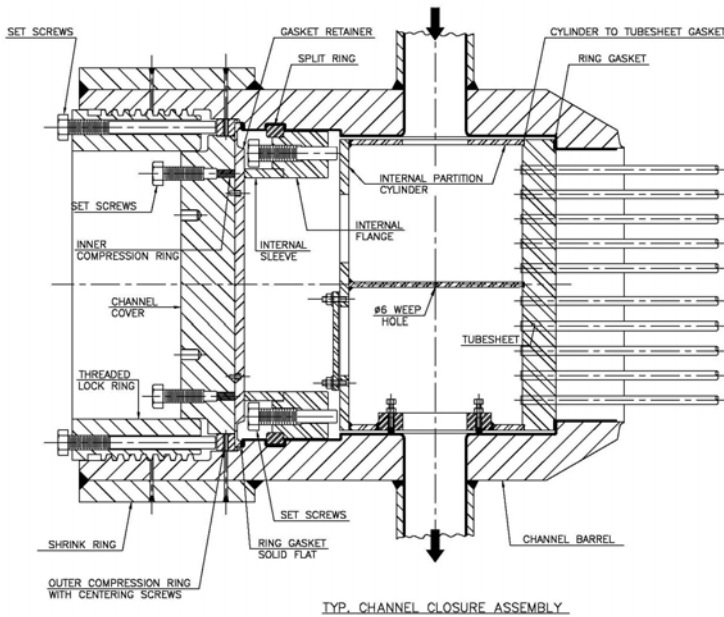


**Pioneering World-class  
Engineering Solutions**



**TEMA**  
INDIA LTD.

# MOST RELIABLE AND EASIEST TO MAINTAIN EQUIPMENT "HIGH PRESSURE SCREW-PLUG HEAT EXCHANGER"

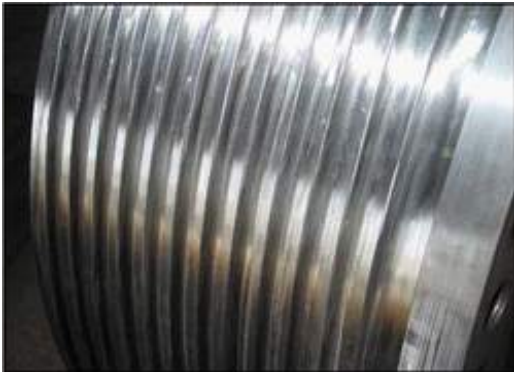


The Screw Plug design for high pressure heat exchangers is now being offered by Tema India Ltd. with their own proprietary technology.

Tema India Ltd.'s proprietary design (patent pending) offers the safest, most reliable and easiest to maintain exchanger.

Tema India Ltd. boasts of being one of the best in the line and one to have successfully produced two of the largest and the most complicated ones in the world.

PLUG THREADS IN FINISHED CONDITION



TUBE BUNDLE INSERTION



FINAL PRODUCT READY FOR DISPATCH

The largest DEU Screw-Plug High-High type Heat Exchanger stacked assembly  
Fabricated at Tema Kherdi facility for BPCL



Stack Weight : 180 tons  
M.O.C : SA336 F22 Cl3 + SS347 Clad  
Shell (112+5)mm Thk  
Project : Hydrocracker  
Process : Chevron

The largest DEU Screw-Plug High-High type Heat Exchanger ever fabricated  
ready to be put into service at the CPCL refinery



Stack Weight : 270 tons  
M.O.C : SA336 F22 Cl3 + SS347 Clad  
Shell (124+5)mm Thk  
Project : Hydrocracker  
Process : Chevron



EXPERIENCE LIST FOR SCREW-PLUG HIGH PRESSURE HEAT EXCHANGERS



Sr. No.	Equipment Number	Qty	Client	Service	TEMA Type	Design Pressure (Kg/cm <sup>2</sup> g)		Design Temperature (DegC)		Size of Exchanger Shell ID x Tube Length (mm)	Shell THK (mm)	Channel ID x THK (mm)	Metallurgy				T/S Thk. (mm)	Empty Weight (Kgs)	Year	Inspection Agency	Process Licensor
						Shell	Tube	Shell	Tube				Shell	Tube	Tubesheet	Channel					
1	84-E-03 A-C	3	IOCL, HALDIA LOBS	HDT FEED/ EFFLUENT	DEU	171	159	390	420	590 x 6000	40 + 2.5 Cladding	590 x 132	SA 387 GR 22 CL2 + SS321 CLAD	SA 213 TP 321	SA 182 GR F321	SA 336 GR F22 CL3 + SS347 WD	74	35000	2002	LRS	Mobil
2	84-E-06 A-C	3	IOCL, HALDIA LOBS	MSDW FEED / EFFLUENT	DEU	154	142	380	420	620 x 6000	37 + 2.5 Cladding	620 x 132	SA 387 GR 22 CL2 + SS321 CLAD	SA 213 TP 321	SA 182 GR F321	SA 336 GR F22 CL3 + SS347 WD	78	34000	2002	LRS	Mobil
3	84-E-07	1	IOCL, HALDIA LOBS	HTS OVHD/ RECYCLE GAS	DEU	173	136	232	280	410 x 4014	36	448 x 168	SA 516 GR 60	SA 213 T11	SA 182 F11 CL2 CHANNEL INTEGRAL WITH TUBESHEET		86	5000	2002	LRS	Mobil
4	207-E3A/B	2	CPCL, CHENNAI	REACTOR FEED/ EFFLUENT	DFU	171.6	192.9	454	394	1727 x 5189	124+5 Strip W.D.	1783 x 195	SA 336 GR F22 CL3 + SS347 WD	SA 213 TP316L	SA 336 GR F316L	SA 336 GR F22 CL3 + SS316LWD	252	260000	2003	EIL	Chevron Lummus Globel
5	207-E4	1	CPCL, CHENNAI	RX EFFLUENT/ CLPS LIQUID	DFU	112.9	169.3	343	343	1342 x 5210	64	1540 x 118	SA 516 GR 70	SA 213 TP321	SA 336 GR F22 CL3 + SS347WD CHANNEL INTEGRAL WITH TUBESHEET		275	48000	2003	EIL	Chevron Lummus Globel
6	207-E5	1	CPCL, CHENNAI	STEAM GENERATOR	DKU	35	168	343	343	1074/1803 x 5695	32 / 20	1100 x 101	SA 516 GR 70	SA 213 T22	SA 336 GR F22 CL3 CHANNEL INTEGRAL WITH TUBESHEET		198	29000	2003	EIL	Chevron Lummus Globel
7	207-E6	1	CPCL, CHENNAI	INTER REACTOR EFFLUENT/ FRAC FEED	DEU	117.8	176.7	354	454	956 x 3325	48+3	1040 x 119	SA 516 GR 70 + 410S CLAD	SA 213 TP321	SA 336 GR F22 CL3 + SS347WD CHANNEL INTEGRAL WITH TUBESHEET		210	20000	2003	EIL	Chevron Lummus Globel
8	207-E7	1	CPCL, CHENNAI	REACTOR EFFLUENT /RECYCLE GAS	DEU	166.7	204.3	343	343	943 x 4111	63	999 x 121	SA 336 GR F22 CL3	SA 213 T11	SA 336 GR F11 CL3	SA 336 GR F22 CL3	148	23000	2003	EIL	Chevron Lummus Globel
9	207-E8	1	CPCL, CHENNAI	COLD REACTOR EFFLUENT/ CLPS LIQUID	DFU	109.6	164.4	182	343	1290 x 6417	58	1425 x 116	SA 516 GR 70	SA 179	SA 266 GR4 CHANNEL INTEGRAL WITH TUBESHEET		261	52000	2003	EIL	Chevron Lummus Globel
10	132-E-207 A/B	2	BPCL, MUMBAI HYDRO	1 ST STAGE REACTOR FEED/ EFFLUENT	DFU	176.3	193.4	454	444	1524 x 6310	112 + 5 Strip W.D.	1524 x 184	SA 336 GR F22 CL3 + SS347 WD	SA 213 TP321	SA 336 GR F321	SA 336 GR F22 CL3 + SS347WD	252	180000	2004	EIL	Chevron Lummus Globel
11	132-E-208	1	BPCL, MUMBAI HYDRO	INTER REACTOR/ FRAC FEED EXCHANGER	DEU	121.9	181.2	445	454	1100 x 2403	105 + 5 Strip W.D.	1340 x 113	SA 516 GR 70 + 410S CLAD	SA 213 TP321	SA 336 GR F22 CL3 + SS347WD CHANNEL INTEGRAL WITH TUBESHEET		275	36000	2004	EIL	Chevron Lummus Globel
12	132-E-209	1	BPCL, MUMBAI HYDRO	REACTOR EFFLUENT/ MP STEAM GENERATOR	DKU	30	175.1	390	429	1500/2300 x 5400	38	1540 x 119	SA 516 GR 70	SB163UNS N08825	SA 336 GR F22 CL3+SS347WD CHANNEL INTEGRAL WITH TUBESHEET		198	47000	2004	EIL	Chevron Lummus Globel
13	132-E-210	1	BPCL, MUMBAI HYDRO	HHPS VAPOR/CLPS LIQUID EXG	DFU	115.5	173.8	343	343	955 x 5000	52	1040 x 115	SA 516 GR 70	SB163UNS N08825	SA 336 GR F22 CL3+SS347WD CHANNEL INTEGRAL WITH TUBESHEET		198	26000	2004	EIL	Chevron Lummus Globel
14	132-E-211	1	BPCL, MUMBAI	HHPS VAPOR/ RECYCLE GAS EXG.	DFU	201.4	172.1	343	343	1100 x 4430	90	1100 x 147	SA 336 GR F22 CL3	SA 213 T11	SA 336 GR F11 CL3	SA 336 GR F22 CL3	148	38000	2004	EIL	Chevron Lummus Globel
15	132-E-212	1	BPCL, MUMBAI	2ND STAGE REACTOR FEED/ EFFLUENT	DFU	178.2	191.7	454	412	1219 x 7017	92 + 5 Strip W.D.	1219 x 151	SA 336 GR F22 CL3 + SS347 WD	SA 213 TP321	SA 336 GR F321	SA 336 GR F22 CL3	261	58000	2004	EIL	Chevron Lummus Globel
16	132-E-213 A/B	2	BPCL, MUMBAI LOBS	2ND STAGE REACTOR EFFLUENT REC GAS EXG.	DEU	176	200.1	397	343	888 x 2045	68	888 x 138	SA 336 GR F22 CL3	SA 213 T22	SA 336 GR F321	SA 336 GR F22 CL3	261	36000	2004	EIL	Chevron Lummus Globel
17	132-E-254 A/B/C/D	4	BPCL, MUMBAI LOBS	REACTOR FEED / EFFLUENT EXCHANGER	DEU	191.9	204.7	454	400	650 x 4946	54 + 3	700 x 95	SA387GR22CL2+SS321 CLAD	SA213TP321	SA336F321	SA336F22CL3+SS347WD	67	13000	2005	TEIL	Chevron Lummus Globel
18	132-E-256 A/B	2	BPCL, MUMBAI LOBS	DW HHPS VAPOR / MAKE-UP H2 EXCHANGER	DFU	182.4	225	304	282	406 x 4365	32	406 x 112	SA387GR22CL2	SA213T11	SA336F11CL3	SA336F22CL3	48	5000	2005	TEIL	Chevron Lummus Globel
19	E-4502 A/B/C/D	4	ULTRAMAR, CANADA DHTD	REACTOR FEED / EFFLUENT EXCHANGER	DFU	90	108.62	476	412	1423 x 4877	50 + 5 W.O.L.	1473 x 115	SA336F22CL3 + SS347 WOL	SA213TP316L	SA336F316L	SA336F22CL3+SS347WD	164	48000	2006	Fluor	Chevron Lummus Globel
20	E-4503	1	ULTRAMAR, CANADA DHTD	HHPS / VAPOR RECYCLE GAS EXCHANGER	DFU	112.14	87.18	385	412	1168 x 5791	54	1205 x 114	SA336F22CL3	SA213TP11	SA336F22CL3	SA336F22CL3+N06625 WD	108	39000	2005	Fluor	Chevron Lummus Globel
21	E-4504	1	ULTRAMAR, CANADA DHTD	HHPS VAPOR / CLPS LIQUID EXCHANGER	DFU	4.6	24.16	172.78	172.8	1321 x 6096	40	1357 x 116	SA516GR70	SA179	SA765 GR II	SA765 GR II	207	53000	2005	Fluor	Chevron Lummus Globel
22	E-1210A/B	2	YANSAB SAUDI ARABIA	BFW 1ND PREHEATER	DEU	173.35+ FV	203.94	250	160	1016 x 6096	75	1073 x 123	SA516GR70	SA179	SA266 GR2	SA266 GR2	285	46000	2007	TECHNIP ITALY	Chevron Lummus Globel



EXPERIENCE LIST FOR SCREW-PLUG HIGH PRESSURE HEAT EXCHANGERS



Sr. No.	Equipment Number	Qty	Client	Service	TEMA Type	Design Pressure (Kg/cm <sup>2</sup> g)		Design Temperature (DegC)		Size of Exchanger Shell ID x Tube Length (mm)	Shell THK (mm)	Channel ID x THK (mm)	Metallurgy				T/S Thk. (mm)	Empty Weight (Kgs)	Year	Inspection Agency	Process Licensor
						Shell	Tube	Shell	Tube				Shell	Tube	Tubesheet	Channel					
23	E-1211	1	YANSAB SAUDI ARABIA	BFW 2ND PREHEATER	DEU	173.35+ FV	203.94	343	160	1270 x 6096	100	1339 x 147	SA516GR70	SA179	SA266 GR2	SA266 GR2	345	65000	2007	TECHNIP ITALY	Chevron Lummus Globel
24	16-EE-00-201	1	BORL	2nd STAGE RX FEED / EFFLUENT EXCHANGER	DFU	178.9	188.8	454	396	1245 x 6261	94+3	1245 x 144	SA387 GR22 CL-2 + 3THK AISI 321 CLAD.	SA213 TP 321	SA336 F321	SA336 F22 CL-3 +5THK AISI 347 W.D	162	61150	2008	EIL	Chevron Lummus Globel
25	16-EE-00-304 A/B	2	BORL	DHT REACTOR FEED/ EFFLUENT EXCHANGER	DFU	172	179	454	391	1397 x 6279	102+3	1397 x 149	SA387 GR22 CL-2 + 3THK AISI 321 CLAD.	SA213 TP 321	SA336 F321	SA336 F22 CL-3 +5THK AISI 347 W.D	180	145400	2008	EIL	Chevron Lummus Globel
26	16-EE-00-106	1	BORL	INTER-REACTOR EFFLUENT / FRAC FEED EXCHANGER	DEU	136.3	177.2	429	454	1194 x 4016	70+5	1194 x 197	SA387 Gr.22 CL-2+ AISI 347 STRIP W.D.	SA213 TP 321	SA336 F22 CL-3+ AISI 347 W.D.	SA336 F22 CL-3+ AISI 347 W.D.	355	44350	2008	EIL	Chevron Lummus Globel
27	16-EE-00-108	1	BORL	1 ST STAGE RX EFFLUENT / FRAC EXCHANGER	DEU	129.3	168.1	295	421	1194 x 3997	336	1194 x 170	SA516 GR.70	SA213 TP 321	SA336 F22 CL-3+ AISI 347 W.D.	SA336 F22 CL-3+ AISI 347 W.D.	336	38000	2008	EIL	Chevron Lummus Globel
28	16-EE-00-202 A/B	2	BORL	2 ND STAGE RX EFFLUENT / FRAC EXCHANGER	DFU	136.1	176.9	340	396	1219 x 5824	72	1219 x 215	SA516 GR.70	SA213 T5	SA336 F5	SA336 F5	335	54200	2008	EIL	Chevron Lummus Globel
29	16-EE-00-401	1	BORL	DHT HHPS VAPOR / CLPS LIQUID EXCHANGER	DEU	128	166.4	260	288	711 x3239	40	711 x 131	SA516 GR.70	SB163 UNS NO.8825	SA336 F22 CL-3+ AISI 347 W.D.	SA336 F22 CL-3+ AISI 347 W.D.	188	11650	2008	EIL	Chevron Lummus Globel
30	16-EE-00-402	1	BORL	1 ST STAGE HHPS VAPOR / FEED GAS EXCHANGER	DFU	202.5+HV	165.1+HV	263.3	214.6	1016 x4430	82	1016 x 129	SA387 Gr.22 CL-2	SA213 T11	SA336 F11 CL-2	SA336 F22 CL3	160	33050	2009	EIL	Chevron Lummus Globel
31	VH-E-04	1	BPCL-KR	HYDROCARBON & HYDROGEN	DFU	93	120.5 / FV	260	285	975 x 4000	46	1115 x 75	SA516Gr60	SA213T11	SA336F11CL2	SA336F11CL2	147	22000	2009	EIL	UOP
32	VH-E-06	1	BPCL-KR	HYDROCARBON & HYDROGEN & COOLING WATER	DEU	118 / FV	91	235	120	1025 x5750	68	1165 x 120	SA516Gr60	SA179	SA266CL4	SA266CL4	154	29000	2009	EIL	UOP
33	211-E-02	1	CPCL	REACTOR FEED REACTOR EFFLUENT	DEU	99.1 / FV	87.5 / FV	361	417	1400 x 6000	55	1400 X 154	387Gr11 CL2+ SS321CL	SA213TP321	SA336F321	SA336F11CL2 +SS321	176	56000	2009	EIL	AXENS
34	211-E-3 A	1	CPCL	STRIPPER FEED REACTOR EFFLUENT	DEU	66.8	86.8 / FV	353	381	1200 x4250	38+3	1100 X178	SA516Gr60+ SS321CL	SA213TP321	SA336F11CL2 +SS321WD	SA336F11CL2 +SS321WD	182	40000	2009	EIL	AXENS
35	211-E-3 B	1	CPCL	STRIPPER FEED REACTOR EFFLUENT	DEU	66.8	86.8 / FV	320	367	1200 x4250	38+3	1100 X 178	SA516Gr60+ SS321CL	SA213TP321	SA336F11CL2 +SS321WD	SA336F11CL2 +SS321WD	182	39000	2009	EIL	AXENS
36	211-E-1A	1	CPCL	REACTOR FEED REACTOR EFFLUENT	DEU	102.6 / FV	85.4 / FV	314	342	1475 x 6000	62	1475 X 161	SA387Gr11CL2	SA213TP321	SA336F321	SA336F11CL2+SS321	170	63000	2009	EIL	AXENS
37	211-E-1B	1	CPCL	REACTOR FEED REACTOR EFFLUENT	DEU	102.6 / FV	85.4 / FV	296	323	1475 x 6000	62	1475 X 135	SA387Gr11CL2	SA213TP321	SA336F321	SA336F11CL2+SS321	170	63000	2009	EIL	AXENS
38	211-E-1C	1	CPCL	REACTOR FEED REACTOR EFFLUENT	DEU	102.6 / FV	85.4 / FV	273	304	1475 x 6000	58	1475 x 135	SA387Gr11CL2	SA213T11	SA336F11CL2	SA336F11CL2	165	62000	2009	EIL	AXENS
39	211-E-1D	1	CPCL	REACTOR FEED REACTOR EFFLUENT	DEU	102.6 / FV	85.4 / FV	245	283	1475 x 6000	72	1475 X 135	SA516Gr60	SA213T11	SA336F11CL2	SA336F11CL2	165	65000	2009	EIL	AXENS
40	211-E-1E	1	CPCL	REACTOR FEED REACTOR EFFLUENT	DEU	102.6 / FV	85.4 / FV	215	256	1475 x 6000	76	1475 X 135	SA516Gr60	SA213T11	SA336F11CL2	SA336F11CL2	76	65000	2009	EIL	AXENS
41	211-E-1F	1	CPCL	REACTOR FEED REACTOR EFFLUENT	DEU	102.6 / FV	85.4 / FV	173	224	1475 x 6000	76	1475 X 135.5	SA516Gr60	SA179	SA266CL4	SA266CL4	166	66000	2009	EIL	AXENS
42	50-E-5203	1	DYNAMIC FUELS , LLC	HDO FEED / EFFLUENT EXCHANGER	DFU	143.4/ FV	151.1/ FV	426	426	736 X 6000	46+3	780 X 112	SA387 Gr.22 CL-2+ SA240 Gr.321 CLAD	SA213 TP316	SA965 F316	SA336 F22 CL-3 +SA965 F316	180	14579	2009	U STAMP	-
43	50-E-5209	1	DYNAMIC FUELS, LLC	HDO GAS/GAS EXCHANGER	DEU	156.42/FV	70.30/FV	204	315	388 X 6848	32	442 X 123	SA516 Gr.60	SA213 T22	SA336 F22 CL3	SA336 F22 CL3	66	5061	2009	U STAMP	-
44	50-E-5214	1	DYNAMIC FUELS, LLC	HDO HOT SEPRATOR COOLER	DFU	28.8 / FV	140.61 / FV	315/148	398/148	1143 X 6000	20	1143 X 188	SA516 Gr.60	SA213 TP321	SA336 F22 CL-3 + AISI 347W.D.	SA336 F22 CL-3 + AISI 347W.D.	280	1660	2009	U STAMP	-



EXPERIENCE LIST FOR SCREW-PLUG HIGH PRESSURE HEAT EXCHANGERS



Sr. No.	Equipment Number	Qty	Client	Service	TEMA Type	Design Pressure (Kg/cm <sup>2</sup> g)		Design Temperature (DegC)		Size of Exchanger Shell ID x Tube Length (mm)	Shell THK (mm)	Channel ID x THK (mm)	Metallurgy				T/S Thk. (mm)	Empty Weight (Kgs)	Year	Inspection Agency	Process Licenser
						Shell	Tube	Shell	Tube				Shell	Tube	Tubesheet	Channel					
45	50-E-5222	1	DYNAMIC FUELS, LLC	HI FEED/HDO EFFLUENT EXCHANGER	DEU	80.8/FV	142.36/FV	343/148	426/148	559 X 4500	22	602 X 114	SA387 Gr.22 CL-2	SA213 TP321	SA336 F22 CL-3 +AISI 347 W.D	SA336 F22 CL-3	160	386	2009	U STAMP	-
46	50-E-5223	1	DYNAMIC FUELS, LLC	HDO FEED HEATER	DEU	28.82/FV	142.64/FV	426/148	426/148	584 X 6000	10+3	627 X 103	SA387 Gr.22 CL-2 +SA240 Gr.316 CLAD	SA213 TP 316L	SA965 F316	SA336 F22 CL-3 +AISI 316 W.D.	160	403	2009	U STAMP	-
47	50-E-5303	1	DYNAMIC FUELS, LLC	HI FEED/EFFLUENT EXCHANGER	DEU	70.30/FV	80.85/FV	426/148	426/148	406 X 6000	16	449 X 106	SA387 Gr.22 CL-2	SA213 T22	SA336 F22 CL-3	SA336 F22 CL-3	62	265	2009	U STAMP	-
48	50-E-5313	1	DYNAMIC FUELS, LLC	HI EFFLUENT / PRODUCT EXCHANGER	DFU	28.82/FV	68.54/FV	398/148	426/148	610 X 5000	12	653 X 113	SA387 Gr.22 CL-2	SA213 T22	SA336 F22 CL-3	SA336 F22 CL-3	110	394	2009	U STAMP	-
49	50-E-5314	1	DYNAMIC FUELS, LLC	HI FEED HEATER	DFU	28.82	79.09	426	426	711 X 6096	12	777 X 162	SA387 Gr.22 CL-2	SA213 T22	SA336 F22 CL-3	SA336 F22 CL-3	117	13197	2009	U STAMP	-
50	VH-E-03	1	BPCL	HOT SEPARATOR VAPOR RECYCLE GAS EXCHANGER	DEU	152/FV	121.5/FV	290	385	1225 X 4250	78	1291 X 139	SA387 Gr.11CL2	SA213T22	SA336F22 CL-3	SA336 F22 CL-3	139	45494	2009	EIL	UOP
51	04-EE-002	1	NUMALIGARH REFINERY	INTER REACTOR EXCHANGER	DEU	142.4	185.2	343	454	1118 X 8109	68 + 3	1119 X 313	SA516 Gr.60 + SS410S CLAD	#REF!	SA336F22CL3 +SS347CLAD	#REF!	222	53352	2009	EIL / TPI	Chevron Lummus Globel
52	507-E-001 A	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	91.2 / FV	76 / FV	386	391	1675 X 6000	58	1710 X 89.5	SA 387 GR 11 CL2	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	205	59714	2010	EIL / U STAMP	AXENS PROCESS
53	507-E-001 B	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	91.2 / FV	76 / FV	391	391	1675 X 6000	60	1710 X 89.5	SA 387 GR 11 CL2	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	205	60489	2010	EIL / U STAMP	AXENS PROCESS
54	507-E-001 C	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	91.2 / FV	76 / FV	391	391	1675 X 6000	55 + 3	1710 X (84.5+5)	SA 387 GR 11 CL2 +SA240 GR.321 CLAD	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	205	70427	2010	EIL / U STAMP	AXENS PROCESS
55	507-E-001 D	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	91.2 / FV	76 / FV	391	402	1675 X 6000	55 + 3	1710 X (84.5+5)	SA 387 GR 11 CL2 +SA240 GR.321 CLAD	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	205	84089	2010	EIL / U STAMP	AXENS PROCESS
56	507-E-001 E	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	91.2 / FV	76 / FV	392	417	1675 X 6000	55 + 3	1710 X (84.5+5)	SA 387 GR 11 CL2 +SA240 GR.321 CLAD	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	205	84089	2010	EIL / U STAMP	AXENS PROCESS
57	507-E-003	1	HEML	RECYCLE GAS PREHEATER	DEU	92.1/FV	72/FV	327	371	1050 X 5500	52	1085 X 169	SA516 GR60	SA213 T 11	SA 336 F11 CL2	SA 336 F11 CL2	130	25515	2010	EIL / U STAMP	AXENS PROCESS
58	509-E-001 A	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	108	93.4	418	423	1675 X 6200	68	1710 X (108.5+5)	SA 387 GR 11 CL2	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	235	74930	2010	EIL / U STAMP	AXENS PROCESS
59	509-E-001 B	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	108	93.4	423	423	1675 X 6200	66 + 3	1710 X (108.5+5)	SA 387 GR 11 CL2 +SA240 GR.321 CLAD	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	235	74650	2010	EIL / U STAMP	AXENS PROCESS
60	509-E-001 C	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	108	93.4	423	424	1675 X 6200	66 + 3	1710 X (108.5+5)	SA 387 GR 11 CL2 +SA240 GR.321 CLAD	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	235	41878	2010	EIL / U STAMP	AXENS PROCESS
61	509-E-001 D	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	108	93.4	424	424	1675 X 6200	66 + 3	1710 X (108.5+5)	SA 387 GR 11 CL2 +SA240 GR.321 CLAD	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	235	41878	2010	EIL / U STAMP	AXENS PROCESS
62	509-E-001 E	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	108	93.4	424	437	1675 X 6200	66 + 3	1710 X (108.5+5)	SA 387 GR 11 CL2 +SA240 GR.321 CLAD	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	235	41878	2010	EIL / U STAMP	AXENS PROCESS
63	509-E-001 F	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	108	93.4	431	449	1675 X 6200	66 + 3	1710 X (108.5+5)	SA 387 GR 11 CL2 +SA240 GR.321 CLAD	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	235	41878	2010	EIL / U STAMP	AXENS PROCESS
64	509-E-001 G	1	HEML	REACTOR FEED / EFFULENT EXCHANGERS	DEU	108	93.4	431	449	1675 X 6200	66 + 3	1710 X (108.5+5)	SA 387 GR 11 CL2 +SA240 GR.321 CLAD	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +AISI 347 W.D.	235	76561	2010	EIL / U STAMP	AXENS PROCESS
65	509-E-002	1	HEML	1ST COLD LIQUID PREHEATER	DEU	68.2	88.6	406	418	1030 X 5250	52	1075 X (75.5+5)	SA516 GR60	SA213 TP 321	SA 965 F321	SA 336 F11 CL2 +SS347 WD	210	26178	2010	EIL / U STAMP	AXENS PROCESS



EXPERIENCE LIST FOR SCREW-PLUG HIGH PRESSURE HEAT EXCHANGERS



Sr. No.	Equipment Number	Qty	Client	Service	TEMA Type	Design Pressure (Kg/cm <sup>2</sup> g)		Design Temperature (DegC)		Size of Exchanger Shell ID x Tube Length (mm)	Shell THK (mm)	Channel ID x THK (mm)	Metallurgy				T/S Thk. (mm)	Empty Weight (Kgs)	Year	Inspection Agency	Process Licenser
						Shell	Tube	Shell	Tube				Shell	Tube	Tubesheet	Channel					
66	509-E-004	1	HEML	2ND COLD LIQUID PREHEATER	DEU	68.2	86.4 / FV	315	340	1125 X 4500	44	1170 X 84.5	SA516 GR60	SA179	SA266 GR4	SA266 GR 4	230	30760	2010	EIL / U STAMP	AXENS PROCESS
67	509-E-003 A	1	HEML	RECYCLE GAS PREHEATER	DEU	109.3/FV	87.9 / FV	327	393	1100 X 6000	62	1170 X 77.5	SA516 GR60	SA213 T11	SA 336 F11 CL2	SA336 F11 CL2	155	54270	2010	EIL / U STAMP	AXENS PROCESS
68	509-E-003 B	1	HEML	RECYCLE GAS PREHEATER	DEU	109.3/FV	87.9 / FV	389	409	1100 X 6000	52	1170 X 77.5	SA 387 GR 11 CL2	SA213 T11	SA 336 F11 CL2	SA336 F11 CL2	160	32132	2010	EIL / U STAMP	AXENS PROCESS
69	140-EE-001A	1	NOCL	REACTOR FEED/EFFLUENT EXCHANGER	DEU	108/FV @AMB	96/FV @AMB	205	290	1450 X 5938	64	1479 X 88.5	SA516 GR70	SA213 TP321	SA965 F321	SA336 F11 CL2+ AISI 347 W.D.	185	60500	2011*	TPI	CBI LUMMUS
70	140-EE-001B	1	NOCL	REACTOR FEED/EFFLUENT EXCHANGER	DEU	108/FV @AMB	96/FV @AMB	280	340	1450 X 5938	58+3	1479 X 88.5	SA387 GR11 CL2+ SA240 GR321 CLAD	SA213 TP321	SA965 F321	SA336 F11 CL2+ AISI 347 W.D.	185	59500	2011*	TPI	CBI LUMMUS
71	140-EE-001C	1	NOCL	REACTOR FEED/EFFLUENT EXCHANGER	DEU	108/FV @AMB	96/FV @AMB	330	375	1450 X 5938	58+3	1479 X 88.5	SA387 GR11 CL2+ SA240 GR321 CLAD	SA213 TP321	SA965 F321	SA336 F11 CL2+ AISI 347 W.D.	185	67500	2011*	TPI	CBI LUMMUS
72	140-EE-001D	1	NOCL	REACTOR FEED/EFFLUENT EXCHANGER	DEU	108/FV @AMB	96/FV @AMB	365	400	1450 X 5938	58+3	1479 X 88.5	SA387 GR11 CL2+ SA240 GR321 CLAD	SA213 TP321	SA965 F321	SA336 F11 CL2+ AISI 347 W.D.	185	67500	2011*	TPI	CBI LUMMUS
73	140-EE-002	1	NOCL	STRIPPER FEED PREHEATER	DEU	74.5/FV @AMB	96.5/FV @AMB	390/18	430/18	865 X 2850	32+3	894 X 84.5	SA516 GR70+ SA240 GR321 CLAD	SA213 TP321	SA965 F321	SA336 F11 CL2+ AISI 347 W.D.	195	17000	2011*	TPI	CBI LUMMUS
74	700-E-1002A-C	3	HPCL	EFFLUENT-RECYCLE GAS HOT EXCHANGER	DEU	98.5	124	180	180	950 x 5500	38+3	979x 69+5	SA387 GR11 CL2+ SA240 GR 321 CLAD	SA213 TP321	SA965 F321	SA336 F22 CL3+ AISI 347 W.D.	110	24	2011*	LRIS	-
75	700-E-1003AB	2	HPCL	EFFLUENT-FEED HOT EXCHANGER	DEU	97.5	178.6	180	350	1360 x 6000	48+3	1460+ 134+5	SA387 GR11 CL2+ SS 321 CLAD	SA213 TP321	SA965 F321	SA266 GR2+ SS347 WD	320	55	2011*	LRIS	-
76	700-E-1003CD	2	HPCL	EFFLUENT-FEED HOT EXCHANGER	DEU	97.5	178.6	180	350	1360 x 6000	48+3	1460+ 134+5	SA387 GR11 CL2+ SS 321 CLAD	SA213 TP321	SA965 F321	SA266 GR2+ SS347 WD	320	55	2011*	LRIS	-
77	700-E-1005A	1	HPCL	EFFLUENT FEED COLD EXCHANGER	DEU	95.5	178.6	180	253	1400 x 5500	50	1500 x 130+5	SA387 GR11 CL2	SA213 TP304L	SA336 F11 CL2+ SS304L WD	SA266 GR2+ SS347 WD	290	49.5	2011*	LRIS	-
78	700-E-1005BC	2	HPCL	EFFLUENT FEED COLD EXCHANGER	DEU	95.5	178.6	180	253	1400 x 5500	50	1500 x 130+5	SA387 GR11 CL2	SA213 TP304L	SA336 F11 CL2+ SS304L WD	SA266 GR2+ SS347 WD	290	49	2011*	LRIS	-
79	700-E-1006	1	HPCL	EFFLUENT RECYCLE GAS COLD EXCHANGER	DEU	94.5	131	180	186	1050 x 4877	42	1150 x 110	SA387 GR11 CL2	SA213 T11	SA336 F11 CL2	SA266 GR2	165	26	2011*	LRIS	-
<b>TOTAL</b>		<b>101</b>																			
* Completion in MID 2011																					
Set in Nozzles on channel in Sr. Nos. 1 to 18 and 24 to 73																					

# THE MOST EFFICIENT HEAT TRANSFER EQUIPMENT "THE HELIXCHANGER"

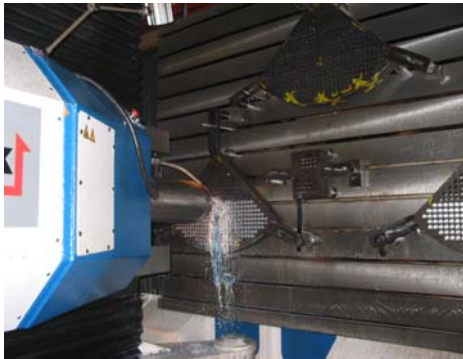


Tema India Ltd. have manufactured the largest and the most complicated "HELIXCHANGER" in the country and amongst the largest in the world with the technology from ABB Lummus.

This product shall serve all the Petroleum Refineries, Petrochemical, Fertilizers units and all other chemical units to increase the efficiency and bring down the cost of capital equipments drastically.

PREMACK INCLINED PLATE DRILLING MACHINE

More than 50 dignitaries from all over the country attended the Seminar presided by Bert Boxma of ABB a renowned expert in the field of Heat Transfer and C&MD of Tema India Ltd. Mr. H.K.Siddh



CLOSER VIEW OF PREMACK INCLINED PLATE DRILLING MACHINE



CLOSE LOOK AT HELIX BUNDLE WITH ALL FOUR SEGMENTS IN PLACE



WORLD'S LARGEST HORIZONTAL HELIX TUBE BUNDLE (5500 TUBES) IS READY



WORLD'S LARGEST HORIZONTAL HELIXCHANGER ON IT'S WAY TO RELIANCE HAZIRA



## EXPERIENCE LIST FOR HELIXCHANGERS



Sr.	Eqpt. No.	Qty.	Client	Service	TEMA Type	Design Pressure (Kg/cm2g)		Design Temp. °C		Metallurgy				Shell ID & thk (mm)	Tube Sheet Thk (mm)	Tube (Qty)	Tube to T/sht Joint	Helix Baffle Angle (Degree)	Empty Weight (Kgs)	Year of Mfr	TPI
						Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube								
1	E-201 (N)	1	RELIANCE HAZIRA	REACTOR FEED PRODUCT EXCHANGER (HELIXCHANGER)	BES (Special)	23	21.5	380	235	SA 516 GR70	SA516 GR70 +SS304L CLAD	SA266 GR4 +SS304L CLAD	SA312 TP 304L	2350 & 25	154	5558	EXP.	35 Double Helix	104000	2004	BVIS/RIL/UIL
2	ME-RF413-S109	1	RELIANCE JAMNAGAR	LCO FEED EXCHANGER	AES	11.8	52	282/7.5	237/7.5	SA 516 GR70	SA 516 GR70	SA266 GR2	SA179 (KILLED)	1040 & 14	116	650	STR WELD+LIGHT EXP.	9 Single Helix	23000	2005	BVIS
3	ME-RD311/312-S713A	2	RELIANCE JAMNAGAR	FLASHED CRUDE-HOT CIRCULATING HVGO EXCH.	AES	21.4	32	318/7.5	290/7.5	SA387 GR5 CL2	SA387 GR5 CL2	SA182 F5	SA268 TP410	1300 & 18	115	1092	STR WELD	11 Single Helix	27000	2005	BVIS
4	ME-RD311/312-S713B	2	RELIANCE JAMNAGAR	FLASHED CRUDE-HOT CIRCULATING HVGO EXCH.	AES	21.4	32	318/7.5	290/7.5	SA 516 GR70	SA 516 GR70	SA266 GR2	SA 213 T11	1300 & 18	113	1092	STR WELD	11 Single Helix	34000	2005	BVIS
5	ME-RD311/312-S714A	2	RELIANCE JAMNAGAR	FLASHED CRUDE-HOT CIRCULATING HVGO EXCH.	AES	21.4	32	356/7.5	206/235.6	SA387 GR5 CL2	SA387 GR5 CL2	SA182 F5	SA268 TP410	1300 & 18	115	1092	STR WELD	7 Single Helix	22000	2005	BVIS
6	ME-RD311/312-S714B	2	RELIANCE JAMNAGAR	FLASHED CRUDE-HOT CIRCULATING HVGO EXCH.	AES	8.7	23.5	328/241	206/235.6	SA 516 GR70	SA 516 GR70	SA266 GR2	SA 213 T5	1300 & 18	114	1092	STR WELD	7 Single Helix	26000	2005	BVIS
7	ME-RD311/312-S715A/B	4	RELIANCE JAMNAGAR	FLASHED CRUDE-HOT VACUUM RESIDUF EXCH.	AES	21.4	23.7	350/276.4	225/253.9	SA 516 GR70 + SS410S CLAD	SA 516 GR70	SA182F6a CL2	SA 268 TP410	1300 & 24+3	124	1092	STR WELD	9 Single Helix	30000	2005	BVIS
8	ME-RD311/312-S715A/B	2	RELIANCE JAMNAGAR	FLASHED CRUDE-HOT CIRCULATING HVGO EXCH.	AES	21.4	23.7	350/276.4	225/253.9	SA 516 GR70 + SS410S CLAD	SA 516 GR70	SA182F6a CL2	SA 268 TP410	1300 & 24+3	124	1092	STR WELD	30	2005	BVIS	
9	E-7120A/B	2	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AEU	25.4	7.0	150	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	965 & 14	106	444	EXP. TWO GROOVES	13 Single Helix	12300	2007	AI
10	E-7121	1	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AEU	6.2/FV	7.0	150	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1200 & 14	80	754	EXP. TWO GROOVES	9 Single Helix	19200	2007	AI
11	E-7124	1	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AEU	6.2/FV	7.0	150	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1118 & 14	80	636	EXP. TWO GROOVES	11 Single Helix	17000	2007	AI
12	E-7130 A/B/C	3	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AES	25.4/ FV	20/FV	165	150	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1000 & 16	85	999	SEAL WELDED	10 Single Helix	14000	2007	AI
13	E-7234A/B	2	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AEU	11.9	7.0	150	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	559 & 10	66	149	SEAL WELDED	10 Single Helix	4500	2007	AI
14	E-7341	1	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AEU	8.0 / FV	7.0	150	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	914 & 12	75	420	EXP. TWO GROOVES	9 Single Helix	12500	2007	AI
15	E-7345	1	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AEU	6.0 / FV	7.0	150	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1900 & 14	105	1962	EXP. TWO GROOVES	10 Single Helix	40000	2007	AI
16	E-8202 A/B	2	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AES	10.0 / FV	7.0 / FV	85	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1625 & 14	85	2646	EXP. TWO GROOVES	8 Single Helix	28000	2007	AI
17	E-8301	1	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	CES	37.2	37.2	350	392	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1016 & 20	145	1405	ST. WELD LT. EXP	8 Single Helix	36500	2007	AI
18	8302	1	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AES	37.2	27.6	88	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1200 & 22	120	1423	EXP. TWO GROOVES	8 Single Helix	21200	2007	AI



## EXPERIENCE LIST FOR HELIXCHANGERS



Sr.	Eqpt. No.	Qty.	Client	Service	TEMA Type	Design Pressure (Kg/cm2g)		Design Temp. °C		Metallurgy				Shell ID & thk (mm)	Tube Sheet	Tube (Qty)	Tube to T/sht Joint	Helix Baffle Angle (Degree)	Empty Weight (Kgs)	Year of Mfr	TPI
						Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube								
19	E-8405	1	CTCI / TITAN	BUTADIENE EXTRACTION PLANT	AEM	21.4	18.0	60	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1400 & 16	85	2626	EXP. TWO GROOVES	8 Single Helix	28200	2007	AI
20	ME-RDZ 311/312-S713A	2	RELIANCE JAMNAGAR	FLASHED CRUDE-SWEET VGO EXCHANGER	AES	32.0	40.2	335/7	290/7	SA387 GR5 CL1	SA387 GR5 CL1	SA182 F5	SA268 TP410	1300 & 22	130	1054	ST. WELD LT. EXP	10 Single Helix	32000	2007	TUV
21	ME-RDZ 311/312-S15A/B & ME-RDZ 311/312-S515A/B	8	RELIANCE JAMNAGAR	FLASHED CRUDE-HOT VACUUM RESIDUE EXCHANGER	AES	32.0	40.0	410/7	290/7	SA516 GR70+ SS410S CLAD	SA516 GR70	SA182 F6a CL1	SA268 TP410	1300 & (24+3)	130	1054	ST. WELD LT. EXP	8 Single Helix	34000	2007	TUV
22	ME-RDZ 311/312-S714B	2	RELIANCE JAMNAGAR	FLASHED CRUDE-HOT CIRCULATING HAGO EXCHANGER	AES	32.0	40.2	360/7	290/7	SA516 GR70	SA516 GR70	SA266 GR2	SA213 T5	1300 & 20	130	1054	ST. WELD LT. EXP	8 Single Helix	28500	2007	TUV
23	ME-RDZ 311/312-S713B	2	RELIANCE JAMNAGAR	FLASHED CRUDE SWEET VGO EXCHANGER	AES	32.0	40.2	335/7	290/7	SA516 GR70	SA516 GR70	SA266 GR2	SA213 T11	1300 & 20	130	1054	ST. WELD LT. EXP	10 Single Helix	36000	2007	TUV
24	ME-RDZ 311/312-S714A	2	RELIANCE JAMNAGAR	FLASHED CRUDE HOT CIRCULATING HAGO EXCHANGER	AES	32.0	40.2	360/7	240/7	SA387 GR5 CL1	SA387 GR5 CL1	SA182 F5	SA268 TP410	1300 & 24	130	1054	ST. WELD LT. EXP	8 Single Helix	26500	2007	TUV
25	ME-RDZ 311/312-S715A/B	4	RELIANCE JAMNAGAR	FLASHED CRUDE-HOT VACUUM RESIDUE EXCHANGER	AES	32.0	40.2	410/7	290/7	SA516 GR70+ SS410S CLAD	SA516 GR70	SA182 F6a CL1	SA268 TP410	1300 & (24+3)	130	1054	ST. WELD LT. EXP	8 Single Helix	34000	2007	TUV
26	3E-230 AR/BR/CR/DR	4	Haldia Petrochemicals	Solvent Heat Exchangers	AES	22.7 / FV	21.3	-20/180	-20/180	-	-	SA266 GR2	SA179	900	84	890	2 Groove Seal Weld with Heavy Expansion	14°	5900	2007	Bureau Veritas
27	2E-301AR	1	Haldia Petrochemicals	Charge gas compressor 1st Stage Aftercooler	Tube Bundle	3.7	10	120	70	-	-	SA266 GR4	SA179	1650	80	1820	2-Groove Heavy Expansion	18°	19500	2007	Bureau Veritas
28	2E-301BR	1	Haldia Petrochemicals	Charge gas compressor 1st Stage Aftercooler	Tube Bundle	3.7	10	120	70	-	-	SA266 GR4	SA179	1650	80	1820	2-Groove Heavy Expansion	18°	19500	2007	Bureau Veritas
29	2E-302R	1	Haldia Petrochemicals	Charge gas compressor 2nd Stage Aftercooler	Tube Bundle	6.4	10	120	70	-	-	SA266 GR4	SA179	2000	98	4392	2-Groove Heavy Expansion	18°	33500	2007	Bureau Veritas
30	2E-303N	1	Haldia Petrochemicals	Charge gas compressor 3rd Stage Aftercooler	AJ21S (H)	12	10	120	70	SA516 GR60	SA516 GR70	SA266 GR4	SA179	2000 & 14	110	3994	2-Groove Heavy Expansion	16°	33800	2007	Bureau Veritas
31	2E-304N	1	Haldia Petrochemicals	Charge gas compressor 4th Stage Aftercooler	AJS (H)	21.8	18.1	120	70	SA516 GR70	SA516 GR70	SA266 GR4	SA179	1750 & 18THK	120	3132	2-Groove Heavy Expansion	13°	47000	2007	Bureau Veritas
32	2E-305N	1	Haldia Petrochemicals	Charge gas compressor 5th Stage Aftercooler	AES (H)	41.3	37.4	120	70	SA516 GR70	SA516 GR70	SA266 GR4	SA179	1875 & 32THK	165	3540	2-Groove Heavy Expansion	16°	71000	2007	Bureau Veritas
33	2E-442AR	1	Haldia Petrochemicals	Depropanizer No.1 Condenser	AEM (H)	18.8	15.1	65	70	SA516 GR70	SA516 GR70	SA516 GR70	SA179	1450 & 14THK	83	2672	Strength Weld + Light Exp.	10°	28000	2007	Bureau Veritas
34	11-E-1401	1	IOCL Panipat	PGO/PFO Product Cooler	AES (H)	22.5	17.9	260	175	SA106 GRB	SA106 GRB	SA266 GR2	SA179	482.6 & 12.7	60	194	Strength Weld	8°	4100	2007	TUV
35	11-E-1501A-C	3	IOCL Panipat	Quench Water Cooler No.1	AES (H)	17.9	10.0	100	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	2170 & 18	140	4900	2-Groove Heavy Expansion	10°	67000	2007	TUV
36	11-E-1502 A-C	3	IOCL Panipat	Quench Water Cooler No.2	AES (H)	10.6	10.6	100	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1700 & 14	90	3200	2-Groove Heavy Expansion	10°	49000	2007	TUV



## EXPERIENCE LIST FOR HELIXCHANGERS



Sr.	Eqpt. No.	Qty.	Client	Service	TEMA Type	Design Pressure (Kg/cm2g)		Design Temp. °C		Metallurgy				Shell ID & thk (mm)	Tube Sheet	Tube (Qty)	Tube to T/sht Joint	Helix Baffle Angle (Degree)	Empty Weight (Kgs)	Year of Mfr	TPI
						Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube		Thk (mm)						
37	11-E-4803 A-D	4	IOCL Panipat	Propylene Fractionator Condensers	AEL (H)	22.4	10.0	65	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	2075 & 20	144	6168	2-Groove Heavy Expansion	18°	99000	2007	TUV
38	11-E-5002	1	IOCL Panipat	Debutanizer Condenser	AEM (H)	7.6	10.0	65	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1725 & 14	80	3835	2-Groove Heavy Expansion	16°	54000	2007	TUV
39	11-E-6501	1	IOCL Panipat	Ethylene Refrigerant Cooler	AEM (H)	31.5	10.0	90	65	SA516 GR70	SA516 GR70	SA266 GR2	SA179	1085 & 16	75	1092	2-Groove Heavy Expansion	16°	12600	2007	TUV
40	14-EE-00-101 A/B	2	BORL	FEED/HCGO PRODUCT EXCHANGER	AES	21.5	28	250	400	SA516 GR60	SA516 GR60+ SS 405 CLAD	SA266 GR4 SS405 CLAD	SA213 T9	750 & 12	80+10	317	STR WELD	11°	14640	2008	EIL
41	14-EE-00-102 A/B	2	BORL	FEED/HCGO PA EXCHANGER	AES	14	17	322	400	SA387 GR5 CL2	SA516 GR60+ SS 405 CLAD	SA336 F9	SA213 T9	1125 & 12	72	742	STR WELD	7°	29400	2008	EIL
42	14-EE-00-107 A/B/C/D	4	BORL	COMPRESSOR INTARSTAGE COOLER	AES	5.6	7.0	165	65	SA516 GR60	SA516 GR60	SA266 GR4	SA179	660.4 & 10	40	218	STR WELD	17°	18000	2008	EIL
43	E-21213A-D	4	PETRONAS	HSFO PRODUCT COOLER	AES	33.9	31.4	365	200	SA516Gr.60 + AISI410 CLAD	SA213 T5	SA336 Gr.F5	SA387 Gr.5 CL2	863 & 18 + 3	90	1380	-	6°	23104	2008	-

**TOTAL**                      **88**

# Products



Service : Reactor Feed Effluent  
 Type : DFU (Screw-Plug/Breech-Lock)  
 M.O.C. : SA336 F22 CL3+SS347 Clad  
 Wt. : 130 MT



Service : Process Gas Reheater  
 Type : NEN  
 M.O.C. : SA516 Gr70  
 Wt. : 105 MT



Service : Butadiene Extraction Plant  
 Type : AES, AEU, CES & AEM  
 M.O.C. : SA516 GR60+SA316L Clad  
 Wt. : 233MT



Service : Solvent Cooler  
 Type : BKM  
 M.O.C. : SA516 Gr60  
 Wt. : 76MT



Service : Gas-Gas Exchanger  
 Type : BEM  
 M.O.C. : SA387 GR11 Cl2  
 Wt. : 150 MT



Service : HTF Condenser  
 Type : NEN (V)  
 M.O.C. : SS316 L  
 Wt. : 35 MT  
 Tube Qty. : 7700



## EXPERIENCE LIST OF SUPER DUPLEX &amp; DUPLEX EXCHANGERS



Sr. No.	Eqpt. No.	Qty.	Client	Service	TEMA Type	Design Pressure kg/Cm <sup>2</sup>		Design Temp. (°C)		Metallurgy				Shell ID & thk (mm)	Tube Sheet thk (mm)	Tube (Qty) (Each)	TTJ	Empty Weight (Kg) (Each)	Year of Mfr	TPI
						Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube							
1	42-J-612 AC	1	CROLL REYNOLDS	AFTER CONDENSER	AES(H)	7.7/1.033	10	270	65	SA 516 Gr.70	SA 516 Gr.70	SA 516 GR.70 +S31803 CLAD	SA 789 S31803	339 x 10	30+10	282	STR WELD with LIGHT EXP.	1138	2008	TPI
2	42-J-612 1C	1	CROLL REYNOLDS	INTER CONDENSER	AES(H)	7.7/1.033	10	270	65	SA 516 Gr.70	SA 516 Gr.70	SA 516 GR.70 +S31803 CLAD	SA 789 S31803	539 x 10	36+10	92	STR WELD with LIGHT EXP.	2455	2008	TPI
3	42-J-622 AC	1	CROLL REYNOLDS	AFTER CONDENSER	AES(H)	7.7/1.033	10	270	65	SA 516 Gr.70	SA 266 Gr.4	SA 516 GR.70 +S31803 CLAD	SA 789 S31803	390 x 10	46+10	222	STR WELD with LIGHT EXP.	1293	2008	TPI
4	42-J-622 1C	1	CROLL REYNOLDS	INTER CONDENSER	AES(H)	7.7/1.033	10	270	65	SA 516 Gr.70	SA 266 Gr.4	SA 516 GR.70 +S31803 CLAD	SA 789 S31803	488 x 10	40+10	130	STR WELD with LIGHT EXP.	1821	2008	TPI
5	42-J-632 AC	1	CROLL REYNOLDS	AFTER CONDENSER	AES(H)	7.7/1.033	10	270	65	SA 516 Gr.70	SA 266 Gr.4	SA 516 GR.70 +S31803 CLAD	SA 789 S31803	307 x 10	30+10	280	STR WELD with LIGHT EXP.	837	2008	TPI
6	42-J-632 1C	1	CROLL REYNOLDS	INTER CONDENSER	AES(H)	7.7/1.033	10	270	65	SA 516 Gr.70	SA 266 Gr.4	SA 516 GR.70 +S31803 CLAD	SA 789 S31803	539 x 10	36+10	79	STR WELD with LIGHT EXP.	2309	2008	TPI
7	42-J-712 AC	1	CROLL REYNOLDS	AFTER CONDENSER	AES(H)	7.7/1.033	10	270	65	SA 516 Gr.70	SA 266 Gr.4	SA 516 GR.70 +S31803 CLAD	SA 789 S31803	339 x 10	40+10	276	STR WELD with LIGHT EXP.	1069	2008	TPI
8	42-J-712 1C	1	CROLL REYNOLDS	INTER CONDENSER	AES(H)	7.7/1.033	10	270	65	SA 516 Gr.70	SA 266 Gr.4	SA 516 GR.70 +S31803 CLAD	SA 789 S31803	539 x 10	36+10	81	STR WELD with LIGHT EXP.	2376	2008	TPI
9	18-EE-00-16 A/B/C/D	1	BORL	PROCESS GAS TRIM COOLER	AJS / H	27/-	21/-	160	65	SA 240 GR. 304L	SA 182 Gr. F51	SA 240 (S 31803)	SA 789 S31803	1042 & 14	80	574	Welded	-	2008	TPI
10	18-EE-00-18	1	BORL	BLOWDOWN TRIM COOLER	AEM / H	4.5	7	115	65	SA 240 GR. 304L	SA 182 F51	SA 240 (S31803)	SA 789 (S31803)	360 & 5	50	102	EXPANSION	1000	2008	TPI
11	31-E-37(N)	1	HPCL MUMBAI	LVGO COOLER-1	AES	21	16.2	144	65	SA516 GR60	SA516 GR60+SA240 S31803 CLAD	SA516 GR60 SA240 S31803 CLAD	SA789 S31803	950 & 14	63+10 CLAD	865	STR. WELD	10100	2006	EIL
12	31-E-38(N)	1	HPCL MUMBAI	LVGO COOLER-2	FSFS	21	16.2	144	65	SA516 GR60	SA516 GR60+SA240 S31803 CLAD	SA516 GR60 SA240 S31803 CLAD	SA789 S31803	1022 & 14	68+10 CLAD	948	STR. WELD	11500	2006	EIL
13	14-E-050 A/B/C/D	4	HPCL MUMBAI	WGC INTER STAGE CONDENSER	AES	10	8.5	150	65	SA516 GR60+SA240 GR304L CLAD	SA516 GR60+SA240 S32750 CLAD	SA240 S32750	SA789 S32750	1050 & 10+3 CLAD	50	1017	STR. WELD	25300 PER STACK	2006	EIL
14	14-E-3051A/B/C/D	4	HPCL MUMBAI	WGC AFTER COOLER	AES	21	16.2	150	65	SA516 GR60+SA240 GR304L CLAD	SA516 GR60+SA240 S32750 CLAD	SA240 S32750	SA789 S32750	1175 & 12.7+3 CLAD	75	1358	STR. WELD	36200 PER STACK	2006	EIL
15	14-E-3065	1	HPCL MUMBAI	HN. PA TRIM COOLER	AES	13.6	10.5	150	65	SA516 GR60	SA516 GR60+SA240 S31803 CLAD	SA516 GR60 SA240 S31803 CLAD	SA789 S31803	575 & 10	34+10 CLAD	300	STR. WELD	4500	2006	EIL
16	14-E-3066	1	HPCL MUMBAI	PR. ABS. INTER COOLER	AES	27	20.8	70	65	SA516 GR60	SA516 GR60+SA240 S31803 CLAD	SA516 GR60 SA240 S31803 CLAD	SA789 S31803	775 & 14	60+10 CLAD	550	STR. WELD	8500	2006	EIL
17	14-E-3068A/B	2	HPCL MUMBAI	SPARE PRODUCT COOLER	AES	18.9	14.6	145	65	SA516 GR60	SA516 GR60+SA240 S32750 CLAD	SA516 GR60+SA240 S32750 CLAD	SA789 S32750	500 & 10	32+10 CLAD	222	STR. WELD	7500 PER STACK	2006	EIL
18	14-E-3069 A-F	7	HPCL MUMBAI	MAIN FRACTIONATOR OVHD. TRIM COOLER	AES	6.6	8.5	150	65	SA516 GR60	SA516 GR60+SA240 S32750 CLAD	SA516 GR60+SA240 S32750 CLAD	SA789 S32750	1175 & 12.7	50+10 CLAD	1238	STR. WELD	31300 PER STACK	2006	EIL
19	14-E-3070 A-D	4	HPCL MUMBAI	SLURRY COOLER	AES	16.1	12.4	290	65	SA516 GR60	SA516 GR60+SA240 S32750 CLAD	SA516 GR60+SA240 S32750 CLAD	SA789 S32750	438.1 & 9.53	30+10 CLAD	166	STR. WELD	5900 PER STACK	2006	EIL
20	103-E-2018 A/B	2	HPCL MUMBAI	OFF GAS COOLER	AES	17	13	109/10	65	SA333 GR6	SA516 GR60+SA240 S31803 CLAD	SA516 GR60+SA240 S31803 CLAD	SA789 S31803	18"NB & 11.1	31+10 CLAD	154	STR. WELD	6000	2006	EIL
21	103-E-2021	1	HPCL MUMBAI	DRYERS REGENERATION TRIM COOLER	AES	18/FV	14	310	65	SA106 GRB	SA516 GR60+SA240 S31803 CLAD	SA516 GR60+SA240 S31803 CLAD	SA789 S31803	14"NB & 9.53	26+10 CLAD	80	STR. WELD	1900	2006	EIL
22	103-E-3001	1	HPCL MUMBAI	LP CONDENSATE COOLER	AES	14.3	11	120	65	SA106 GRB	SA516 GR60+SA240 S31803 CLAD	SA516 GR60+SA240 S31803 CLAD	SA789 S31803	12"NB & 8.38	30+10 CLAD	38	STR. WELD	1700	2006	EIL



## EXPERIENCE LIST OF SUPER DUPLEX &amp; DUPLEX EXCHANGERS



Sr. No.	Eqpt. No.	Qty.	Client	Service	TEMA Type	Design Pressure kg/Cm <sup>2</sup> g		Design Temp. (°C)		Metallurgy				Shell ID & thk (mm)	Tube Sheet	Tube (Qty) (Each)	TTJ	Empty Weight (Kg) (Each)	Year of Mfr	TPI
						Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube		thk (mm)					
																SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	16"NB SCH. STD.	26
23	14-E-53 A/B/C/D	4	HPCL VIZAG	PRODUCT HCO COOLER	AES	13.20	10.20	170.0	65.0	SA106 GRB	SA516 GR70+ SA240 S32750 CLAD	SA516 GR70+ SA240 S32750 CLAD	SA789 S32750	16"NB SCH. STD.	26	116	STR. WELD	4200 (PER STACK)	2006	EIL
24	14-E-59 A/B/C/D	4	HPCL VIZAG	PRODUCT CLO COOLER	AES	13.8	10.6	300	65	SA106 GRB	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	16"NB SCH. STD.	26	116	STR. WELD	4400 (PER STACK)	2006	EIL
25	15-E-51 A/B/C/D	4	HPCL VIZAG	INTER STAGE COOLER	AES	8.0	7.60	121.0	65.0	SA516 GR60	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	600 & 10	30+10	200	STR. WELD	8600 (PER STACK)	2006	EIL
26	15-E-52 A/B/C/D	4	HPCL VIZAG	INTER STAGE COOLER II	AES	8.0	7.60	121.0	65.0	SA516 GR60	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	600 & 10	30+10	200	STR. WELD	8600 (PER STACK)	2006	EIL
27	15-E-54 A/B	2	HPCL VIZAG	PRIMARY ABSORBER UPPER INTERCOOLER	AES	23.0	17.7	70.0	65.0	SA106 GRB	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	18"NB SCH. XS.	40+10	149	STR. WELD	3000 (PER SHELL)	2006	EIL
28	15-E-55 A/B	2	HPCL VIZAG	PRIMARY ABSORBER LOWER INTERCOOLER	AES	23.0	17.7	70.0	65.0	SA106 GRB	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	18"NB SCH. XS.	40+10	149	STR. WELD	3000 (PER SHELL)	2006	EIL
29	15-E-58 A/B	2	HPCL VIZAG	CONDENSATE WATER COOLER	AES	6.0	7.60	120.0	65.0	SA106 GRB	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	12"NB SCH. 30	25+10	74	STR. WELD	1000 (PER SHELL)	2006	EIL
30	15-E-59 A/B/C/D	4	HPCL VIZAG	DEBUTANISER BOTTOMS TRIM COOLER	AES	13.3	10.5	115.0	65.0	SA516 GR60	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	450 & 10	30+10	172	STR. WELD	5600 (PER STACK)	2006	EIL
31	14-E-54 A/B/C/D	4	HPCL VIZAG	PRODUCT LCO COOLER	AES	15.7	12.1	175.0	65.0	SA106 GRB	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	14"NB SCH. STD.	25+10	86	STR. WELD	3600 (PER STACK)	2006	EIL
32	14-E-55 A/B/C/D	4	HPCL VIZAG	MAIN COLUMN OVERHEAD CONDENSER	AES	6.0	7.6	215.0	65.0	SA516 GR60	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	1150 & 12.7	50+10	1248	STR. WELD	30000 (PER STACK)	2006	EIL
33	14-E-60 A/B	2	HPCL VIZAG	LCO PA COOLER	AES	10.80	8.30	160.0	65.0	SA106 GRB	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	14"NB SCH. STD.	25+10	72	STR. WELD	1100 (PER SHELL)	2006	EIL
34	14-E-62 A/B	2	HPCL VIZAG	HCO PA WATER COOLER	AES	13.1	10.1	200	65.0	SA106 GRB	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	14"NB SCH. STD.	25+10	72	STR. WELD	1100 (PER SHELL)	2006	EIL
35	15-E-53 A/B/C/D	4	HPCL VIZAG	COMPRESSOR AFTER COOLER	AES	17.6	13.5	90.0	65.0	SA516 GR60	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	925 & 12	60+10	794	STR. WELD	20000 (PER STACK)	2006	EIL
36	15-E-57 A/B	2	HPCL VIZAG	SPONGE OIL COOLER	AES	11.70	9.0	100.0	85.0	SA106 GRB	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	16"NB SCH. STD.	25+10	108	STR. WELD	2100 (PER SHELL)	2006	EIL
37	15-E-60 A/B	2	HPCL VIZAG	DEBUTANISER I OVHD. CONDENSER	AES	13.00	10.00	80.0	65.0	SA516 GR60	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	925 & 12	60+10	794	STR. WELD	9700 (PER SHELL)	2006	EIL
38	15-E-61 A/B	2	HPCL VIZAG	DEBUTANISER OVHD. COOLER	AES	31.8	24.5	65.0	65.0	SA106 GRB	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	16"NB SCH. STD.	40+10	112	STR. WELD	2300 (PER SHELL)	2006	EIL
39	15-E-64 A/B	2	HPCL VIZAG	DEBUTANISER II OVHD. CONDENSER	AES	12.80	10.0	80.0	65.0	SA516 GR60	SA516 GR60+ SA240 S32750 CLAD	SA516 GR60+ SA240 S32750 CLAD	SA789 S32750	1300 & 12.7	70+10	1625	STR. WELD	19200 (PER SHELL)	2006	EIL
40	31-E-37(N)	1	HPCL MUMBAI	LVGO COOLER-1	AES	21	16.2	144	65	SA516 GR60	SA516 GR60+ SA240 S31803 CLAD	SA516 GR60 SA240 S31803 CLAD	SA789 S31803	950 & 14	63+10 CLAD	865	STR. WELD	10100	2006	EIL
41	31-E-38(N)	1	HPCL MUMBAI	LVGO COOLER-2	FSFS	21	16.2	144	65	SA516 GR60	SA516 GR60+ SA240 S31803 CLAD	SA516 GR60 SA240 S31803 CLAD	SA789 S31803	1022 & 14	68+10 CLAD	948	STR. WELD	11500	2006	EIL
42	14-E-3050 A/B/C/D	4	HPCL MUMBAI	WGC INTER STAGE CONDENSER	AES	10	8.5	150	65	SA516 GR60+ SA240 GR304L CLAD	SA516 GR60+ SA240 S32750 CLAD	SA240 S32750	SA789 S32750	1050 & 10+3 CLAD	50	1017	STR. WELD	25300 PER STACK	2006	EIL
43	14-E-3051 A/B/C/D	4	HPCL MUMBAI	WGC AFTER COOLER	AES	21	16.2	150	65	SA516 GR60+ SA240 GR304L CLAD	SA516 GR60+ SA240 S32750 CLAD	SA240 S32750	SA789 S32750	1175 & 12.7+3 CLAD	75	1358	STR. WELD	36200 PER STACK	2006	EIL
44	14-E-3065	1	HPCL MUMBAI	HN. PA TRIM COOLER	AES	13.6	10.5	150	65	SA516 GR60	SA516 GR60+ SA240 S31803 CLAD	SA516 GR60 SA240 S31803 CLAD	SA789 S31803	575 & 10	34+10 CLAD	300	STR. WELD	4500	2006	EIL





TYPICAL EXPERIENCE LIST FOR LOW ALLOY STEEL HEAT EXCHANGERS



Sr. No.	Eqpt. No.	Qty.	Client	Service	TEMA Type	Design Pressure (Kg/cm2g)		Design Temp. °C		Metallurgy					Shell ID & thk (mm)	Tubesheet thk (mm)	Tube to T/S joint (Expanded / Welded)	Empty Weight (kg)	Year of completion	Third Party Inspection
						Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube	FL.HEAD						
1	14-EE-00-108	1	BORL	DEBUTANIZER REBOILER	AES (H)	18	17	225	360	SA516 Gr.60	SA 387 Gr.5 CL.2	SA 387 Gr.5 CL.2	SA 213 Gr.T5	SA 387 Gr.5 CL.2	750 & 12	55	EXP	13950.00	2008	EIL
2	CE-233B	1	BPCL	CRUDE / HGO CR EXCHANGER - I	AES (H)	41	31.5	291	320	SA516 Gr.60	SA387 Gr.11 CL1	SA336.F5	SA 213 T5	SA387 Gr5 CL.1	950 & 24	130	EXP	17500	2008	EIL
3	CE-245C	1	BPCL	CRUDE / VR QUENCH EXCHANGER-I	AES (H)	31.5	41	370	308	SA387 Gr.91 CL.2	SA387 Gr.5 CL.1	SA182F6a CL.2	SA268 TP410	SA240Gr.410S	950 & 16	140	EXP	15600	2008	EIL
4	CE-283	1	BPCL	CRUDE / VR EXCHANGER - IV	AES (H)	33.3	43.3	312	159	SA387 Gr11 CL.1	SA516 GR.60	SA336 Gr.F5	SA213 T5	SA387Gr5 CL.1	1075 & 22	150	EXP	23000	2008	EIL
5	CE-231 B	1	BPCL	CRUDE /HV (CR+PDT) EXCHANGER- V	AES (H)	31.5	41	316	266	SA387 Gr5 CL2	SA387 Gr5 CL2	SA336 Gr.F5	SA213 T5	SA387Gr5 CL.2	940 & 14	130	EXP	15500	2008	EIL
6	CE-232 C/D	2	BPCL	CRUDE / HGO EXCHANGER- II	AES (H)	31.5	41	300	252	SA387 Gr5 CL2	SA387 Gr5 CL2	SA336 Gr.F5	SA213 T5	SA387Gr5 CL.2	790 & 12.7	120	EXP	22000	2008	EIL
7	CE-234B	1	BPCL	CRUDE HVGO(CR+PDT) EXCHANGER -IV	AES (H)	41	31.5	302	327	SA387 Gr5 CL2	SA387 Gr5 CL2	SA336 F9	SA213 T9	SA387 Gr91	1080 & 20	110	EXP	22000	2008	EIL
8	CE-244B	1	BPCL	CRUDE HVGO(CR+PDT) EXCHANGER -I	AES (H)	31.5	41	327	290	SA387 Gr5 CL2	SA387 Gr5 CL2	SA336 F9	SA213 T9	SA387 Gr91	1125 & 16	115	EXP	22500	2008	EIL
9	14-EE-00-105	1	BROL	HGO PA / MP STEAM GENERATOR	AKT	22.00 FV	17	350	360	SA516 Gr.60	SA516 Gr.60 + SA240 Gr.405 CLAD	SA266Gr.4 + SA240 Gr.405 CLAD	SA 213 T9	SA266 Gr.4 + AISI 4105 W.D.	1400 & 20	115 & 10	Welded	32000	2008	EIL / IBR
10	11-EE-109 A / B	2	BROL	HVGO PDT / CRUDE EXCHANGER	AES(H)	54.6	71	350	286	SA387 GR5 CL2	SA516 GR60	SA336 GRF5	SA213 T5	SA336 GRF5	900 & 22	195	Welded	53500.00	2008	EIL
11	11-EE-109 C	1	BROL	HVGO PDT / CRUDE EXCHANGER	AES(H)	54.6	71	350	286	SA387 GR5 CL2	SA516 GR60	SA336 GRF5	SA213 T5	SA336 GRF5	900 & 22	195	Welded	26350	2008	EIL
12	EX057/ EX058	2	MOTIVA ENTERPRISES USA	IDW RX FEED/IDW RX EFFLUENT EXCHANGER	BEU	154.67	137.09	800/ 300	850/ 300	SA336 F22 CL3	SA336 F22 CL3	SA336 F22 CL3	SA213 T22	-	1244.6 & 80	146	Expansion & Seal Weld	85005'	2005	AI / JACOBS
13	EX059/ EX060	2	MOTIVA ENTERPRISES USA	RECYCLE GAS/IDW RX EFFLUENT EXCHANGER	BEU	152.9	135.7	700/ 300	800/ 300	SA336 F11 CL3	SA336 F11 CL3	SA336 F11 CL3	SA213 T11	-	927.1 & 58.8	146	Expansion & Seal Weld	73392	2005	AI / JACOBS
14	EX61	1	MOTIVA ENTERPRISES USA	RECYCLE GAS STAB.RX EFFLUENT EXCHANGER	BEU	152.9	133.58	600/ 300	750/ 300	SA336 F11 CL3	SA336 F11 CL3	SA336 F11 CL3	SA213 T11	-	1003 & 58.8	120.6	Expansion & Seal Weld	23905	2005	AI / JACOBS
15	132-E-254	1	BHARAT PETROLEUM CORPN.LTD.	REACTOR FEED/ EFFLUENT EXCHANGER	DFU	191.9	204.7	454	400	SA387GR 22 CL2+SS321 CLAD	SA336 F22 CL3+ SS347 WD	SA336 F321	SA213 TP321	-	650 & 54+3	67	Light Expn. & Strength Weld	13800	2005	TEIL/AI
16	11-E-200 A/B	2	Shell Oil Products USA	EFFLUENT / HYDROGEN PREHEATER	CET	94.93	82.27	398.89	435	SA384GR 11 CL1 + SS347 CLAD	SA384GR 22 CL1 + SS347 WD	SA182F347	SA213 TP347	SA 182F347	609.6 & 30 +3	171	Expansion & Strength Weld	11700	2004	AI
17	E-2060 R1	1	Shell Oil Products USA	FEED / REACTOR EFFLUENT EXCHANGER	BFU	56.56	72.08	410	382.2	SA384GR 11 CL1 + SS347 CLAD	SA 516 GR 70	SA182F11CL1 + SS347 WD	SA249 TP347	-	1372 & 35 +3	243	Expansion & Strength Weld	16173	2004	AI
18	E-2059 R1	1	Shell Oil Products USA	FEED / REACTOR EFFLUENT EXCHANGER	BFU	56.56	72.08	410	382.2	SA384GR 11 CL1 + SS347 CLAD	SA 516 GR70+ SS316L CLAD	SA182F11CL1 + SS347 WD	SA249 TP347	-	1372 & 35+3	230.19	Expansion & Strength Weld	33340	2004	AI
19	E-2058 R1	1	Shell Oil Products USA	HYDROGEN/REACTOR EFFLUENT EXCHANGER	CEU	66.8	56.25	20/ 755	20/ 775	SA387 GR11 CL-1	SA387 GR11 CL-1	SA182 F5	SA213 T9	-	1041 & 35	242	Expansion & Strength Weld	37500	2004	AI
20	701-E-220	2	IOCL, BARAUNI	DEBUTANIZER REBOILER	AHS(H)	17	13	225	318.5	SA 516 GR70	SA 387 GR 5 CL2	SA 387 GR 5 CL2	SA 213 GR T5	SA387 GR5 CL2	1300 & 14	93	Expanded	21369	2000	LRIS
21	03-EE-00-024 A/B	2	MRPL - II	DESATED CRUDE HVGO	AES(H)	25	22	190	310	SA 516 GR 60	SA 387 GR 5 CL2	SA 182 GR F6 CL2	SA 268 TP 410	SA 516 GR 60	1178 & 16	78	Welded	13500	1999	EIL
22	03-EE-00-025 A/B	2	MRPL - II	DESATED CRUDE LVGO	AES(H)	25	17	195	280	SA 516 GR 60	SA 516 GR 60	SA 336 GR 5	SA 199 GR T5	SA 516 GR 60	975 & 16	87	Welded	16500	1999	EIL





## EXPERIENCE LIST OF SHELL AND TUBE TYPE HEAT EXCHANGERS (SS)



SL. No.	Eqpt. No.	Client	Service	TEMA Type	Design Pressure (Kg/cm2g)		Design Temp. °C		Metallurgy					T/Sht. Thk. (mm)	Shell ID & Thk (mm)	Tube to T/S Joint (Expanded / Welded)	Empty Weight (Kgs)	Year Of Completion	Third Party Inspection
					Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube	FL.HEAD						
1	R-3106	KANORIA CHEMICALS	MAIN REACTOR	NEN (VERT)	3.5/-1	4.5/-1	350	350	SA240 Gr.304	SA240 Gr.304	SA213 TP304	SA213 TP304	-	50	4600 & 18	STR WELD	52700	In progress	UHDE/ KCIL
2	16-E-2410 AB	IOCL	LEAN-RICH AMINE EXCHANGER	AES(H)	8.9	25.5	120	150	SA240 Gr.304L	SA240 Gr.304L	SA336 CLF304L	SA213 TP304L	-	145	1150 & 10	Welded	26400	2008	TUV
3	16-E-2415	IOCL	AMINE REGENERATOR CONDENSER	AES(H)	3.5/FV	10	145	65	SA240 Gr.304L	SA240 Gr.304L	SA336 CLF304L	SA213 TP304L	-	120	1600 & 12	Welded	21130	2008	TUV
4	16-E-2413 AB	IOCL	AMINE REGENERATE REBOILER	AEM (V)	6.5/FV	5/FV	350	145	SA516 Gr.70	SA240 Gr.304L	SA516 Gr.70+ AISI304L	SA213 TP304L	-	74+8	2850 & 18	Welded	82500	2008	TUV/IBR
5	16-EE-00-506	BORL	LIGHT DIESEL STRIPPER	AES	16.8	12.9	387	279	SA516 Gr.60 + AISI 321 CLAD	SA516 Gr.60	SA336 F321	SA213 TP321	-	90	1125 & 12*3THK CLAD	Welded	15500	2008	EIL
6	16-EE-00-702	BORL	DHT FRAC FEED / BTMS EXCHANGER	AES (H)	15.3	19.9	282	335	SA516 Gr.60	SA516 Gr60 +SA240 Gr.410S CLAD	SA182 F6a CL1	SA268 TP 410	-	105	1225 & 14THK	Welded	20500	2008	EIL
7	42-E-223	IOCL	REGENERATOR EXTRACTION REBOILER	BEM (V)	5 / FV	5	167	141	SA516 Gr.70	SA240 Gr.304	SA266 Gr.2 + SS304 CLAD	SA213 TP304	-	65 (55+10)	1400 & 14THK	Expanded & Welded	16656	2008	SECL & TUV INDIA
8	42-E-531	IOCL	FIRST EFFECT REBOILER	BEL(V)	24.5 FV	13.8 FV	270	222	SA516 Gr.70	SA516 Gr.70 + SS304L CLAD	SA266 Gr.2 + SS304L CLAD	SA213 TP304L	-	145 (135+10)	2000 & 25THK	Welded	43993	2008	TUV INDIA & IBR
9	42-E-521	IOCL	FIRST STAGE REACTOR FEED HEATER	BEM	29.8 FV	38.7	150	146	SA516 Gr.70	SA240 Gr.304	SA266 Gr.2+ SA240 Gr.304L CLAD	SA213 TP304L	-	150 (140+10)	1100 & 18THK	Welded	17244	2008	TPI SECL TUV INDIA
10	42-E-310	IOCL	STRIPPING COLUMN REBOILER	BEL(V)	5 / FV	5 / FV	173	143	SA516 Gr.70	SA240 Gr.304	SA266 Gr.2+ SA240 Gr.304 CLAD	SA213 TP304	-	65 (55+10)	1500 & 14THK	Expanded & Welded	21375	2008	TUV SECL IBR
11	42-E-523	IOCL	THRID STAGE REACTOR FEED HEATER	BEM	29.8 FV	38.7	44.7	53.8	SA516 Gr.70	SA240 Gr.304	SA266 Gr.2+ SA240 Gr.304LCLAD	SA213 TP304L	-	140 (130+10)	1020 & 16THK	Welded	17700	2008	TUV SECL IBR
12	42-E-520 A/B	IOCL	REACTOR FEED PREHEATER	BFM	29.8	38.7	143	133	SA516 Gr.70	SA240 Gr.304	SA266 Gr.2+ SA240 Gr.304LCLAD	SA213 TP304L	-	177 (167+10)	1120 & 25THK	Welded	32524	2008	SECL & TUV INDIA
13	11-EE-132 A/B	BORL	VE-QUENCH/CRUDE-III EXCHANGER	AES(H)	71	54.6	324	365	SA516 GR60+ SA240 GR410S CLAD	SA516 GR60+ SA240 GR410S CLAD	SA182 F6a CL1	SA268 TP410	-	260	1230& (45+3)	Welded	57000	2008	EIL
14	2E-1316	TOYO MCC PTA HALDIA	2R-1311 6TH CONSENSER	BEM	0.8	1.9	70	95	SA516 GR70	SA240 GR316L	SA266 GR4+ SS316L CLAD	SA249 GR TP316L	-	120+5	1670 & 14THK	Welded	31000	2007	TEIL/ MCPI
15	2E-1522A/B	TOYO MCC PTA HALDIA	2T-1521 1ST CONDENSER	BEM	0.18	0.09/FV	115	100	SA240 GR304	SA516 GR70	SA336 GR F304	SA249 GR304	-	80	2900 & 10THK	2-GROOVE ROLLER EXP.	102000	2007	TEIL / MCPI
16	2E-2221	TOYO MCC PTA HALDIA	1ST SLURRY HEATER	BEM	0.5	11.8	160	140	SA240 GR304	SA240 GR304L	SA336 GR F304	SA213 TP304L	-	355	1010 & 8THK	2-GROOVE ROLLER EXP.	24600	2007	TEIL / MCPI
17	2E-2511	TOYO MCC PTA HALDIA	2V-2511 CONDENSER	BKM	0.09/FV	0.25	100	125	SA516 GR70	SA516 GR70	SA336 GR F321	SA249 TP304	-	66	3200 & 14THK	2-GROOVE ROLLER EXP.	60265	2007	TEIL / MCPI
18	2E-2512	TOYO MCC PTA HALDIA	2V-2512 1ST CONDENSER	BEM	0.8	0.18/FV	70	115	SA516 GR70	SA240 GR304	SA336 GR F321	SA249 TP304	-	95	1700 & 14THK	2-GROOVE ROLLER EXP.	28300	2007	TEIL / MCPI
19	26-E-103A/B	IOCL PANIPAT	Quench Water Trim Cooler	AES	9.6	14.4/FV @150°C	65.0	150.0	SA516 GR60	SA240 GR316L	SA336 GRF316L	SA213 TP316L	-	92	1400 & 12.7THK	STRENGTH WELD+LIGHT EXPANSION	45500	2007	TUV
20	49-E-302	UHDE SAFCO	METHANOL VAPORISER	NEN (V)	4.6	4.6	340	300	SA240 GR 304	SA240 GR 304	SA240 GR 304	SA213 TP304	-	50	1600 & 8THK	STR WELD	14500	2005	SAFCO/UHD E/ TUV
21	11-EVL-102A/B, 21-EVL-102 A/B	OMIFCO	M.P.DECOMPOSER	FIXED TUBESH EET	28	23	234	190	SA 516 GR 70 + SS 316L CLAD	---	SA 266 GR 2 + SS 316 L WD	SA 213 TP 316L	---	169	2300 & 22THK	Welded	52000	2004	Technip
22	11-E-104/ 21-E-104	OMIFCO	VACCUM PRECONCENTRATOR	FIXED TUBESH EET	23	2	165	132	SA 240 GR 316L	---	SA182 GR F 316 L	SA 213 TP 316L	---	164	2189 & 30THK	Welded	39000	2004	Technip



## EXPERIENCE LIST OF SHELL AND TUBE TYPE HEAT EXCHANGERS (SS)



SL. No.	Eqpt. No.	Client	Service	TEMA Type	Design Pressure (Kg/cm <sup>2</sup> g)		Design Temp. °C		Metallurgy					T/Sht. Thk. (mm)	Shell ID & Thk (mm)	Tube to T/S Joint (Expanded / Welded)	Empty Weight (Kgs)	Year Of Completion	Third Party Inspection
					Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube	FL.HEAD						
23	11-EVL-103/ 21-EVL-103	OMIFCO	L.P.DECOMPOSER	BEU	6	6	185	180	SA 516 GR 70	---	SA182 GR F 316 L	SA 213 TP 316L	---	76	1600 & 14THK	Welded	20000	2004	Technip
24	11-E-109/ 21-E-109	OMIFCO	AMMONIA CONDENSER	NEN	23	9	-33 & 110	60	SA 240 GR 304	SA 516 GR 70	SA 182 GR F 304L	SA 213 TP 304L	---	120	1580 & 14THK	Welded	46000	2004	Technip
25	04-E-063 A/B	HPCL VISHAKH	COMPRESSOR INTERCOOLER	AJS(H)	10	10	150	65	SA 516 GR 60 + SA 240 GR 304L	SA 516 GR 60	SA 240 GR 316L	SA 789 UNS No. S31803	SA 516 GR 60 + SA 240 GR 304L	75	1350 & 10+3THK	Welded	44000	2003	EIL
26	04-E-064 A/B	HPCL VISHAKH	COMPRESSOR AFTERCOOLER	AJS(H)	19	12.7	150	65	SA 516 GR 60 + SA 240 GR 304L	SA 516 GR 60	SA 182 GR 316L	SA 789 UNS No. S31803	SA 516 GR 60 + SA 240 GR 304L	91	1200 & 12+3THK	Welded	19000	2003	EIL
27	13-EE-00-001	MRPL - II	RESTRIPPER REBOILER	BKU(H)	4.3	10	180	225	SA 516 GR 60	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 316L	SA 213 TP 316L	--	73+10	1600 & 16THK	Welded	15200	2003	EIL
28	18-EE-00-007	MRPL - II	2nd STAGE COL.REBOILER	BKU(H)	3.5	10	182	225	SA 516 GR 60	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 316L	SA 213 TP 316L	--	70+10	1550 & 16THK	Welded	15000	2003	EIL
29	27-EE-00-001	MRPL - II	RICH/LEAN AMINE EXCHANGER	AES(H)	7	10.5	150	115	SA 516 GR.60	SA 516 GR 60 + SA 240 GR 304L	SA 516 GR 60 + SA 240 GR 304L	SA 213 TP 304L	SA 516 GR 60 + SA 240 GR 304L	70+12	1300 & 12THK	Welded	26500	2003	EIL
30	27-EE-00-002	MRPL - II	AMINE REG. CONDENSOR	AEL(H)	6	9	150	185	SA 516 GR 60 + SA 240 GR 304L	SA 516 GR 60 + SA 240 GR 304L	SA 516 GR 60 + SA 240 GR 304L	SA 213 TP 316L	--	88	1100 & 10+3THK	Welded	14800	2003	EIL
31	27-EE-00-003 A/B	MRPL - II	AMINE REGN. REBOILER	BKU(H)	4.5	10	150	225	SA 516 GR 60	SA 516 GR 60	SA 266 CL2+SS316	SA 213 TP 316L	--	82+10	1950 & 14THK	Welded	22000	2003	EIL
32	27-EE-00-004 A/B	MRPL - II	LEAN AMINE COOLER	AES(H)	6	9	150	65	SA 516 GR 60	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 316L	SA 213 TP 316L	SA 516 GR 60 + SA 240 GR 316L	59+10	1250 & 12THK	Welded	25900	2003	EIL
33	03-EE-BU-003A/B	MRPL - II	NAPHTA STABILIZER REBOILER	AHS(H)	15	17	235	330	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 410S	SA 516 GR 60 + SA 240 GR 304L	SA 268 TP 410	SA 516 GR 60 + SA 240 GR 410	88	1120 & 14THK	Welded	15850	2003	EIL
34	03-EE-BU-012 A/B	MRPL - II	KERO REBOILER	AHS(H)	5.2	22	275	325	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 410S	SA 240 GR 410S	SA 268 TP 410	SA 516 GR 60 + SA 240 GR 410	98	1180 & 12THK	Welded	19500	2003	EIL
35	03-EE-BU-032	MRPL - II	CRUDE / HGO CR EXCHANGER	AES(H)	44	17	265	330	SA 516 GR 60	SA 387 GR 5 CL2	SA 516 GR 60 + SA 240 GR 410S	SA 268 TP 410	SA 387 GR 5 CL2	109+10	930 & 25THK	Welded	18500	2003	EIL
36	701-E-209 A/B	IOCL BARAUNJ	SLURRY PUMPAROUND STEAM GENERATOR	AKT(H)	44	30	260	368.5	SA 516 GR 70	SA 516 GR 70 + SA240 GR 304L	SA 516 GR 70 + SA240 GR 304L	SA 213 TP304L	--	144	1800 & 36THK	Welded	33053	2000	LRIS & SHELL SIDE IBR
37	04-E-064 A/B	HPCL VISHAKH	COMPRESSOR AFTERCOOLER	AJS(H)	19	12.7	150	65	SA 516 GR 60 + SA 240 GR 304L	SA 516 GR 60	SA 182 GR 316L	SA 789 UNS No. S31803	--	91	1200 & 12 + 3THK	Welded	19000	1999	EIL
38	13-EE-00-001	MRPL - II	RESTRIPPER REBOILER	BKU(H)	4.3	10	180	225	SA 516 GR 60	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 316L	SA 213 TP 316L	--	83	1600 & 16THK	Welded	15200	1999	EIL
39	18-EE-00-007	MRPL - II	2nd STAGE COL.REBOILER	BKU(H)	3.5	10	182	225	SA 516 GR 60	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 316L	SA 213 TP 316L	--	80	1550 & 16THK	Welded	15000	1999	EIL
40	27-EE-00-001	MRPL - II	RICH/LEAN AMINE EXCHANGER	AES(H)	7	10.5	150	115	SA 516 GR.60	SA 516 GR 60 + SA 240 GR 304L	SA 516 GR 60 + SA 240 GR 304L	SA 213 TP 304L	--	82	1300 & 12THK	Welded	26500	1999	EIL
41	27-EE-00-002	MRPL - II	AMINE REG. CONDENSOR	AEL(H)	6	9	150	185	SA 516 GR 60 + SA 240 GR 304L	SA 516 GR 60 + SA 240 GR 304L	SA 516 GR 60 + SA 240 GR 304L	SA 213 TP 316L	--	88	1100 & 10+3THK	Welded	14800	1999	EIL
42	27-EE-00-003 A/B	MRPL - II	AMINE REGN. REBOILER	BKU(H)	4.5	10	150	225	SA 516 GR 60	SA 516 GR 60	SA 266 CL2+SS316	SA 213 TP 316L	--	92	1950 & 14THK	Welded	22000	1999	EIL
43	27-EE-00-004 A/B	MRPL - II	LEAN AMINE COOLER	AES(H)	6	9	150	65	SA 516 GR 60	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 316L	SA 213 TP 316L	--	69	1250 & 12THK	Welded	25900	1999	EIL
44	03-EE-BU-003A/B	MRPL - II	NAPHTA STABILIZER REBOILER	AHS(H)	15	17	235	330	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 410S	SA 516 GR 60 + SA 240 GR 304L	SA 268 TP 410	--	88	1120 & 14THK	Welded	15850	1999	EIL



## EXPERIENCE LIST OF SHELL AND TUBE TYPE HEAT EXCHANGERS (SS)



SL. No.	Eqpt. No.	Client	Service	TEMA Type	Design Pressure (Kg/cm2g)		Design Temp. °C		Metallurgy					T/Sht. Thk. (mm)	Shell ID & Thk (mm)	Tube to T/S Joint (Expanded / Welded)	Empty Weight (Kgs)	Year Of Completion	Third Party Inspection
					Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube	FL.HEAD						
45	03-EE-BU-012 A/B	MRPL - II	KERO REBOILER	AHS(H)	5.2	22	275	325	SA 516 GR 60	SA 516 GR 60 + SA 240 GR 410S	SA 240 GR 410S	SA 268 TP 410	--	98	1180 & 12THK	Welded	19500	1999	EIL
46	03-EE-BU-032	MRPL - II	CRUDE / HGO CR EXCHANGER	AES(H)	44	17	265	330	SA 516 GR 60	SA 387 GR 5 CL2	SA 516 GR 60 + SA 240 GR 410S	SA 268 TP 410	--	119	930 & 25THK	Welded	18500	1999	EIL



## EXPERIENCE LIST OF GAS -GAS EXCHANGERS



Sr	Eqpt. No.	Qty	Client	Service	TEMA Type	Design Pressure kg/Cm2g		Design Temp. (°C)		Metallurgy				Shell ID	Tube Sheet	Tube Details	TUBE TO TUBE SHEET JOINT	Unit Empty Weight (Kgs)	Year of Mfr	THIRD PARTY INSPECTION
						Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube		thk (mm)					
1	E-41111	1	CTCI/ SAUDI KAYAN	Gas-Gas Exchanger (Reactor)	BEM (V)	23.8	23.8	267	230	SA240 GR304	SA240 GR304	SA240 GR304	SA213 TP304	3600	90	OD 15.875 Length-11000 Qty-13370	Roller Exp.	178000	2007	U-Stamp
2	E-41121	1	CTCI/ SAUDI KAYAN	Gas-Gas Exchanger (Reactor)	BEM (V)	23.8	23.8	267	230	SA240 GR304	SA240 GR304	SA240 GR304	SA213 TP304	3600	90	OD 15.875 Length-11000 Qty-13370	Roller Exp.	178000	2007	U-Stamp



## EXPERIENCE LIST OF ROD BAFFLE EXCHANGER



Sr	Eqpt. No.	Qty	Client	Service	TEMA Type	Design Pressure kg/Cm2g		Design Temp. (°C)		Metallurgy				Shell ID	Tube Sheet	Tube Details	TUBE TO TUBE SHEET JOINT	Unit Empty Weight (Kgs)	Year of Mfr	THIRD PARTY INSPECTION
						Shell	Tube	Shell	Tube	Shell	Channel	Tubesheet	Tube		thk (mm)					
1	E-117A/B	2	CTCI/ SAUDI KAYAN	Carbonate Feed/ Effluent Exchanger (Rod Baffle)	NEN (H)	38.75	28.55	149	139	SA240 GR304	SA240 GR304	SA240 GR304	SA213 TP304	1500	190	OD 19.05 Length-16300 Qty-2499	Str Weld	15000	2007	U-Stamp



## Experience List for Cu-Ni / Monel / Inconel Heat Exchangers



Sr. No.	Eqpt. No.	Client	Service	TEMA Type	Design Pressure (Kg/cm2g)		Metallurgy				Shell ID & thk (mm)	T/SHT THK	Tube ODx Length x Nos. & Tube to T/S joint	Empty Weight (kgs)	Inspection
					Shell	Tube	Shell	Tube	T/SHT	Channel					
1	701-E-216 A/B	IOCL, Barauni	HP SEPARATOR CONDENSER	AES(H)	21	14	SA 516 GR 60	SB 163 UNS NO4400	SB 564 UNS NO4400	SA 516 GR 70	1300 & 20	96	20 x 6000 mm 1503 & STRENGTH WELD	22828	LRIL
2	12 - E -7D	HPCL, Vizag	VACUUM OVHD. CONDENSOR	AES(H)	1.5 & FV	5	SA 516 GR 60	SB 111 C71500	SA 266 CL 2 + SB 111 C71500	SA 516 GR 60 + MONEL LINER	880 + 12	45 + 10	20 x 6000, 617 & EXPANDED	13700	EIL
3	11-E-17 A/B/C/D	HPCL, Vizag	INTER COOLER	AES(H)	4.8	5	-	SB 338 GR 2	SB 171 C63000	-	1065 & 18	50	20 x 6000, 619 & EXPANDED	2250	EIL
4	11-E-20 A/B/C/D	HPCL, Vizag	FIRST STAGE CONDENSOR	AES(H)	14	5	-	SB 338 GR 2	SB 171 C63000	-	1600 & 14	65	20 x 6000, 500 & EXPANDED	4752	EIL
5	74 - E -06	HPCL, Vizag	STRIPPED WATER COOLER	AES(H)	12	14.5	SA 516 GR 60	SB - 111 C 70600	SB - 171 C70600	SA 516 GR 70 + SB 127 UNS NO 4400	700 & 12	50	20 x 5000, 604 & WELDED	7500	EIL
6	42-E-31 A/B/C	HPCL, Vizag	OVHD. CONDENSOR	AES(H)	5	7.6	SA 516 GR 60 + SB 127 UNS. N04400	SB 111 C71500	SB 171 C71500	SA 516 GR.60 + SB 171 C71500	960 & (10+3)	52	20 X 6000, 830 & EXPANDED	11025	EIL
7	42-E-33 A/B	HPCL, Vizag	ETHANE CONDENSOR	AES(H)	15	10	SA 516 GR.60	SB 111 C71500	SB 171 C71500	SA 516 GR.60 + SB 171 C71500	925 & 12	69	20 x 6000, 760 & EXPANDED	9100	EIL
8	E-206 A/B	HPCL, Mumbai	NMP WATER CONDENSOR	AES(H)	3.9	7.03	SA 516 GR 70	SB 338 GR 2	SA 266 CL 2 + Monel Weld Deposit	SA 516 GR 70 + SB 127 UNS No 4400	817 & 14	43 +8	19.05 x 2438, 668 & EXPANDED	3500	BVIS
9	E-3206 A/B	HPCL, Mumbai	NMP WATER CONDENSOR	AES(H)	3.9	7.03	SA 516 GR 70	SB 338 GR 2	SA 266 CL 2 + Monel Weld Deposit	SA 516 GR 70 + SB 127 UNS No 4400	817 & 14	43 +8	19.05 x 2438, 668 & EXPANDED	3500	BVIS
10	E- 308 G/H	HPCL, Mumbai	DRY PROPANE CONDENSOR	AES(H)	18.63	7	SA 516 GR 60	SB - 111 C71500	SB - 171 C46400	SA 516 GR 70 + SB 127 UNS No 4400	770 & 12	64	20 x 5000, 604 & EXPANDED	6000	EIL
11	74 - E -06	HPCL	STRIPPED WATER COOLER	AES(H)	12	14.5	SA 516 GR 60	SB - 111 C 70600	SB - 171 C 70600	SA 516 GR 70 + SB 127 UNS No 4400	700 & 12	50	EXPANDED	7500	EIL
12	2112-E-03 AB	IOCL	NAPHTHA SPLITTER 1 BOTTOMS COOLER	AES	20.80/1.03	16.0/0.175	SA516 Gr.60	SB 111 C44300 CLS. 061	SB 171 C46400 CLS.025	SA516 Gr.60	750 & 12	114	20 x 3000,740 &WELD	6904	TPI
13	2112-E-09	IOCL	FCC HEART CUT NAPHTHA SPLITTER NET OVERHEAD COOLER	AES	13/1.033	10.0/0.175	SA516 Gr.60	SB 111C44300 CLS.025	SB 171 C44300 CLS.025	SA516 Gr.60	600 & 10	64	20 x 4000,290 & EXPANDED	3620	TPI



## Experience List for Cu-Ni / Monel / Inconel Heat Exchangers



Sr. No.	Eqpt. No.	Client	Service	TEMA Type	Design Pressure (Kg/cm2g)		Metallurgy				Shell ID & thk (mm)	T/SHT THK	Tube ODx Length x Nos. & Tube to T/S joint	Empty Weight (kgs)	Inspection
					Shell	Tube	Shell	Tube	T/SHT	Channel					
14	2112-E-11 C	IOCL	NHT COLD COMBINED FEED EXCHANGER	BEU	42/1.035	54.5/1.035	SA 516 Gr.60+ALLOY 625 CLAD.	SB 444 (UNS-06625)	SB 443 (UNS-06625)	SA 516 GR.60	600 & 14	90	20 x 4000,143"U" & EXPANDED	5870	TPI
15	2112-E-14	IOCL	NHT STRIPPER OVERHEAD CONDENSER	AEU	15.5/1.033	12/0.54	SA516 Gr.60	SB111 C44300 CLS 06	SB171 C46400 CLS025	SA516 Gr.60	600 & 12	77	20 x 6000,142"U"	4050	TPI
16	2112-E-15	IOCL	NHT STRIPPER BOTTOMS COOLER	AEU	15.5/1.03	12.0/0.18	SA516 Gr.60	SB111 C44300	SB171 C46400	SA516 Gr.60	650 & 10	76	20 x 6000,177 & EXPANDED	4539	TPI
17	2112-E-07	IOCL	FCC HEART CUT NAPHTHA SPLITTER BOTTOMS COOLER	AES	17/1.03	3.10/0.1	SA 106 GR. ` B'	SB111 C44300 CLS-061	SB 171 C46400 CLS.025	SA 106 GR. ` B'	303 & 10	58	20 x 5000,54 & EXPANDED	1059	TPI
18	2113-E-11 AB	IOCL	STABILIZER CONDENSER	AEU	18/1.033	14/0.175	SA516 Gr.60	SB111	SB171	SA516 Gr.60	550 & 12	78	20 x 5000,117 & EXPANDED	3266	TPI
19	2113-E-13	IOCL	LPG COOLER	AES	23.5	8.5/0.17	SA 106 Gr.B	SB 111-C44300 CLS 06	SB 171 C46400 CLS 025	SA 106 Gr.B	323 & 10	48	20 x 5000,17 & EXPANDED	660	TPI
20	2113-E-16	IOCL	DEISOHEXANIZER BOTTOMS COOLER	AES	14/1.033	11/0.175	SA516 Gr.60	SB 111-C44300 CLS 06	SB 171 C46400 CLS 025	SA516 Gr.60	500 & 10	62	20 x 5000,242 & EXPANDED	2946	TPI
21	2113-E-17	IOCL	DEISOHEXANIZER SIDE DRAW TRIM COOLER	AEU	7.0/1.3	13.5	SA516 Gr.60	SB 111-C44300 CLS 06	SB 171 C71500 CL.025	SA516 Gr.60	450 & 10	61	20 x 6000,79"U" & EXPANDED	2409	TPI
22	2113-E-20	IOCL	ISOMERATE COOLER	AEU	7.5/1.03	13.5	SA516 Gr.60	SB 111-C71500	SB 171 C71500	SA516 Gr.60	400 & 10	57	20 x 6000,58"U" & EXPANDED	1928	TPI
23	2112-E-19	IOCL	NAPHTHA SPLITTER 2 BOTTOMS COOLER	AES(H)	3.0/1.3	10/0.175	SA516 Gr.60	SB 111-C44300 CLS 061	SB 171 C46400 CLS 025	SA516 Gr.60	686 & 10	65	20 x 5000,308 & EXPANDED	3681	TPI
24	201-E-151 A/B/C	CPCL	DESALTING WATER BRINE EXCHANGER	AES(H)	22.2	18.3	SA 516 Gr.60	SB 111 C 44 300	SB171 C46400	SA 516 Gr.60	700 & 20	126	25 x 6000, 262 & EXPANDED	25000	EIL