Annex A
(informative)

Equipment Datasheets

This annex includes datasheets for the following equipment items:

a) fired-heater datasheets: 12 sheets (6 in SI units, 6 in USC units);

b) burner datasheets: 6 sheets (3 in SI units, 3 in USC units);

c) air preheater datasheets: 4 sheets (2 in SI units, 2 in USC units);

d) fan datasheets: 4 sheets (2 in SI units, 2 in USC units);

e) sootblower datasheets: 2 sheets (1 in SI units, 1 in USC units).

f) isolation guillotine/isolation blind datasheet; and

g) louver/butterfly damper datasheet.

See Section 5 for instructions on using the equipment datasheets.

The purchaser should complete, at a minimum, those items that are designated with an asterisk (*).

	FIRED HEATER DATASHEET	SI UNITS				
		REV.:	DATE:		SHEET 1 of 6	
	PURCHASER/OWNER:	**ITEM NO.:**				
	SERVICE:	**LOCATION:**				
1	UNIT:	*NUMBER REQUIRED:				REV
2	MANUFACTURER:	REFERENCE:				
3	TYPE OF HEATER:					
4	* TOTAL HEATER ABSORBED DUTY, MW:					
5	**PROCESS DESIGN CONDITIONS**					
6	* OPERATING CASE					
7	HEATER SECTION					
8	* SERVICE					
9	HEAT ABSORPTION, MW					
10	* FLUID					
11	* FLOW RATE, kg/s					
12	* FLOW RATE, m^3/h					
13	* PRESSURE DROP, ALLOWABLE (CLEAN / FOULED), kPa					
14	PRESSURE DROP, CALCULATED (CLEAN / FOULED), kPa					
15	* AVG. RAD. SECT. FLUX DENSITY, ALLOWABLE, W/m^2					
16	AVG. RAD. SECT. FLUX DENSITY, CALCULATED, W/m^2					
17	MAX. RAD. SECT. FLUX DENSITY, W/m^2					
18	CONV. SECT. FLUX DENSITY, (BARE TUBE), W/m^2					
19	* VELOCITY LIMITATION, m/s					
20	PROCESS FLUID MASS VELOCITY, $kg/s \cdot m^2$					
21	* MAXIMUM ALLOW. / CALC. INSIDE FILM TEMPERATURE, °C					
22	* FOULING FACTOR, $m^2 \cdot K/W$					
23	* COKING ALLOWANCE, mm					
24	**INLET CONDITIONS:**					
25	* TEMPERATURE, °C					
26	* PRESSURE, kPa (abs) / kPa (ga)					
27	* LIQUID FLOW RATE, kg/s					
28	* VAPOR FLOW RATE, kg/s					
29	* LIQUID RELATIVE DENSITY, (at 15 °C)					
30	* VAPOR RELATIVE MOLECULAR MASS [1)]					
31	* VAPOR DENSITY, kg/m^3					
32	* VISCOSITY, (LIQUID /VAPOR), mPa·s					
33	* SPECIFIC HEAT, (LIQUID/VAPOR), kJ/kg·K					
34	* THERMAL CONDUCTIVITY, (LIQUID/VAPOR), W/m·K					
35	**OUTLET CONDITIONS:**					
36	* TEMPERATURE, °C					
37	* PRESSURE, kPa (abs) / kPa (ga)					
38	* LIQUID FLOW RATE, kg/s					
39	* VAPOR FLOW RATE, kg/s					
40	* LIQUID RELATIVE DENSITY (at 15 °C)					
41	* VAPOR RELATIVE MOLECULAR MASS [1)]					
42	* VAPOR DENSITY, kg/m^3					
43	* VISCOSITY, (LIQUID /VAPOR), mPa·s					
44	* SPECIFIC HEAT, (LIQUID/VAPOR), kJ/kg·K					
45	* THERMAL CONDUCTIVITY, (LIQUID/VAPOR), W/m·K					
46	**REMARKS AND SPECIAL REQUIREMENTS:**					
47	* DISTILLATION DATA OR FEED COMPOSITION:					
48	* SHORT TERM OPERATING CONDITIONS:					
49						
50	NOTES:					
51	1) RELATIVE MOLECULAR MASS IS THE SI TERM USED FOR THE MORE FAMILIAR "MOLECULAR WEIGHT".					
52						
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FIRED HEATER DATASHEET			SI UNITS			
			REV.:	DATE:	SHEET 2 of 6	
COMBUSTION DESIGN CONDITIONS						
1	OPERATING CASE					REV
2	* TYPE OF FUEL					
3	* EXCESS AIR, %					
4	CALCULATED HEAT RELEASE (h_L), MW					
5	FUEL EFFICIENCY CALCULATED, % (h_L)					
6	FUEL EFFICIENCY GUARANTEED, % (h_L)					
7	RADIATION LOSS, % OF HEAT RELEASE (h_L)					
8	FLUE GAS TEMPERATURE LEAVING: RADIANT SECTION, °C					
9	CONVECTION SECTION, °C					
10	AIR PREHEATER, °C					
11	FLUE GAS QUANTITY, kg/s					
12	FLUE GAS MASS FLOW RATE THROUGH CONVECTION SECTION, kg/s·m^2					
13	DRAFT: AT ARCH, Pa (ga)					
14	AT BURNERS, Pa (ga)					
15	* AMBIENT AIR TEMPERATURE, EFFICIENCY CALCULATION, °C					
16	* AMBIENT AIR TEMPERATURE, STACK DESIGN, °C					
17	* ALTITUDE ABOVE SEA LEVEL, m					
18	VOLUMETRIC HEAT RELEASE (h_L), W/m^3					
19	* EMISSION LIMITS (DRY):	mg/m^3 (corrected to 3% O_2)	NO_x:	CO:	SO_x:	
20		kJ/kg (h_L) (h_H)	UHC:	PARTICULATES:		
21	**FUEL CHARACTERISTICS:**					
22	* GAS TYPE		* LIQUID TYPE		*OTHER TYPE	
23	* h_L kJ/m^3		* h_L kJ/kg		* h_L kJ/kg kJ/m^3	
24	* h_H kJ/m^3		* h_H kJ/kg		* h_H kJ/kg kJ/m^3	
25	* PRESS. AVAILABLE @ BURNER kPa (ga)		* PRESS. AVAILABLE @ BURNER kPa (ga)		* PRESS. AVAILABLE @ BURNER kPa (ga)	
26	* TEMP. @ BURNER °C		* TEMP. @ BURNER °C		* TEMP. @ BURNER °C	
27	* RELATIVE MOLECULAR MASS		* VISCOSITY @ °C mPa·s			
28			* ATOMIZING STEAM TEMP. °C			
29			* PRESSURE kPa (ga)			
30	COMPONENT	MOLE FRACTION %	COMPONENT	MASS FRACTION	COMPONENT	MASS FRACTION
31						
32						
33						
34			* VANADIUM (mg/kg)			
35			* SODIUM (mg/kg)			
36			* SULFUR			
37			* ASH			
38	**BURNER DATA:**					
39	MANUFACTURER:		SIZE / MODEL NO.:		NUMBER:	
40	TYPE:		LOCATION:		ORIENTATION:	
41	HEAT RELEASE PER BURNER, MW		DESIGN:	NORMAL:	MINIMUM:	
42	PRESSURE DROP ACROSS BURNER @ DESIGN HEAT RELEASE, Pa:					
43	DISTANCE BURNER CENTER LINE TO TUBE CENTER LINE, HORIZONTAL, mm:				VERTICAL, mm:	
44	DISTANCE BURNER CENTER LINE TO UNSHIELDED REFRACTORY, HORIZONTAL, mm:				VERTICAL, mm:	
45	PILOT, TYPE:		CAPACITY, kW:		FUEL:	
46	IGNITION METHOD:					
47	FLAME DETECTION TYPE:			NUMBER:		
48	NOTES:					
49						
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	FIRED HEATER DATASHEET	SI UNITS				
		REV.:	DATE:		SHEET 3 of 6	
	MECHANICAL DESIGN CONDITIONS					
1	* PLOT LIMITATIONS:		*STACK LIMITATIONS:			REV
2	* TUBE LIMITATIONS:		*NOISE LIMITATIONS:			
3	* STRUCTURAL DESIGN DATA: WIND VELOCITY:		*WIND OCCURRENCE:			
4	SNOW LOAD:		*SEISMIC ZONE:			
5	* MIN. / NORMAL / MAX. AMBIENT AIR TEMPERATURE, °C:		*RELATIVE HUMIDITY,%:			
6	HEATER SECTION :					
7	SERVICE :					
8	**COIL DESIGN:**					
9	* DESIGN BASIS: TUBE WALL THICKNESS (CODE OR SPEC.)					
10	RUPTURE STRENGTH (MINIMUM OR AVERAGE)					
11	* STRESS-TO-RUPTURE BASIS, h					
12	* DESIGN PRESSURE, ELASTIC/RUPTURE, kPa (ga)					
13	* DESIGN FLUID TEMPERATURE, °C					
14	* TEMPERATURE ALLOWANCE, °C					
15	CORROSION ALLOWANCE, TUBES/FITTINGS, mm					
16	HYDROSTATIC TEST PRESSURE, kPa (ga)					
17	* POST WELD HEAT TREATMENT (YES OR NO)					
18	* PERCENT (%) OF WELDS FULLY RADIOGRAPHED					
19	MAXIMUM (CLEAN) TUBE METAL TEMPERATURE, °C					
20	DESIGN TUBE METAL TEMPERATURE, °C					
21	INSIDE FILM COEFFICIENT, $W/m^2 \cdot K$					
22	CERAMIC COATING DESIGN TEMPERATURE °C					
23	**COIL ARRANGEMENT:**					
24	TUBE ORIENTATION: VERTICAL OR HORIZONTAL					
25	* TUBE MATERIAL (SPECIFICATION AND GRADE)					
26	TUBE OUTSIDE DIAMETER, mm					
27	TUBE-WALL THICKNESS, (MINIMUM) (AVERAGE), mm					
28	NUMBER OF FLOW PASSES					
29	NUMBER OF TUBES					
30	NUMBER OF TUBES PER ROW (CONVECTION SECTION)					
31	OVERALL TUBE LENGTH, m					
32	EFFECTIVE TUBE LENGTH, m					
33	BARE TUBES: NUMBER					
34	TOTAL EXPOSED SURFACE, m^3					
35	EXTENDED SURFACE TUBES: NUMBER					
36	TOTAL EXPOSED SURFACE, m^3					
37	TUBE LAYOUT (IN LINE OR STAGGERED)					
38	TUBE SPACING, CENT. TO CENT. : HORIZ. x DIAG. (OR VERT.)					
39	SPACING TUBE CENT. TO FURNACE WALL (MIN.), mm					
40	CORBELS (YES OR NO)					
41	CORBEL WIDTH, mm					
42	CERAMIC COATING (RADIANT, SHIELD)					
43	**DESCRIPTION OF EXTENDED SURFACE:**					
44	TYPE: (STUDS) (SERRATED FINS) (SOLID FINS)					
45	MATERIAL					
46	DIMENSIONS: (HEIGHT x DIAMETER/THICKNESS), mm					
47	SPACING (FINS/M) (STUDS/PLANE)					
48	MAXIMUM TIP TEMPERATURE, (CALCULATED), °C					
49	EXTENSION RATIO (TOTAL AREA / BARE AREA)					
50	**PLUG TYPE HEADERS:**					
51	* TYPE					
52	MATERIAL (SPECIFICATION AND GRADE)					
53	NOMINAL RATING					
54	* LOCATION (ONE OR BOTH ENDS)					
55	WELDED OR ROLLED JOINT					
56	NOTES:					
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	FIRED HEATER DATASHEET	SI UNITS				
		REV.:	DATE:		SHEET 4 of 6	
	MECHANICAL DESIGN CONDITIONS (Cont'd)					
1	HEATER SECTION					REV
2	SERVICE					
3	**RETURN BENDS:**					
4	TYPE					
5	MATERIAL (SPECIFICATION AND GRADE)					
6	NOMINAL RATING OR SCHEDULE					
7	* LOCATION (F. B. = FIRE BOX, H. B. = HEADER BOX)					
8	**TERMINALS AND/OR MANIFOLDS:**					
9	* TYPE (BEV.= BEVELED, MAN.= MANIFOLD, FLG.= FLANGED)					
10	INLET: MATERIAL (SPECIFICATION AND GRADE)					
11	SIZE/SCHEDULE OR THICKNESS					
12	NUMBER OF TERMINALS					
13	FLANGE MATERIAL (SPEC. AND GRADE)					
14	FLANGE SIZE AND RATING					
15	OUTLET: MATERIAL (SPECIFICATION AND GRADE)					
16	SIZE/SCHEDULE OR THICKNESS					
17	NUMBER OF TERMINALS					
18	FLANGE MATERIAL (SPEC. AND GRADE)					
19	FLANGE SIZE AND RATING					
20	* MANIFOLD TO TUBE CONN. (WELDED, EXTRUDED, ETC.)					
21	MANIFOLD LOCATION (INSIDE OR OUTSIDE HEADER BOX)					
22	**CROSSOVERS:**					
23	* WELDED OR FLANGED					
24	* PIPE MATERIAL (SPECIFICATION AND GRADE)					
25	PIPE SIZE/SCHEDULE OR THICKNESS					
26	* FLANGE MATERIAL					
27	FLANGE SIZE/RATING					
28	* LOCATION (INTERNAL/EXTERNAL)					
29	FLUID TEMPERATURE, °C					
30	**TUBE SUPPORTS:**					
31	LOCATION (ENDS, TOP, BOTTOM)					
32	MATERIAL (SPECIFICATION AND GRADE)					
33	DESIGN METAL TEMPERATURE, °C					
34	THICKNESS, mm					
35	TYPE AND THICKNESS OF INSULATION, mm					
36	ANCHOR (MATERIAL AND TYPE)					
37	**INTERMEDIATE TUBE SUPPORTS:**					
38	MATERIAL (SPECIFICATION AND GRADE)					
39	DESIGN METAL TEMPERATURE, °C					
40	THICKNESS, mm					
41	SPACING, m					
42	**TUBE GUIDES:**					
43	LOCATION					
44	MATERIAL					
45	TYPE/SPACING					
46	**HEADER BOXES:**					
47	LOCATION: HINGED DOOR / BOLTED PANEL:					
48	CASING MATERIAL : THICKNESS, mm:					
49	LINING MATERIAL: THICKNESS, mm:					
50	ANCHOR (MATERIAL AND TYPE):					
51	**NOTES :**					
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	FIRED HEATER DATASHEET	SI UNITS					
		REV.:	DATE:	SHEET 5 of 6			
	MECHANICAL DESIGN CONDITIONS (Cont'd)						
1	**REFRACTORY DESIGN BASIS:**						REV
2	AMBIENT TEMPERATURE, °C:	WIND VELOCITY, m/s:			CASING TEMP., °C:		
3	**EXPOSED VERTICAL WALLS:**						
4	LINING THICKNESS, mm:	HOT FACE TEMPERATURE, DESIGN/CALCULATED, °C:					
5	WALL CONSTRUCTION:						
6	CERAMIC COATING:						
7	ANCHOR (MATERIAL & TYPE):						
8	CASING MATERIAL:	THICKNESS, mm:			TEMPERATURE, °C:		
9	**SHIELDED VERTICAL WALLS:**						
10	LINING THICKNESS, mm:	HOT FACE TEMPERATURE, DESIGN/CALCULATED, °C:					
11	WALL CONSTRUCTION:						
12	CERAMIC COATING:						
13	ANCHOR (MATERIAL & TYPE):						
14	CASING MATERIAL:	THICKNESS, mm:			TEMPERATURE, °C:		
15	**ARCH:**						
16	LINING THICKNESS, mm:	HOT FACE TEMPERATURE, DESIGN/CALCULATED, °C:					
17	WALL CONSTRUCTION:						
18	CERAMIC COATING:						
19	ANCHOR (MATERIAL & TYPE):						
20	CASING MATERIAL:	THICKNESS, mm:			TEMPERATURE, °C:		
21	**FLOOR:**						
22	LINING THICKNESS, mm:	HOT FACE TEMPERATURE, DESIGN/CALCULATED, °C:					
23	FLOOR CONSTRUCTION:						
24	CERAMIC COATING:						
25	CASING MATERIAL:	THICKNESS , mm:			TEMPERATURE, °C:		
26	MINIMUM FLOOR ELEVATION, m:	FREE SPACE BELOW PLENUM, m:					
27	**CONVECTION SECTION:**						
28	LINING THICKNESS, mm:	HOT FACE TEMPERATURE, DESIGN/CALCULATED, °C:					
29	WALL CONSTRUCTION:						
30	CERAMIC COATING:						
31	ANCHOR (MATERIAL & TYPE):						
32	CASING MATERIAL:	THICKNESS, mm:			TEMPERATURE, °C:		
33	**INTERNAL WALL:**						
34	TYPE:	MATERIAL:					
35	DIMENSION, HEIGHT / WIDTH, m:						
36	**DUCTS:**	**FLUE GAS**			**COMBUSTION AIR**		
37	LOCATION:	BREECHING					
38	SIZE, m OR NET FREE AREA, m^2:						
39	CASING MATERIAL:						
40	CASING THICKNESS, mm:						
41	LINING: INTERNAL/EXTERNAL:						
42	THICKNESS, mm:						
43	MATERIAL:						
44	ANCHOR (MATERIAL & TYPE):						
45	CASING TEMPERATURE, °C:						
46	**PLENUM CHAMBER (AIR):**						
47	CASING MATERIAL:	THICKNESS, mm:			SIZE, m:		
48	LINING MATERIAL:				THICKNESS, mm:		
49	ANCHOR (MATERIAL & TYPE):						
50	NOTES:						
51							
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	FIRED HEATER DATASHEET			SI UNITS		
				REV.:	DATE:	SHEET 6 of 6
	MECHANICAL DESIGN CONDITIONS (Cont'd)					
1	**STACK OR STACK STUB:**					REV
2	NUMBER:				LOCATION:	
3	CASING MATERIAL:	*CORROSION ALLOWANCE, mm:			*MINIMUM THICKNESS, mm:	
4	INSIDE METAL DIAMETER, m:	HEIGHT ABOVE GRADE, m:			STACK LENGTH, m:	
5	LINING MATERIAL:				THICKNESS, mm:	
6	ANCHOR (MATERIAL AND TYPE):					
7	EXTENT OF LINING:			INTERNAL OR EXTERNAL:		
8	DESIGN FLUE GAS VELOCITY, m/s:			FLUE GAS TEMPERATURE., °C:		
9	**DAMPERS:**					
10	LOCATION					
11	TYPE (CONTROL, TIGHT SHUT-OFF, ETC.)					
12	MATERIAL: BLADE					
13	MATERIAL: SHAFT					
14	MULTIPLE/SINGLE LEAF					
15	PROVISION FOR OPERATION (MANUAL OR AUTOMATIC)					
16	TYPE OF OPERATOR (CABLE OR PNEUMATIC)					
17	**MISCELLANEOUS:**					
18	**PLATFORMS: LOCATION**	NUMBER	WIDTH	LENGTH/ARC	STAIRS/LADDER	ACCESS FROM
19						
20						
21						
22						
23						
24	TYPE OF FLOORING:					
25	**DOORS:**		NUMBER	LOCATION	SIZE	BOLTED/HINGED
26	ACCESS					
27						
28	OBSERVATION					
29						
30	TUBE REMOVAL					
31						
32	**INSTRUMENT CONNECTIONS**			NUMBER	SIZE	TYPE
33	FLUE GAS/COMBUSTION AIR TEMPERATURE					
34	FLUE GAS/COMBUSTION AIR PRESSURE					
35	FLUE GAS SAMPLE					
36	SNUFFING STEAM/PURGE					
37	O_2 ANALYZER					
38	CO or NO_x ANALYZER					
39	VENTS/DRAINS					
40	PROCESS FLUID TEMPERATURE					
41	TUBESKIN THERMOCOUPLES					
42						
43						
44	PAINTING REQUIREMENTS:					
45	INTERNAL COATING:					
46	GALVANIZING REQUIREMENTS:					
47	ARE PAINTER'S TROLLEY AND RAIL INCLUDED?					
48	SPECIAL EQUIPMENT:	SOOTBLOWERS:				
49		AIR PREHEATER:				
50		FAN(S):				
51		OTHER:				
52	NOTES:					
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	BURNER DATASHEET	SI UNITS		
		REV.:	DATE:	SHEET 1 of 3
	PURCHASER/OWNER:	**ITEM NO.:**		
	SERVICE:	**LOCATION:**		
1	**GENERAL DATA:**			REV
2	TYPE OF HEATER			
3	ALTITUDE ABOVE SEA LEVEL, m			
4	AIR SUPPLY:			
5	AMBIENT/PREHEATED AIR/GAS TURBINE EXHAUST			
6	TEMPERATURE, °C (MIN. / MAX. / DESIGN)			
7	RELATIVE HUMIDITY, %			
8	DRAFT TYPE: FORCED/NATURAL/INDUCED			
9	DRAFT AVAILABLE: ACROSS BURNER, Pa			
10	DRAFT AVAILABLE: ACROSS PLENUM, Pa			
11	REQUIRED TURNDOWN			
12	BURNER WALL LINING THICKNESS, mm			
13	HEATER CASING THICKNESS, mm			
14	FIREBOX HEIGHT, m			
15	TUBE CIRCLE DIAMETER, m			
16	**BURNER DATA:**			
17	MANUFACTURER			
18	TYPE OF BURNER			
19	MODEL/SIZE			
20	DIRECTION OF FIRING			
21	LOCATION (ROOF/FLOOR/SIDEWALL)			
22	NUMBER REQUIRED			
23	MINIMUM DISTANCE BURNER CENTERLINE, mm			
24	TO TUBE CENTERLINE (HORIZONTAL/VERTICAL)			
25	TO ADJACENT BURNER CENTERLINE (HORIZONTAL/VERTICAL)			
26	TO UNSHIELDED REFRACTORY (HORIZONTAL/VERTICAL)			
27	BURNER CIRCLE DIAMETER, m			
28	PILOTS:			
29	NUMBER REQUIRED			
30	TYPE			
31	IGNITION METHOD			
32	FUEL			
33	FUEL PRESSURE, kPa (ga)			
34	CAPACITY, MW			
35	**OPERATING DATA:**			
36	FUEL			
37	HEAT RELEASE PER BURNER, MW (h_L)			
38	DESIGN			
39	NORMAL			
40	MINIMUM			
41	EXCESS AIR @ DESIGN HEAT RELEASE, (%)			
42	AIR TEMPERATURE, °C			
43	DRAFT LOSS, Pa			
44	DESIGN			
45	NORMAL			
46	MINIMUM			
47	FUEL PRESSURE REQUIRED, kPa (ga)			
48	FLAME LENGTH @ DESIGN HEAT RELEASE, m			
49	FLAME SHAPE (ROUND, FLAT, ETC.)			
50	ATOMIZING MEDIUM/OIL RATIO, kg/kg			
51	NOTES:			
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	BURNER DATASHEET	SI UNITS			
		REV.:	DATE:	SHEET 2 of 3	
	GAS FUEL CHARACTERISTICS:				
1	FUEL TYPE				REV
2	HEATING VALUE (h_L), (kJ/m^3) (kJ/kg)				
3	RELATIVE DENSITY (AIR = 1.0)				
4	MOLECULAR MASS				
5	FUEL TEMPERATURE @ BURNER, °C				
6	FUEL PRESSURE: AVAILABLE @ BURNER, kPa (ga)				
7	FUEL GAS COMPOSITION: (MOLE FRACTION, %)				
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9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20	TOTAL				
21	**LIQUID FUEL CHARACTERISTICS:**				
22	FUEL TYPE				
23	HEATING VALUE (h_L), kJ/kg				
24	RELATIVE DENSITY (AT 15 °C)				
25	H/C RATIO (BY MASS)				
26	VISCOSITY, @ °C, mPa·s				
27	VISCOSITY, @ °C, mPa·s				
28	VANADIUM, mg/kg				
29	POTASSIUM, mg/kg				
30	SODIUM, mg/kg				
31	NICKEL, mg/kg				
32	FIXED NITROGEN, mg/kg				
33	SULFUR, MASS FRACTION (%)				
34	ASH, MASS FRACTION (%)				
35	WATER, MASS FRACTION (%)				
36	DISTILLATION: ASTM INITIAL BOILING POINT, °C				
37	ASTM MID-POINT, °C				
38	ASTM END-POINT, °C				
39	FUEL TEMPERATURE @ BURNER, °C				
40	FUEL PRESSURE AVAILABLE @ BURNER, kPa (ga)				
41	ATOMIZING MEDIUM: AIR/STEAM/MECHANICAL				
42	TEMPERATURE, °C				
43	PRESSURE, kPa (ga)				
44	NOTES:				
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	BURNER DATASHEET		SI UNITS		
			REV.:	DATE:	SHEET 3 of 3
	MISCELLANEOUS:				
1	BURNER PLENUM:	COMMON/INTEGRAL			REV
2		MATERIAL			
3		PLATE THICKNESS, mm			
4		INTERNAL INSULATION			
5	INLET AIR CONTROL:	DAMPER OR REGISTERS			
6		MODE OF OPERATION			
7		LEAKAGE, %			
8	BURNER TILE:	COMPOSITION			
9		MINIMUM SERVICE TEMPERATURE, °C			
10	NOISE SPECIFICATION				
11	ATTENUATION METHOD				
12	PAINTING REQUIREMENTS				
13	IGNITION PORT:	SIZE/NO.			
14	SIGHT PORT:	SIZE/NO.			
15	FLAME DETECTION:	TYPE			
16		NUMBER			
17	SCANNER CONNECTION	SIZE/NO.			
18	SAFETY INTERLOCK SYSTEM FOR ATOMIZING MEDIUM AND OIL				
19	PERFORMANCE TEST REQUIRED (YES or NO)				
20	**EMISSION REQUIREMENTS:**				
21	FIREBOX BRIDGEWALL TEMPERATURE, °C				REV
22	NO_x	* ml/m^3 (d) or g/GJ (h_L) (h_H)			
23	CO	* ml/m^3 (d) or g/GJ (h_L) (h_H)			
24	UHC	* ml/m^3 (d) or g/GJ (h_L) (h_H)			
25	PARTICULATES	g/GJ (h_L) (h_H)			
26	SO_x	* ml/m^3 (d) or g/GJ (h_L) (h_H)			
27					
28	* CORRECTED TO 3% O_2 (DRY BASIS @ DESIGN HEAT RELEASE)				
29	NOTES:				
30	NOTE 1	AT DESIGN CONDITIONS, A MINIMUM OF 90 % OF THE AVAILABLE DRAFT WITH AIR REGISTER FULLY OPEN			
31		SHALL BE UTILIZED ACROSS THE BURNER. IN ADDITION, A MINIMUM OF 75 % OF THE AIR SIDE PRESSURE DROP			
32		WITH AIR REGISTERS FULLY OPEN SHALL BE UTILIZED ACROSS BURNER THROAT.			
33	NOTE 2	VENDOR TO GUARANTEE BURNER FLAME LENGTH.			
34	NOTE 3	VENDOR TO GUARANTEE EXCESS AIR, HEAT RELEASE, AND DRAFT LOSS ACROSS BURNER.			
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	AIR PREHEATER DATASHEET	SI UNITS				
		REV.:	DATE:		SHEET 1 of 2	
	PURCHASER/OWNER:	**ITEM NO.:**				
	SERVICE:	**LOCATION:**				
1	MANUFACTURER:					REV
2	MODEL:					
3	NUMBER REQUIRED:					
4	HEATING SURFACE, m^2					
5	MASS, kg					
6	APPROXIMATE DIMENSIONS: (h x w x l), m					
7	**PERFORMANCE DATA:**					
8	OPERATING CASE					
9						
10	AIR SIDE: FLOW RATE ENTERING, kg/s					
11	INLET TEMPERATURE, °C					
12	OUTLET TEMPERATURE, °C					
13	PRESSURE DROP: ALLOWABLE, Pa					
14	PRESSURE DROP: CALCULATED, Pa					
15	HEAT ABSORBED, MW					
16	FLUE GAS SIDE: FLOW RATE, kg/s					
17	INLET TEMPERATURE, °C					
18	OUTLET TEMPERATURE, °C					
19	PRESSURE DROP: ALLOWABLE, Pa					
20	PRESSURE DROP: CALCULATED, Pa					
21	HEAT EXCHANGED, MW					
22	AIR BYPASS RATE, kg/s					
23	TOTAL AIR FLOW RATE TO BURNERS, kg/s					
24	MIX AIR TEMPERATURE, °C					
25	FLUE GAS COMPOSITION, MOLE FRACTION, %: ($O_2/N_2/H_2O/CO_2/SO_x$)					
26	FLUE GAS SPECIFIC HEAT, kJ/kg·K					
27	FLUE GAS ACID DEW POINT TEMPERATURE, °C					
28	MINIMUM METAL TEMPERATURE: ALLOWABLE, °C					
29	MINIMUM METAL TEMPERATURE: CALCULATED, °C					
30	**MISCELLANEOUS:**					
31	MINIMUM AMBIENT AIR TEMPERATURE, °C					
32	SITE ELEVATION ABOVE SEA LEVEL, m					
33	RELATIVE HUMIDITY, %					
34	EXTERNAL COLD AIR BYPASS (YES/NO)					
35	COLD END THERMOCOUPLES (YES/NO) / NO. REQUIRED					
36	ACCESS DOORS : NUMBER/SIZE/LOCATION					
37	INSULATION (INTERNAL/EXTERNAL):					
38	CLEANING MEDIUM: STEAM OR WATER					
39	PRESSURE, kPa (ga)					
40	TEMPERATURE, °C					
41						
42	**MECHANICAL DESIGN**					
43	DESIGN FLUE-GAS TEMPERATURE, °C					
44	DESIGN PRESSURE DIFFERENTIAL, kPa					
45	SEISMIC FACTOR					
46	PAINTING REQUIREMENTS					
47	LEAK TEST					
48	STRUCTURAL WIND LOAD, kg/m^2					
49	AIR LEAKAGE (GUARANTEED MAXIMUM), %					
50						
51	NOTE: ALL DATA ON PER UNIT BASIS					
52	NOTES:					
53						
54						

AIR PREHEATER DATASHEET		SI UNITS		
		REV.:	DATE:	SHEET 2 of 2
CONSTRUCTION DATA				
1	**I. CAST IRON:**			REV
2	NUMBER OF PASSES			
3	NUMBER OF TUBES PER BLOCK			
4	NUMBER OF BLOCKS			
5	TYPE OF SURFACE			
6	TUBE MATERIAL			
7	TUBE THICKNESS, mm			
8	GLASS BLOCK (YES/NO)			
9	NUMBER OF GLASS TUBES			
10	AIR CROSSOVER DUCT: NUMBER			
11	BOLTED/WELDED			
12	SUPPLIED WITH CLIPS			
13	WATER WASH : YES/NO			
14	TYPE (OFF-LINE OR ON-LINE)			
15	LOCATION			
16				
17	**II. PLATE TYPE:**			
18	NUMBER OF PASSES			
19	NUMBER OF PLATES PER BLOCK			
20	NUMBER OF BLOCKS			
21	PLATE THICKNESS, mm			
22	WIDTH OF AIR CHANNEL, mm			
23	WIDTH OF FLUE-GAS CHANNEL, mm			
24	AIR SIDE RIB PITCH, mm			
25	FLUE GAS SIDE RIB PITCH, mm			
26	MATERIAL: PLATE			
27	RIB			
28	FRAME			
29	AIR CROSSOVER DUCT: NUMBER			
30	BOLTED/WELDED			
31	SUPPLIED WITH CLIPS			
32	WATER WASH : YES/NO			
33	TYPE (OFF-LINE OR ON-LINE)			
34	LOCATION			
35				
36	**III. HEAT PIPE:**			
37	NUMBER OF TUBES			
38	TUBE O.D./WALL THICKNESS, mm			
39	TUBE MATERIAL			
40	TUBES PER ROW			
41	NUMBER OF ROWS			
42	TUBE PITCH (SQUARE/TRIANGULAR), mm			
43		AIR SIDE	GAS SIDE	
44	FINS: TYPE			
45	HEIGHT x THICKNESS x NO./m			
46	MATERIAL			
47	EFFECTIVE LENGTH, m			
48	HEATING SURFACE, m^2			
49	MAXIMUM ALLOWABLE SOAK TEMP., °C			
50	SOOT BLOWER: YES/NO			
51	TYPE			
52	LOCATION			
53	NOTES:			
54				
55				
56				
57				

	FAN DATASHEET	SI UNITS				
		REV.:	DATE:	SHEET 1 of 2		
	PURCHASER/OWNER:	**ITEM NO.:**				
	SERVICE:	**LOCATION:**				
1	FAN MANUFACTURER:	MODEL/SIZE:	ARRANGEMENT:			REV
2	SERVICE:	NO. REQUIRED:				
3	DRIVE SYSTEM:	FAN ROTATION FROM DRIVEN END: ☐ CW ☐ CCW				
4	GAS HANDLED:	RELATIVE MOLECULAR MASS:				
5	SITE ELEVATION, m:	FAN LOCATION:				
6	**OPERATING CONDITIONS:**					
7	OPERATING CONDITION/CASE:	**NORMAL**	**RATED**	**OTHER CONDITIONS**		
8	MASS FLOW-RATE CAPACITY, kg/s					
9	VOLUME FLOW-RATE CAPACITY, m^3/s					
10	AIR DENSITY, kg/m^3					
11	TEMPERATURE , °C					
12	RELATIVE HUMIDITY, %					
13	STATIC PRESSURE @ INLET, Pa (ga)					
14	STATIC PRESSURE @ OUTLET, Pa (ga)					
15	PERFORMANCE:					
16	kW @ TEMPERATURE (ALL LOSSES INCLUDED)					
17	FAN SPEED, r/min					
18	STATIC PRESSURE RISE ACROSS FAN, Pa					
19	INLET DAMPER/VANE POSITION					
20	DISCHARGE DAMPER POSITION					
21	FAN STATIC EFFICIENCY, %					
22	STEAM RATE, kg/kW·h (TURBINE ONLY)					
23	FAN CONTROL:	DRIVE:				
24	AIR SUPPLY:	MAKE TYPE				
25	FAN CONTROL, FURNISHED BY	RATED kW r/min				
26	METHOD: ☐ INLET DAMPER ☐ OUTLET DAMPER	ELECTRICAL AREA CLASSIFICATION:				
27	☐ INLET GUIDE VANES ☐ VARIABLE SPEED	CLASS GROUP DIVISION				
28	STARTING METHOD:	POWER Volts Ph Hz				
29	**CONSTRUCTION FEATURES:**					
30	HOUSING:	BEARINGS:				
31	MATERIAL THICKNESS , mm	☐ HYDRODYNAMIC ☐ ANTI - FRICTION				
32	SPLIT FOR WHEEL REMOVAL ☐ YES ☐ NO	TYPE				
33	DRAINS, NO./SIZE	LUBRICATION				
34	ACCESS DOORS, NO./SIZE	MASS FLOW RATE COOLANT REQUIRED m^3/s WATER @ °C				
35	BLADES:	THERMOSTATICALLY CONTROLLED HEATERS ☐ YES ☐ NO				
36	TYPE	TEMPERATURE DETECTORS ☐ YES ☐ NO				
37	NO. THICKNESS, mm	VIBRATION DETECTORS ☐ YES ☐ NO				
38	MATERIAL					
39	HUB:	SPEED DETECTORS :				
40	☐ SHRINK FIT ☐ KEYED	☐ NON-CONTACT PROBE				
41	MATERIAL	☐ SPEED SWITCH				
42	SHAFT:	☐ OTHER				
43	MATERIAL	COUPLINGS:				
44	DIAMETER @ BRGS., mm	TYPE				
45	SHAFT SLEEVES:	MAKE				
46	MATERIAL	MODEL				
47	SHAFT SEALS:	SERVICE FACTOR				
48	TYPE	MOUNT COUPLING HALVES				
49		☐ FAN ☐ DRIVER				
50	CENTRIFUGAL FORCE ωR^2, kg·m2	SPACER ☐ YES ☐ NUMBER LENGTH, mm				
51	NOTE ALL DATA ON PER UNIT BASIS					
52	NOTES:					
53						

FAN DATASHEET	SI UNITS		
	REV.:	DATE:	SHEET 2 of 2

CONSTRUCTION FEATURES (Cont'd):

				REV
1	**MISCELLANEOUS:**			
2	☐ COMMON BASEPLATE (FAN, DRIVER)	☐ SILENCER (INLET) (OUTLET)	☐ INLET (SCREEN) (FILTER)	
3	☐ BEARING PEDESTALS/SOLEPLATES	☐ EVASE	☐ HOUSING DRAIN CONNECTION	
4	☐ PERFORMANCE CURVES	☐ VIBRATION ISOLATION	☐ SPARK-RESISTANT COUPLING GUARD	
5	☐ SECTIONAL DRAWING	☐ TYPE	☐ INSULATION CLIPS	
6	☐ OUTLINE DRAWING	☐ SPECIAL COATINGS	☐ INSPECTION ACCESS	
7	☐ INLET BOXES	☐ CONTROL PANEL	☐ HEAT SHIELDS	

8	**NOISE ATTENUATION:**			**WEIGHTS, kg:**			
9	MAX. ALLOW. SOUND PRESSURE LEVEL	dB (A) @ m		FAN			
10	PREDICTED SOUND PRESSURE LEVEL	dB (A) @ m		DRIVER	BASE		
11	ATTENUATION METHOD			SOUND TRUNK			
12				EVASE			
13	FURNISHED BY			TOTAL SHIPPING WEIGHT			
14	**PAINTING:**			**CONNECTIONS:**			
15	☐ MANUFACTURER'S STANDARD				**SIZE**	**RATING**	**ORIENTATION**
16	☐			INLET			
17	**SHIPMENT:**			OUTLET			
18	☐ DOMESTIC ☐ EXPORT ☐ EXPORT BOXING REQ'D.			DRAINS			
19							
20	**ERECTION:**			* **TESTS:**			
21	☐ ASSEMBLED			☐ MECHANICAL RUN-IN (NO LOAD)			
22	☐ PARTLY ASSEMBLED			☐ WITNESSED PERFORMANCE			
23	☐ OUTDOOR STORAGE OVER 6 MONTHS			☐ ROTOR BALANCE			
24	* **APPLICABLE SPECIFICATIONS:**			☐ SHOP INSPECTION			
25				☐ ASSEMBLY AND FIT-UP CHECK			
26							
27							
28	NOTE:						
29	☐ ITEMS MARKED TO BE INCLUDED IN VENDOR SCOPE OF SUPPLY.						
30							
31	NOTES:						
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	SOOTBLOWER DATASHEET	SI UNITS				
		REV.:	DATE:	SHEET 1 of 1		
	PURCHASER/OWNER:	**ITEM NO.:**				
	SERVICE:	**LOCATION:**				
1	**OPERATING DATA:**					REV
2	FUEL OIL TYPE/RELATIVE MOLECULAR MASS					
3	SULFUR, MASS FRACTION, %					
4	VANADIUM, mg/kg					
5	NICKEL, mg/kg					
6	ASH, MASS FRACTION, %					
7	LANE LOCATION					
8	FLUE-GAS TEMPERATURE @ BLOWER, MAX. °C					
9	FLUE-GAS PRESSURE @ BLOWER, MAX. °C					
10	BLOWING MEDIUM					
11	**UTILITY DATA:**					
12						
13	STEAM _____ kPa (ga) @ _____ °C _____ kg/s PER BLOWER					
14						
15	AIR _____ kPa (ga) _____ m^3/s (N) PER BLOWER					
16						
17	POWER _____ volts _____ PHASE _____ Hz					
18						
19	**LAYOUT DATA:**					
20	TUBE OUTSIDE DIAMETER, mm					
21	TUBE LENGTH, m					
22	TUBE SPACING (STAG./IN LINE), mm					
23	BANK WIDTH, m					
24	NUMBER OF INTERMEDIATE TUBE SHEETS					
25	LANE DIMENSION (MINIMUM CLEARANCE), mm					
26	MAXIMUM CLEANING RADIUS, m					
27	EXTENDED-SURFACE TYPE					
28	NUMBER OF EXTENDED-SURFACE ROWS					
29	LINING THICKNESS, mm					
30	**BLOWER DATA:**					
31	MANUFACTURER					
32	TYPE					
33	MODEL					
34	NUMBER REQUIRED					
35	NUMBER OF LANES (ROWS)					
36	NUMBER PER LANE					
37	ARRANGEMENT					
38	OPERATION					
39	CONTROL REQUIRED					
40	CONTROL PANEL LOCATION (LOCAL OR REMOTE)					
41	DRIVER TYPE (MAN., PNEUMATIC, OR ELECT. MOTOR)					
42	ELECTRICAL-AREA CLASSIFICATION					
43	MOTOR-STARTERS CLASSIFICATION					
44	MOTOR: kW					
45	ENCLOSURE					
46	r/min					
47	LANCE TRAVEL SPEED					
48	HEAD: MATERIAL & RATING					
49	WALL BOX ISOLATION					
50						
51						
52	NOTES:					
53						
54						