



	
DOC NUMBER: 569-DB7C-MEC-721-003		CLIENT NUMBER: PRD-MEC-DSH-025	
TAKEDA			
PROJECT: BURITI EPCVM PROJECT			





DATA SHEET
 WATER TUBE BOILER
 B-7C-1 / B-7C-2 / B-7C-3

0	30/JUL/2021	ISSUED FOR CONSTRUCTION	ASO	LFF	RSP
B	28/JUN/2021	90% DD ISSUE	ASO	LFF	RSP
A	12/FEB/2021	30% DD ISSUE	ASO	LFF	MAJ
REV	DATE	DESCRIPTION	EXEC	CHECK	APPROV

 		 	
NUMBER: 569-DB7C-MEC-721-003		CLIENT NR PRD-MEC-DSH-025	
TITLE WATER TUBE BOILER - B-7C-1 / B-7C-2 / B-7C-3			SHEET: 2/6 REV.: 0

1. REVISION HISTORY

Rev	Reason For Change
A	ORIGINAL ISSUE
B	General Review - Adjusted the data sheet according to Process final Calculation Sheet and P&ID
0	ISSUED FOR CONSTRUCTION

 			 		
NUMBER: 569-DB7C-MEC-721-003			CLIENT NR PRD-MEC-DSH-025		
TITLE					SHEET:
WATER TUBE BOILER - B-7C-1 / B-7C-2 / B-7C-3					3/6
					REV.: 0
1	ITEM N°: B-7C-1/2/3		QTY: 3	MANUFACTURER:	
2	SERVICE: STEAM GENERATOR		MODEL:		
3	LOCAL: GOIANA - PERNAMBUCO		APLICABLE: <input checked="" type="checkbox"/> PROPOSAL <input type="checkbox"/> FIELD		
4			<input type="checkbox"/> AS BUILT		
5	GENERAL DATA			FEED WATER	
6	TYPE:		WATER TUBE	BOILER INPUT PRESSURE: 0.3 (barg)	
7	CODE:		ASME I	BOILER INPUT TEMPERATURE: 60 TO 120 °C	
8	TOTAL LENGTH:	mm	3,920	CONSUMPTION: 12.1 m³/h	
9	TOTAL WIDTH:	mm	1,600	TYPE: <input type="checkbox"/> RAW <input checked="" type="checkbox"/> SOFTENED	
10	TOTAL HEIGHT:	mm	3,250	<input checked="" type="checkbox"/> DESAERATED <input type="checkbox"/> TREATED	
11	EMPTY WEIGHT:	kg	Note 1	NET PRESSURE: 1.0 barg	
12	OPERATING WEIGHT:	kg	Note 1		
13	WEIGHT FULL OF WATER:	kg	Note 1		
14	TOTAL ELECTRICAL POWER:	kW	Note 1	STARTING FUEL (1 UNIT)	
15				TYPE: <input checked="" type="checkbox"/> NATURAL GAS <input type="checkbox"/> DIESEL	
16				CONSUMPTION (at MCP): Note 1	
17	DESIGN CONDITIONS (1 UNIT)			PILOT INPUT PRESSURE: 200-340 mbar	
18	FLUIDS IN CIRCULATION:		WATER / STEAM	PILOT INPUT TEMPERATURE: 30°C	
19	OPERATION FLOW:		3,515 kg/h	CO2 CONTENT IN FUEL GASES: < 20 ppm	
20	DESIGN FLOW:		4,200 kg/h		
21	OPERATING TEMPERATURE:		182° C		
22	DESIGN TEMPERATURE:		200° C	FUEL FOR CONTINUOUS BURNING (1 UNIT)	
23	OPERATING PRESSURE:		9.4 bar g	TYPE: NATURAL GAS	
24	DESIGN PRESSURE:		12.0 barg	CALORIFIC VALUE: ~ 8500 kcal/Nm³	
25	TEST PRESSURE:		18.0 barg	CONSUMPTION (AT MCP): 290 Nm³/h	
26	SPEC. MASS @ O.T.:		5.2 kg/m³	BURN INPUT PRESSURE: 200-340 mbar	
27	STEAM PRES. @ O.T.:		9.4 bar g	BURN INPUT TEMPERATURE: 30°C	
28	VISCOSITY @ O.T.:		0,02 cP (Steam)	CO2 CONTENT IN FUEL GASES: < 20 ppm	
29	STEAM PURITY	TOTAL SOLIDS:	Note 1	DENSITY: 1,59 kg/m³ @ 30°C	
30	HUMIDITY:		1%	VISCOSITY: 0,011 cP	
31	MODULATION RANGE:		FIRE:LOW: 25%/HIGH: 100%	MOLECULAR WEIGHT: ~ 18,1 g/mol	
32	EVAPORATION RATE:		4.200 kg/h	EFF. IHP BASE (BURN INPUT): Note 1	
33	MAX. CONTINUOUS PROD. (MCP):		4.200 kg/h	FUEL FOR CONTINUOUS BURNING 2	
34	THERMAL CAPACITY:		2.465 Mcal/h	TYPE:	
35	THERMAL EFFICIENCY:		Note 1	PCI:	
36	APPLICABLE STANDARDS			CONSUMPTION (A MCP):	
37	FOR TEST:		ASME I	BURNER INLET PRESSURE:	
38	FOR MANUFACTURING:		ASME I	BURNER INLET TEMPERATURE:	
39	STEAM PRODUCTION CONDITIONS:			TEOR DE CO2 GASES COMB.:	
40	OPERATION:	<input checked="" type="checkbox"/>	CONTINUOUS	DENSITY:	
41		<input type="checkbox"/>	INTERMITENT	VISCOSITY:	
42	INSTALLATION:	<input checked="" type="checkbox"/>	COVERED	MOLECULAR WEIGHT:	
43		<input type="checkbox"/>	OUTDOOR	EFCI. PCI BASE (BURN INPUT):	
44				PURGE	
45	ATOMIZING STEAM			FREQUENCY: Note 1	
46	TEMPERATURE:			QUICK DISCHARGE VALVE: Note 1	
47	PRESSURE:			DIAMETER: 1.1/4"	
48	CONSUMPTION:				
49					
50					
51					
52					

NUMBER: 569-DB7C-MEC-721-003

CLIENT NR PRD-MEC-DSH-025

TITLE

SHEET:

WATER TUBE BOILER - B-7C-1 / B-7C-2 / B-7C-3

4/6

REV.:

0

1	ATOMIZATION AIR FOR OUTPUT	BOILER OUTLET STEAM (1 UNIT)
2	MAX. ALLOW. WORK. PRESS. (MAWP):	TEMPERATURE: 182°C
3	HIDROSTATIC TEST PRESSURE:	PRESSURE Note 1
4	TEMPERATURE:	FLOW AT MCP: 4.200 Nm³/h
5	COMBUSTION AIR (1 UNIT)	AUTOMATIC COMBUSTION EQUIPMENT (1 UNIT)
6	EXCESS AIR (MPC): Note 1	COMBUSTOR
7	AIR PRESSURE IN THE AIR BOX: Note 1	TYPE: ATOMIZING NOZZLES
8	AIR TEMP. IN THE AIR BOX: 30°C	CAPACITY: 2,465,000 kcal/h
9	AIR FLOW TO MPC: Note 1	MANUFACTURER: Note 1
10		MODEL: Note 1
11	AUTOMATIC START EQUIPMENT (1 UNIT)	GAS CONTROL VALVE
12	PILOT COMBUSTION	MFR/QTY: Note 1 / 2 UN
13	QUANTITY: 1	DIAMETER: Note 1
14	MFR: Note 1	MATERIAL: Note 1
15	MODEL: Note 1	FLOW TRANSMITTER
16	IGNITION ELECTRODES	TYPE: Note 1
17	QUANTITY: 1	MFR/QTY: Note 1 / 1 UN
18	MFR: Note 1	PROTECTION GRADE: IP-65
19	MODEL: Note 1	MANUAL FUEL BLOCK VALVE
20	PILOT GAS CONTROL VALVE	MFR/QTY: Note 1 / 1 UN
21	MFR/QTY: Note 1 / 2 UN	MODEL: Note 1
22	DIAMETER: Note 1	TYPE: BALL VALVE
23	MATERIAL: Note 1	MATERIAL: BRASS
24	PILOT GAS REGULATOR	PRESSURE INDICATOR
25	MFR/QTY: Note 1 / 1 UN	MFR/QTY: Note 1 / 2 UN
26	DIAMETER: Note 1	MODEL: Note 1
27	MATERIAL: Note 1	RANGE: Note 1
28	PRESSURE TRANSMITTER	STRAINER
29	RANGE: 0-20 barg (0-300 PSig)	MFR/QTY: Note 1 / 1 UN
30	MFR: Note 1	DIAMETER: Note 1
31	MODEL: Note 1	MATERIAL: BRASS / SS
32	MATERIAL: STAINLESS STEEL	AUTOMATIC PURGE VALV.
33	CONNECTION: 1/2" NPT	MFR/QTY: Note 1
34	SECURITY SYSTEM (1 UNIT)	DIAMETER / MATERIAL: Note 1
35	SAFETY VALVE	SECURITY SYSTEM
36	QUANTITY: 2	PRESSURE SWITCH
37	LOCATION: UPPER HEADER	MFR/MODEL: Note 1
38	MANUFACTURER: Note 1	PROTECTION GRADE: IP-65
39	TYPE: SAFETY	ULTRAVIOLET FLAME SENSOR
40	MODEL: Note 1	MFR/MODEL: Note 1
41	ADJUSTMENT PRESSURE: 12.0 barg	QUANTITY: 1
42	MAX. FLOW EACH VALV.: 5.504 kg/h	WATER LEVEL CONTROLLER
43	INTERNAL MATERIAL: BRASS B16	MFR: Note 1
44	SPRING MATERIAL: SS A-303	MODEL: Note 1
45	BODY MATERIAL: BRASS B16	TYPE OF WATER LEVEL INDIC.: Note 1
46		
47	END OF COURSE FOR BURNER DOOR (1 UNIT)	END OF COURSE FOR SERVO MOTOR
48	TYPE: Note 1	TYPE:
49	MFR/MODEL: Note 1	MFR/MODEL:
50	PROTECTION GRADE: IP-65	PROTECTION GRADE:
51		
52		

NUMBER: 569-DB7C-MEC-721-003

CLIENT NR PRD-MEC-DSH-025

TITLE

SHEET:





5/6

WATER TUBE BOILER - B-7C-1 / B-7C-2 / B-7C-3

REV.:

0

1	CONSTRUCTIVE CHARACTERISTICS		AUXILIARY EQUIPMENT (1 UNIT)	
2	GENERAL		COMBUSTION AIR FAN	
3	MAX.ALLOW. WORK PRESS.(MAWP):	12.0 barg	MANUFACTURER / MODEL:	Note 1
4	HIDROSTATIC TEST PRESSURE:	18.0 barg	TYPE:	CENTRIFUGAL
5	TOTAL HEATING SURFACE:	Note 1	NOMINAL FLOW:	Note 1
6	No. OF GAS PASSAGES:	1	DISCHARGE PRESSURE:	Note 1
7	WATER VOLUME, LOW LEVEL:	Note 1	RPM:	Note 1
8	WATER VOLUME, NORMAL LEVEL:	Note 1	BHP:	Note 1
9	WATER VOLUME, FULL LEVEL:	Note 1	VFD	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
10	INLET BURNER TEMPERATURE:	20°C	DRIVER:	
11	CORROSION TOLERANCE:	0 mm	TYPE:	ELECTRIC MOTOR
12	PRESSURE PLATES MATERIAL:	CARBON STEEL	RPM:	Note 1
13	MAT. GENERAL PIPING:	CARBON STEEL	PROTECTION:	IP 55
14	COATING MATERIAL:	PAINTING	POWER:	Note 1
15	BODY		TYPE OF TRANSMISSION:	DIRECT
16	PLATE THICKNESS:	Note 1	MATERIAL:	CARBON STEEL
17	MATERIAL:	CARBON STEEL	FEED WATER PUMP	
18	THICK. THERMAL INSULATION:	Note 1	QUANTITY:	1
19	THERMAL INSULATION:	FIBERGLASS / ROCK WOOL	MANUFACTURER/MODEL:	Note 1
20	BURNER		TYPE:	CENTRIFUGAL
21	TYPE:	Note 1	NOMINAL FLOW:	12.1 m³/h
22	PLATE THICKNESS:	Note 1	TOTAL HEAD:	178 m
23	MATERIAL:	CARBON STEEL	DISCHARGE PRESSURE:	Note 1
24	WATER TUBESHEET		RPM:	1,800
25	INTERNAL DIAMETER:	Note 1	EFFICIENCY:	Note 1
26	QUANTITY:	Note 1	NUMBER OF STAGES:	1
27	MATERIAL:	CARBON STEEL	IMPELLER DIAM.:	Note 1
28	STACK		BHP:	Note 1
29	MATERIAL:	CARBON STEEL	CASING MATERIAL:	CAST IRON
30	PLATE THICKNESS:	Note 1	IMPELLER MATERIAL:	STAINLESS STEEL
31	INTERNAL DIAMETER:	20 INCHES	COOL. WATER CONSUM.:	NA
32	CYLINDRICAL HEIGHT:	6 m	DRIVER	TYPE: ELECTRIC MOTOR
33	STEAM OUTLET PIPING:		RPM:	1,800
34	MATERIAL:	CARBON STEEL	PROTECTION:	IP 55
35	NOMINAL DIAMETER:	4"	TESTS	
36	TYPE:	SEAMLESS	HIDROSTATIC	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> CERTIFIED
37	THICKNESS:	SCH. 40	PERFORMANCE	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> CERTIFIED
38	CONNECTIONS (Ø;CLASS;FACE)		MECHANICAL FUNC.	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> CERTIFIED
39	STEAM OUTLET:	4" #150	INSPECTION	<input type="checkbox"/> <input checked="" type="checkbox"/> CERTIFIED
40	WATER INLET:	1.1/2" NPT	LOCAL INSTALLATION DATA	
41	LEVEL INDICATOR:	Note 1	TEMPERATURE: DB _m /WB _c :	34.0 / 27.1 °C
42	SAFETY VALVE:	2.1/2" NPT	WB _c /DB _m :	27.6 / 32.4 °C
43	BOTTOM DISCHARGE:	1.1/4" NPT	DB/WB (WINTER):	21.8 / 15.2 °C
44	INSPECTION OPENING:	2" NPT	ALTITUDE ABOVE SEA LEVEL:	13 m
45	AIR INLET:	Note 1	UTILITIES AVAILABLE	
46	OIL FEEDING:	Note 1	COMPRESSED AIR	
47	STEAM / AIR ATOMIZATION:	Note 1	GENERAL	PRESSURE: 6.0 bar g
48	PILOT:	Note 1		TEMPERATURE: 40 °C
49				
50				
51				
52				

 		 	
NUMBER: 569-DB7C-MEC-721-003		CLIENT NR PRD-MEC-DSH-025	
TITLE			SHEET:
WATER TUBE BOILER - B-7C-1 / B-7C-2 / B-7C-3			6/6
			REV.: 0
NOTES			
1- Vendor Shall complete all blank fields in this data sheet.			
2- Supplier shall issue with the proposal the material standard (ASTM, ANSI, etc) used in the equipment fabrication, as well as the painting procedure.			
3- The scope of supply includes the instruments and wiring to junction box and/or local panel.			
4- The local control panel is the battery limit of the package.			
5- All instruments and components of the automation shall follow TAKEDA/BAXALTA's vendor list.			
6- The control system shall be supplied with communication protocol in Ethernet and compatible with the Wonderware platform (BMS System) and manager all automation of the steam generation system.			
7- The supplier shall provide the following documents:			
Instrument List, I/O List, Installation Bill of Materials, Instrumentation Hook-up, Logic Diagram,			
Cable List, Instrumentation Plans, Instrument Data Sheets, Control Valves and Pressure Relief Valves.			
8- Available electrical power 380V - 3ph - 60 Hz. Control voltage shall be 220 Vdc generated internally in the scope of the package.			
9- Compliance with NR-10 is required.			
10- Compliance with NR-12 is required.			
11- Compliance with NR-13 is required.			
12- Reference documents:			
PRD-MEC-TSP-008 (TECHNICAL SPECIFICATION – STEAM BOILERS)			
PRD-MEC-DSH-026 (DATA SHEET– BLOWDOWN TANK - BDT-7C-1)			
PRD-MEC-DSH-027 (DATA SHEET– DEARETOR - DA-7C-1)			
13 - One pump shall be supplied as spare (it will not be installed)			
14 - The scope of supply includes the softner system.			
15 - For the battery limits of the scope of supply see: 7C-M-0-5-61 (DRUG PRODUCT - PID - PLANT STEAM GENERATION SYSTEM).			