01.	**Item**	**Set of Cold end Basketed heating elements for 34 Size APH - Non-Enamelled.**
02.	**Application :** Heating element Baskets are the heat transfer surfaces in Rotary Regenerative air preheater used in coal fired Boiler. Air preheater is located after DeNox SCR system in the Boiler.	
03.	**Basket Arrangement, Dimensions & Set detail**	Please refer page 04 of 04. Number of baskets per module is indicated in the sketch. 24 Modules are required for one Air preheater and it is equal to one set.
04.	**Element depth**	1000 mm. Tolerance +0.0,-1.5
05.	**Basket height**	Element Depth 1080 mm. Tolerance: +0.0, -2.0
06.	**Element configuration**	High efficient closed channel cold end profile like DNF / HC or equivalent suitable for APH located after DeNox SCR system. NF and DU profiles are not acceptable.
07.	**Element thickness**	1.2mm. Tolerance: +0.07, -0.0
08.	**Element material**	Low alloy corrosion resistance steel as per ASTM A606 Type 4 Cold rolled (with Cast analysis Carbon 0.12max, Mn 0.2-0.5, Si 0.25-0.75, P 0.07-0.15, S 0.04max, Cu 0.25-0.55, Cr 0.35-1.25 & Ni 0.065max) or Equivalent Standard.
09.	**Basket material & design**	Low alloy corrosion resistance steel as per ASTM A 588 Gr A or Equivalent. Basket design shall be suitable for side removal by pulling. minimum thickness of basket - 5mm, End plates minimum width - 125mm, minimum 1 Holding bar for A2, B & E2 baskets and 2 Holding bars for other baskets.
10.	**General :** a) The Vendor must provide data sheet with element profile name, element thickness with Tolerance, material standard with grade, drawing with dimensions including typical basket details, weight of each type of basket, total weight, and other pertinent information along with offer. b) Vendor to offer cold end elements for 34 size BHEL APH with inner and outer radius of baskets as 1625mm & 8185mm respectively. RPM of rotor is 1.2. Ammonia slip is 2 ppm. SO_3 conversion at SCR may be taken as 1.5%. Vendor to indicate the minimum metal temperature at the top of Cold end layer for all the load conditions given in page no 2. c) Vendor to provide the APH performance for all conditions furnished in page no.2 d) Vendor shall submit the Quality plan along with offer. e) Polythene sheet (thickness more than 20 microns) shall be wrapped over the Baskets and shipped in wooden crates / steel crates. Basket names shall be indicated in baskets and crates by painting/tags. Suitable corrosion prevention coating shall be applied over element surfaces as per vendor's practice before packing. f) Seaworthy packing shall be considered in case of supply from overseas. g) Material as per Chinese standard is not acceptable.	
11.	**Inspection**	a) By BHEL inspector at vendor's works. b) Necessary test & Guarantee certificate shall be submitted.

Rev.No	Date	Prepared	Checked	Approved	Record of Revisions.
01	21-12-19				Cl 7,8,9,10&datasheet updated.
00	03-02-18	SCH	RSB	RSB	FRESH ISSUE

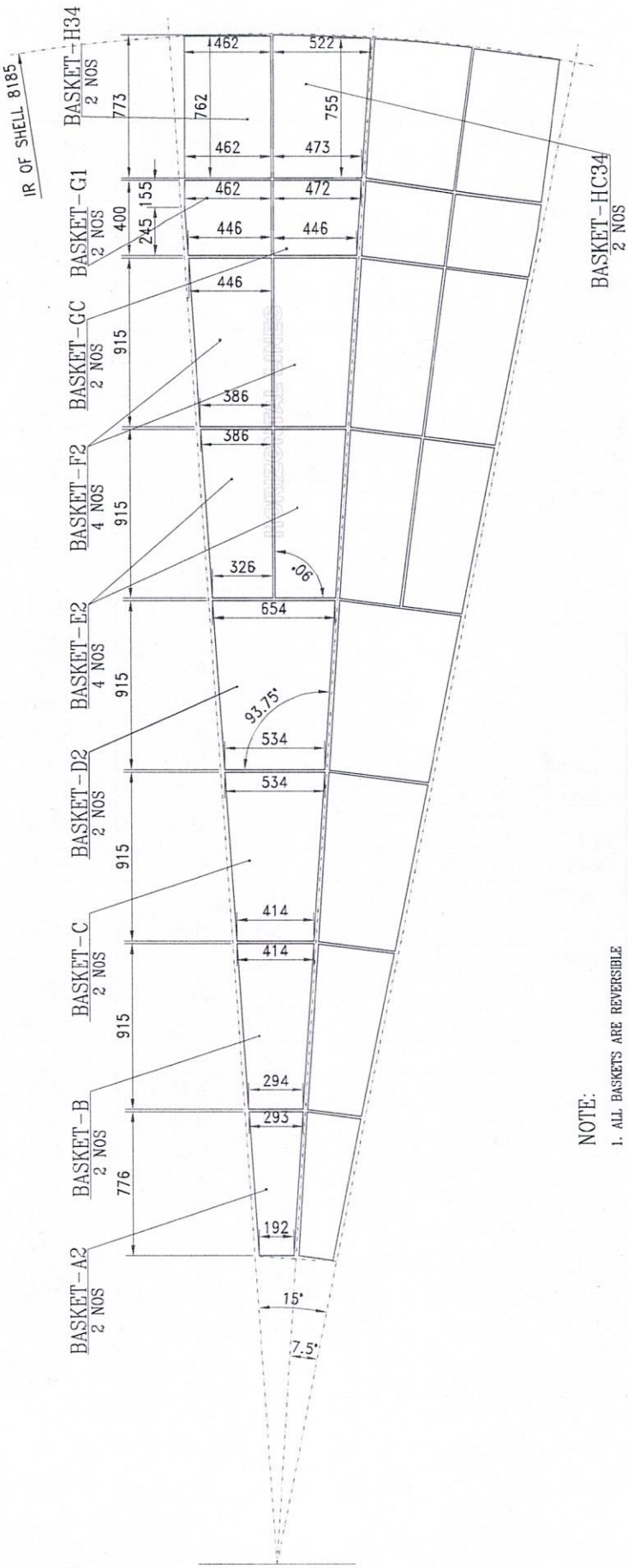
REGENRATIVE AIR PREHEATER PERFORMANCE DATA SHEET									
1	Elevation of Plant above MSL m & ft	81				265.68			
2	Number of Air Preheaters Per Boiler	TWO				2			
3	**Air Heater Size & Type**	**34**		**VIMT**		**TRI-SECTOR**			
4	Type of APH (Shaft Position)	Vertical							
	For Vertical - Gas Flow Direction	Downward							
	For Horizontal - Duct Arrgt	NA							
5	**Fuel & % Sulphur in Fuel**	COAL				Design Coal 0.7%			
6	**Flow Per Boiler** kg/hr	**BMCR DC**		**TMCR DC**		**100% TMCR Indian Coal**		**100% TMCR Imported Coal**	
	a Gas Entering APH	3252960		2902793		2966136		2883914	
	b Ash Entering APH	102000		92000		228600		21100	
	c Total air to Pulveriser	734927		635920		789247		599454	
	d Primary Air Bypassed	VTS		VTS		VTS		VTS	
	e Secondary Air Leaving APH	2075569		1856114		1747358		1882027	
	f Total Air to combustion	2810496		2492034		2536605		2491740	
7	**Temperatures** C								
	a Gas Entering at APH Top	343		333		334		334	
	b Gas Entering at Cold end Layer	VTS		VTS		VTS		VTS	
	c Primary Air Entering APH	35		35		35		35	
	d Secondary Air Entering APH	30		30		30		30	
	e Ambient Air Temperature	27		27		27		27	
	f Ambient Air Relative Humidity %	60		60		60		60	
	g Primary Air Leaving	VTS		VTS		VTS		VTS	
	h Secondary Air Leaving	VTS		VTS		VTS		VTS	
	i Gas Leaving APH (Uncorr/Corr)	VTS	VTS	VTS	≤125	VTS	VTS	VTS	VTS
	j Hot air temp required for Mill	231		235		246		214	
8	**Pressures** mmwc								
	a Pressure Drop Air Side Pri/Sec	VTS	VTS	VTS	VTS	VTS	VTS	VTS	VTS
	b Pressure Drop Gas Side	VTS		≤94		VTS		VTS	
	c Excess Air @ AH Gas Inlet %	20		20		20		20	
	d Hot End Press Diff Sec-Gas /Pri-Gas	498	1275	483	1275	427	1377	422	1107
9	Specific Heat Ratio Cpa/Cpg	0.9288		0.9288		0.8953		0.9538	
10	Fuel Correction factor(1+%Moisture in Gas)	1.0548		1.0548		1.0559		1.0543	
11	Min. Metal temperature at the top of CE layer	VTS		VTS		VTS		VTS	
12	Leakage	VTS		≤8		VTS		VTS	
13	Cold End Protection Device Envisaged	SCAPH							
14	Primary Sector Opening °	72							
15	Direction of Rotation	REVERSE (GAS-SEC-PRI)							
16	**Element Details**								

Sl	Description	Height (mm)	(Inch)	Thickness (mm)	Gauge	Type	Material
a.	Hot End	300	-	0.8	22	BDNU	Carbon Steel
b.	Hot Inter	800	-	0.8	22	BDNU	Carbon Steel
c.	Cold End	1000	-	1.2	18	VTS	Corten Steel

17	No. of Soot blowers per AH	TWO	2
18	Other Customer Requirements	ALCS, Double seal, Three Layer	
19	Remarks	VTS = Vendor to Specify	

COAL CHARACTERISTICS

DESCRIPTION (Source / Type)	UNIT	Design coal 50% Ind+50% Imp	100% Indian Coal	100% Imported Coal
PROXIMATE ANALYSIS				
Fixed carbon	%	35.00	25.31	44.70
Volatile matter	%	25.60	16.49	34.62
Moisture	%	11.00	10.00	12.00
Ash	%	28.40	48.20	8.68
Total	%	100.0	100.0	100.0
HHV	kcal / kg	4375	3000	5750
LHV	kcal / kg			
Ash loading	kg / 10^6 kcal	64.9	160.7	15.1
ULTIMATE ANALYSIS				
Carbon	%	46.40	32.39	60.36
Hydrogen	%	2.50	1.54	3.49
Sulphur	%	0.70	0.81	0.58
Nitrogen	%	1.10	0.67	1.47
Oxygen (difference)	%	9.90	6.39	13.42
Moisture	%	11.00	10.00	12.00
Ash	%	28.40	48.20	8.68
HARD GROVE INDEX		49	98	49
ASH CHARACTERISTICS (Oxidizing Atmosphere)				
IT - Initial deformation temp.	°C	1402	>1450	1234
ST - Softening temp. H = W	°C	>1450	>1450	1270
HT - Hemispherical temp. H = W / 2	°C	>1450	>1450	1321
FT - Fusion temp.	°C	>1450	>1450	1388
ASH CONSTITUENTS				
A - $Si\ O_2$	%	53.22	59.72	46.74
A - Al_2O_3	%	25.53	26.60	24.46
B - Fe_2O_3	%	8.96	9.17	8.77
B - CaO	%	4.25	0.42	8.08
B - MgO	%	2.29	1.05	3.53
B - Na_2O	%	0.44	0.09	0.78
B - K_2O	%	0.84	1.09	0.58
A - TiO_2	%	1.50	1.55	1.45
P_2O_5	%	0.89	0.14	1.63
SO_3	%	2.08	0.17	3.98
Base / Acid Ratio				
Fe_2O_3 / CaO Ratio				
Chloride	%	-	-	-



NOTE:

1. ALL BASKETS ARE REVERSIBLE
2. 3 MM CLEARANCE ON ALL SIDES OF THE BASKETS & ADJACENT TO SHELL PLATE