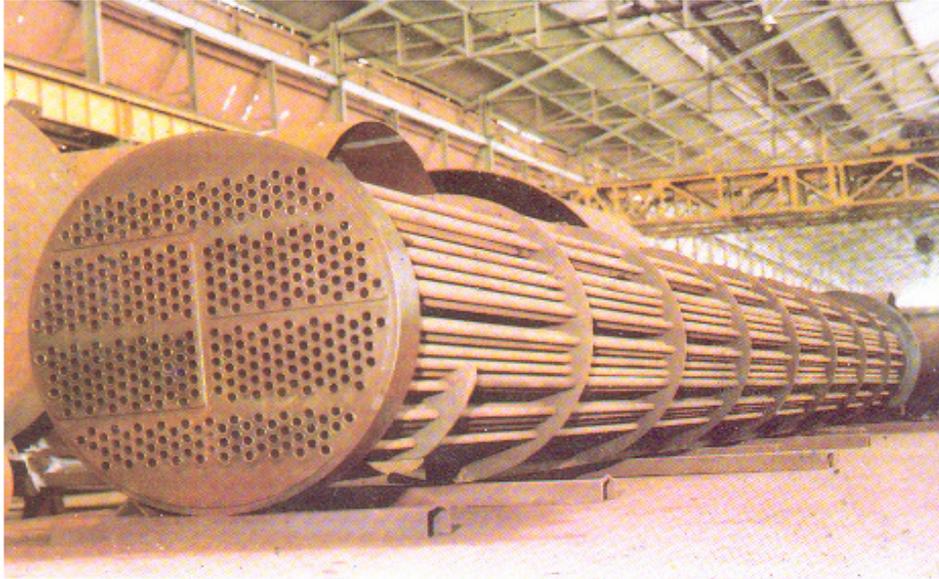
Equipment	:	200 M³ OXYGEN BUFFER VESSEL
Client	:	Jindal Steel
Application	:	For lancing operation of steel melting.
Code of Construction	:	PD : 5500 & SMPV Rules – 1981 ;
Diameter & Length of Vessel	:	3700 MM ID, 21.4 M ;
Material of Construction	:	SA : 537, Cl.1.
Vessel Orientation	:	Vertical.
Operating Pressure	:	44.0 kg/cm² g.
Design Temperature	:	60°C.
Empty Weight	:	80 MT
Inspection	:	LRIS

16.13 M Dia HORTON SPHERES :

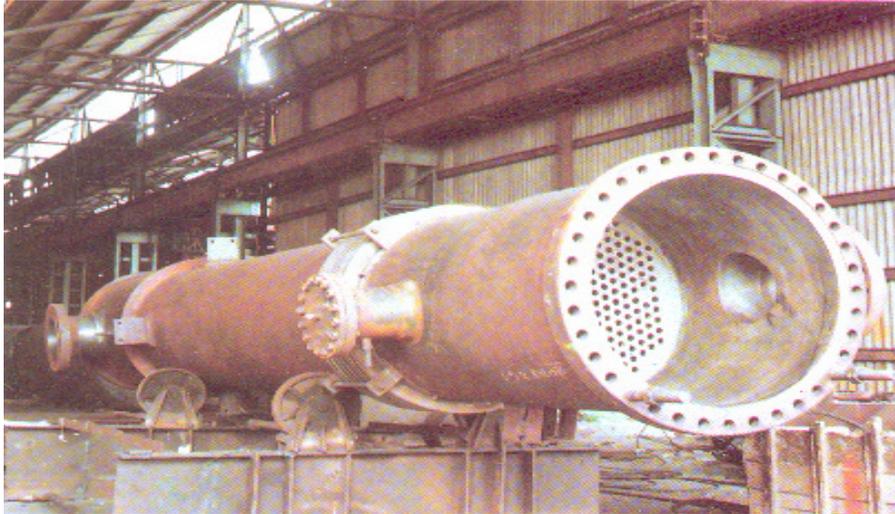
Equipment	:	16.13 M DIA HORTON SPHERES
Client	:	ISRO, Trivandrum
Application	:	Maintaining vacuum of 10^{-6} milibar.
Design Validation	:	FEM Analysis.
Code of Construction	:	ASME SEC VIII, DIV.II.
Diameter	:	16.13 M ;
Thickness of the Vessel	:	24 MM ;
Material of Construction	:	SA : 516, Gr.70;
Operating Pressure	:	Full Vacuum.
Design Temperature	:	60°C.
Empty Weight	:	220 MT
Inspection	:	BVIS.
Testing	:	100% Radiography of joints. Helium leak test of the vessel.

BUFFER VESSEL :

Equipment	:	125 M³ OXYGEN BUFFER VESSEL
Client	:	Jindal Steel
Application	:	Gaseous Oxygen
Code of Construction	:	PD : 5500 & SMPV Rules – 1981 ;
Diameter & Length of Vessel	:	3300 MM ID, 24 M ;
Material of Construction	:	SA : 516, Gr.70.
Vessel Orientation	:	Vertical.
Operating Pressure	:	44.0 kg/cm² g.
Design Temperature	:	60°C.
Empty Weight	:	63MT
Inspection	:	BVIS.

HEAT EXCHANGER :

Equipment	:	TUBE BUNDLE OF HEAT EXCHANGER
Client	:	Rashtriya Chemicals & Fertilisers
Application	:	Fertiliser Plant
Code of Construction	:	Asme Sec Viii, Div.1, Tema Class - R
Tube Sheet Dia, Thickness	:	798 Mm O/D, 81 Mm Thk ;
Tube O/D, Length	:	20 Mm O/D, 6000 Mm ;
No. of Tubes in Tube Bundles	:	386 Nos.
Material of Construction	:	Tube Sheet – SA-516, Gr.60, Tube – SA-179
Operating Pressure	:	Shell Side– 27.5 kg/cm² g, Tube Side– 9 kg/cm² g
Design Temperature	:	Shell Side – 100°C, Tube Side – 180°C.
No. of Pass	:	Shell Side – 9; Tube Side – 6;
Fluid Circulated	:	Shell Side – Water; Tube Side – Carbamate

GAS COOLER :

Equipment	:	GAS COOLER
Client	:	BHEL
Application	:	Shell side steam, Tube side Coal gas.
Code of Construction	:	TEMA Class - R ;
Diameter & Length of Vessel	:	1070 MM ID, 8.7 M ;
Material of Construction	:	SA : 515, Gr.60 – Shell
Tubes	:	SA-213, TP-321.
Tube Sheets	:	SA-182.
Vessel Orientation	:	Vertical.
Operating Pressure	:	23.2 / 21.0 kg/cm² g.
Design Temperature	:	560°C.

DOUBLE-WALLED CRYOGENIC VESSEL :

Equipment	:	75 KL LIQUID NITROGEN VESSEL
Client	:	ISRO, Mahendragiri, Maharashtra.
Application	:	Liquid Nitrogen Storage for blanketing.
Code of Construction	:	ASME SEC VIII, Div.1 ;
Diameter & Length of Vessel	:	3.9 M Dia, 10.755 M Length ;
Material of Construction	:	Jacket – SA-516, Gr.70; Inner Vessel : SA-240, Typ – 304 L
Vessel Orientation	:	Horizontal.
Operating Pressure	:	8 kg/cm² g.
Design Temperature	:	(-) 193°C.
Empty Weight	:	21.82 MT.
Testing	:	Helium Leak Test 100% Radiography of joints.

150 KL LIQUID NITROGEN VESSEL :

Equipment	:	150 KL LIQUID NITROGEN VESSEL
Client	:	Gujarat Refinery
Application	:	Liquid Nitrogen Storage for blanketing.
Code of Construction	:	ASME SEC VIII, Div.1 ;
Diameter & Length of Vessel	:	2.8 M Dia, 22.0 M Length ;
Material of Construction	:	Jacket – SA-516, Gr.70; Inner Vessel : SA-240, Typ – 304 L
Vessel Orientation	:	Vertical.
Operating Pressure	:	8 kg/cm² g.
Design Temperature	:	(-) 193°C.
Empty Weight	:	111.00 MT.
Testing	:	Helium Leak Test 100% Radiography of joints.