WHB DATA SHEET

Project	**Samsung Electronics Incinerator Revamping Project**			Doc. No. 2	**2518-VP-2-BFN201-105-2**
Client	**Samsung Electronics Co., Ltd.**			Date	**2013. 4. 22.**
Contractor	**Samsung Engineering Co., Ltd.**			Revision	0 **1** **2**
Code/Standard	**KS B 6233**	Stamp	**No**	Sheet No.	**1** of **3**
Service	**Boiler Package**			Item No.	**BFN - 201**
Type	**Natural Circulation**			No. of Units	**1** set(s)
Location	**Out-door** **Non-hazardous**				

PROCESS DATA

Description		Sat. Steam	S/H Steam		Waste Gas Source	Waste Incinerator	
Capacity	*1)	at Drum	22,520	kg/h	Waste Gas Name	Flue Gas	
Steam Press.	*1)	26.5	25	kg/cm2.g	Load	**MCR**	
Steam Temp.	*1)	228.1	255.1	℃	Waste Gas Flowrate	29,461	Nm3/h
Blowdown Rate		3		%Steam Flow	Waste Gas Temperature **)	1333	℃
Feedwater Temp. / Press.		143 ℃	32	kg/cm2.g	Waste Gas Pressure	-30	mmH2O
Economizer In / Out Temp		143.2	203	℃	Heat Loss	3.2	%
Circulation Ratio		25 : 1			**) Theoretical Flue Gas Temperature in Furnace		

OVERALL PERFORMANCE

Section	WG Temp., Out ℃	Heat Duty kcal/h	H. T. Rate kcal/m2.h.C	MTD ℃	H. Surface Area m2	Press. Drop WG mmH2O	Press. Drop Tube Side kg/cm2	Remarks
Furnace	1235.0	1,109,798	72.5		87.0	0		
1st Chamber, Lower	1145.0	1,047,665	73.9		51.0	0		
1st Chamber, Upper	879.0	3,019,845	40.6		96.3	0		
2nd Chamber	639.0	2,628,061	27.0		*** 185.3	0		*** including Panel.
Superheater	562.9	804,700	37.7	346.8	65.4	1	0.78	
Evaporator	345.4	2,345,535	42.0	207.4	305.0	7	0.15	Incl. Heat to Wall.
Economizer	200.6	1,412,071	37.1	93.5	479.0	6	0.06	
Total		12,367,675			1,269.0	14		

AUXILIARY EQUIPMENT

Description	Installation	Supply	Specification
Soot Blower	Yes	Yes	Retractable + Rotary Steam Motor-driven
Steam Drum	Yes	Yes	
BW Circ. Pump	- N/A -	- N/A -	
Boiler De-superheater	Yes	Yes	
Flash Tank	Yes	* by Others	
Blowdown Tank	-N/A-	- N/A -	
Sampling Unit	Yes	Yes	
Chemical Dosing Unit	Yes	* by Others	
Ash Rotary Valve	Yes	Yes	
Ash Conveyor	Yes	Yes	

OPERATION & CONTROL

Feed Water Control	Three Element	Overload	**10** % for hours
Steam Temp. Control	Spray Type	Load Change Rate	Nor. **7** Max. **10** %MCR/min.
Blowdown	Manual	Allowance at Terminal Point	
		Pressure	- **1** ~ + **1** kg/cm2
		Temperature	- **3** ~ + **3** ℃

-BLANK-

Notes

***1)** at Terminal Point

***2)**

***3)**

***4)**

***5)**

WHB DATA SHEET

Project	**Samsung Electronics Incinerator Revamping Project**		Doc. No.	**2518-VP-2-BFN201-105-2**
Client	**Samsung Electronics Co., Ltd.**		Date	**2013. 4. 22.**
Contractor	**Samsung Engineering Co., Ltd.**		Revision	0 **1** **2**
Code/Standard	**KS B 6233**	Stamp **No**	Sheet No.	**2** of **3**
Service	**Boiler Package**		Item No.	**BFN - 201**
Type	**Natural Circulation**		No. of Units	**1** set(s)
Location	**Out-door** **Non-hazardous**			

CONSTRUCTION DATA

Description	Design Pressure kg/cm2.g	Design Temperature ℃	Remarks
Furnace	30	275	
Gas Chamber	30	275	
Division Wall	30	275	
Panel	30	275	
Rear Wall	30	275	
Superheater	30	350	
Evaporator	30	275	
Economizer	34	275	

TUBE DATA

Description	Tube Type	Tube Material	Tube OD mm	Tube t mm	Tube Leff. mm	Fin Type	Bundle Tube Q'ty per Row	Bundle Row Q'ty	Bundle Tube Q'ty	Remarks
Furnace	Bare	A 178-A	76.2	5	**Please refer to 2518-VP-5-BFN201-130-2, " Pressure Part Arrangement " !**					
Gas Chamber	Bare	A 178-A	76.2	5						
Division Wall	Bare	A 178-A	76.2	5						
Panel	Bare	A 178-A	50.8	5						
Rear Wall	Bare	A 178-A	50.8	5						
Superheater	Bare	A 213-T22	50.8	5	2,625	***	13	12	156	
Evaporator	Bare	STB 340 E	50.8	5	2,625	***	26	28	728	
Economizer	Bare	A 178-C	38.1	4	2,300	***	30	58	1,740	

HEADER DATA

Description	Material	Size	Sch.	t mm	Remarks
Front Wall	SPPS 370 E	200 A	Sch.160	23	
Side Wall	SPPS 370 E	200 A	Sch.160	23	
1st Division Wall	SPPS 370 E	200 A	Sch.160	23	
Panel	SPPS 370 E	200 A	Sch.160	23	
2nd Division Wall	SPPS 370 E	200 A	Sch.160	23	
Rear Wall	SPPS 370 E	200 A	Sch.160	23	
Superheater	SPPS 370 E	6"	Sch.80	11	
Evaporator	SPPS 370 E	16"	Sch.80	21.4	
Economizer	SPPS 370 E	6"	Sch.80	11	

DOWNCOMER & RISER DATA

Downcomer from Steam Drum	SPPS 370 E	250 A	Sch.80	15.1
Downcomer to Wall	SPPS 370 E	250 A	Sch.80	15.1
Downcomer to Evaporator	SPPS 370 E	200 A	Sch.80	12.7
Riser to Evaporator	SPPS 370 E	200 A	Sch.80	12.7

-BLANK-

Notes

***1)**

***2)**

***3)**

***4)**

***5)**

WHB DATA SHEET

Project	**Samsung Electronics Incinerator Revamping Project**			Doc. No.	**2518-VP-2-BFN201-105-2**
Client	**Samsung Electronics Co., Ltd.**			Date	**2013. 4. 22.**
Contractor	**Samsung Engineering Co., Ltd.**			Revision	0 **1** **2**
Code/Standard	**KS** **B 6233**	Stamp	**No**	Sheet No.	**3** of **3**
Service	**Boiler Package**			Item No.	**BFN - 201**
Type	**Natural Circulation**			No. of Units	**1** set(s)
Location	**Out-door** **Non-hazardous**				

FLUE GAS CONDITION

Description		Unit	MCR	NOR	MIN	Remarks
Flowrate		Nm3/h	29,461	26,948	25,843	
Temperature	**Inlet**	℃	1,333	1,330	1,309	
	Outlet	℃	200.6	196.5 ②	189.9	
Composition :						
	CO2	volume%	9.34	9.28	8.5	
	O2	volume%	7.89	7.85	7.28	
	N2	volume%	72.43	71.97	66.36	
	H2O	volume%	10.33	10.89	17.83 ②	
	SO2	volume%	0.01	0.01	0.01	
	HCl	volume%	0.01	0.01	0.01	
	Dust	mg/Nm3	2,000	2,000	2,000	

SITE CONDITION

Ambient Air

Pressure		**1.033**	kg/cm2.a
Temperature	Max.		℃
	Min.		℃
	Design		℃
Relative Humidity	Max.		%
	Design		%

Basic Wind Speed		km/h 0	m/sec
Seismic Zone	**KBC 2009**	Zone	**1**
Noise Limit	**85** dB(A)	at **1**	m distance

UTILITY CONDITION

Electricity

MV Motor	**AC**	**- N/A -**	V	**60**	Hz	**3**	Ph
LV Motor	AC	**380**	V	60	Hz	3	Ph
Control	**AC**	**220**	V	60	Hz	**1** ②	Ph
	DC	**24**	V				

		Pressure	Temperature
		kg/cm2.g	℃
Cooling Water	Nor	Nor	
Instrument Air	Max	Max	
Service Air	Max	Max	
Aux. Steam	Nor	Nor	

WATER & STEAM QUALITY

Feedwater				Boiler Water				Steam			
pH	8.3 ~ 10										
Dissolved Oxygen	max.	0.007	ppm	TDS	max.	3,000	ppm	TDS	max.	1	ppm
Total Iron	max.	0.05	ppm	Total Alkalinity, CaCO3	max.	600	ppm	Quality, Dryness		**99.5**	%
Total Copper	max.	0.025	ppm	Suspended Solids	max.	10	ppm	Silica	max.	**0.02**	ppm
Total Hardness	max.	0.3	ppm	Silica as SiO2	max.	90	ppm				
Nonvolatile TOC	max.	1	ppm	PO_4^{3-}	20 ~ 40		ppm				
Oily Matter	max.	1	ppm								

Notes

***1)** WATER & STEAM QUALITY : According to ABMA, ASME and JBMA

***2)**

***3)**

***4)**

***5)**

***6)**

***7)**