

 		 	
DOC NUMBER: 569-DB7B-MEC-725-002		CLIENT NUMBER: PRD-MEC-DSH-023	
CLIENT: TAKEDA			
PROJECT: BURITI EPCVM PROJECT			

DATA SHEET
HOT WATER SKID
HX-7B-1

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-DB7B-MEC-725-002		CLIENT NR: PRD-MEC-DSH-023	
TITLE HOT WATER SKID - HX-7B-1			SHEET: 2/7 REV.: 0

1. REVISION HISTORY

Rev	Reason For Change
A	ORIGINAL ISSUE
B	PAGE 3, line 5: changed capacity from 742,789 kcal/h to 672,235 kcal/h
	PAGE 3, line 6 and 18: changed temperature from 50.0 °C to 52.7 °C
	PAGE 3, line 16: changed from operation to design.
	PAGE 3, line 22: changed discharge pressure from 3.6 barg to 3.95 barg
	PAGE 3, line 23: changed differential pressure from 2.93 bar to 3.28 bar
	PAGE 3, line 24: changed total head from 31.0 mH ₂ O to 35.0 mH ₂ O
	PAGE 4, line 23: changed water total flow from 80,036 kg/h to 79,932 kg/h
	PAGE 4, line 23: changed steam total flow from 1,657.2 kg/h to 1,291 kg/h
	PAGE 4, line 24: changed steam inlet flow from 1,657.2 kg/h to 1,291 kg/h
	PAGE 4, line 25: changed liquid flow from 1,657.2 kg/h to 1,291 kg/h
	PAGE 4, line 28: changed water flow from 80,036 kg/h to 79,932 kg/h
	PAGE 4, line 29: changed steam temperature from 164°C to 127.1°C
	PAGE 5, line 4: changed latent heat from 516.5 kcal/kg to 520.7 kcal/kg
	PAGE 5, line 5: changed water operation pressure - input from 3.6 barg to 3.95 barg
	PAGE 5, line 5: changed steam operation pressure - input from 2.0 barg to 1.5 barg
	PAGE 6, line 7: complemented communication protocol information
	PAGE 6, note 6: complemented communication protocol information
	PAGE 6, note 8: changed control voltage from 24 V to 220 V
	PAGE 6: added note 13
	PAGE 7: updated battery limits
0	ISSUED FOR CONSTRUCTION
	PAGE 6: added note 14

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CLIENT NR: PRD-MEC-DSH-023

TITLE

HOT WATER SKID - HX-7B-1

SHEET: 3/7

REV.: 0

CLIENT: Takeda / Baxalta SERVICE.: Air Conditioning Units (7B Bld)

LOCATION: Goiana - PE EQUIPMENT TAG: HX-7B-1

PLANT: Hemobrás' site QTY.: 1 unit

APPLICABLE TO: ☒ Proposal ☐ Purchase ☐ As Built

PROCESS CONDITIONS:

1	GENERAL - PERFORMANCE DATA					
2	MANUFACTURER:		(Note 1)			
3	MODEL:		(Note 1)			
4	UNITS:		1			
5	UNIT EFFECTIVE CAPACITY (Kcal/h):		666,540			
6	WATER ENTERING TEMPERATURE (°C):		52.7			
7	WATER LEAVING TEMPERATURE (°C):		61.1			
8	STEAM PRESSURE (bar g)		2.0			
9	PUMP					
10	OPERATION CONDITIONS					
11	QUANTITY:		2 (one stand-by)			
12	PUMP TYPE:		Centrifugal			
13	MANUFACTURER / MODEL:		(Note 1)			
14	MANUFACTURING STANDARD:		ASME B 73.1			
15	SERVICE:		Hot water			
16	DESING FLOW (m³/h):		81.0			
17	DENSITY AT OPERATION TEMPERAT. (kg/m³):		986.8			
18	OPERATION TEMPERATURE (°C):		52.7			
19	VISCOSITY AT OPERATION TEMPERAT. (cP):		0.53			
20	VAPOUR PRESSURE OF WATER AT OPER. TEMP. (bar abs):		0.14			
21	SUCTION PRESSURE (bar g):		0.67			
22	DISCHARGE PRESSURE (bar g):		3.95			
23	DIFFERENTIAL PRESSURE (bar):		3.28			
24	TOTAL HEAD (mcl):		35.0			
25	NPSH AVAILABLE (mcl):		16.3			
26	CONSTRUCTION AND MATERIALS (Note 1 and 2)					
27	IMPELLER	RADIAL, OVERHUNG AND CLOSED				
28	CONNECTIONS:	DN	CLASS	STANDARD	NUMBER	FACE
29	SUCTION:		150#	ANSI/ASME	B16.5	RF
30	DISCHARGE:		150#	ANSI/ASME	B16.5	RF
31	CASING DRAIN:		3000#	ANSI/ASME	NPT	RF
32	SHAFT SEALING:	MECHANICAL SEAL				
33	CASING MATERIAL:	A48 CL 30B OU SIMILAR				

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CLIENT NR: PRD-MEC-DSH-023

TITLE

HOT WATER SKID - HX-7B-1

SHEET: 4/7

REV.: 0

CLIENT: Takeda / Baxalta SERVICE.: Air Conditioning Units (7B Bld)

LOCATION: Goiana - PE EQUIPMENT TAG: HX-7B-1

PLANT: Hemobrás' site QTY.: 1 unit

APPLICABLE TO: ☒ Proposal ☐ Purchase ☐ As Built

1	IMPELLER MATERIAL:		A48 CL 30B OU SIMILAR			
2	SHAFT MATERIAL:		SAE 1045			
3	SHAFT SLEEVE MATERIAL:		AISI 316			
4	DRIVER					
5	TYPE:		ELECTRIC MOTOR (TFVE)	INSULATION CLASS: F		
6	POWER (CV):		(NOTE 1)	SERVICE FACTOR: 1.25		
7	ROTATION (RPM):		1,800	ZONE / TEMP. CLASS / GROUP: N/A		
8	TENSION (V)		220/380/440	PROTECTION: IP55		
9	N° OF PHASES :		3	CONSTRUCTIVE FORM / ASSEMBLY: B3D		
10	FREQUENCY (Hz):		60	MANUFACTURER: ACCORDING TO VENDOR LIST		
11	SPEED CONTROL:		Yes (note 13)			
12	PERFORMANCE (NOTE 1)					
13	CURVE N°:					
14	REQUIRED NPSH (mcl):					
15	EFFICIENCY (%):					
16	BRAKE HORSEPOWER - BHP (kW/CV):					
17	ROTATION (RPM):					
18	SOUND PRESSURE (dBA):					
19	PLATE HEAT EXCHANGE (NOTE 1)					
20	PERFORMANCE BY UNIT					
21	FLUID LOCATION		COLD SIDE		HOT SIDE	
22	FLUID		WATER		STEAM	
23	TOTAL FLOW (kg /h)		79,932		1,280	
24	STEAM (INLET / OUTLET) (kg/h)		-	-	1,280	-
25	LIQUID (kg/h)		-	-	-	1,280
26	WATER STEAM (kg/h)		-	-	-	-
27	NON-CONDENSABLE (kg / h)		-	-	-	-
28	WATER (kg /h)		79,932	79,932	-	-
29	INLET / OUTLET TEMPERATURE (°C)		52.7	61.1	165.0	165.0
30	DENSITY - LIQUID (kg/m3)		986.8	982.6		
31	VISCOSITY - LIQUID (cP)		0.53	0.46		
32	VISCOSITY - STEAM (cP)		-	-	0.015	
33	MOLECULAR WEIGHT - STEAM (g/mol)		-	-	18.0	18.0

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CLIENT NR: PRD-MEC-DSH-023

TITLE

HOT WATER SKID - HX-7B-1

SHEET: 5/7

REV.: 0

CLIENT: Takeda / Baxalta SERVICE.: Air Conditioning Units (7B Bld)

LOCATION: Goiana - PE EQUIPMENT TAG: HX-7B-1

PLANT: Hemobrás' site QTY.: 1 unit

APPLICABLE TO: ☒ Proposal ☐ Purchase ☐ As Built

1	MOL. WEIGHT - NON-CONDENSABLE (g/mol)	-	-	-	-
2	SPECIFIC HEAT (kcal/kg ° C)	1.0	1.0	-	-
3	THERMAL CONDUCTIBILITY (kcal/h.m°C)				
4	LATENT HEAT (kcal/kg))	-		520.7	
5	OPERATING PRESSURE - INPUT (bar g)	3.95		1.5	
6	SPEED (m / s)	(Note 1)		(Note 1)	
7	PRESSURE DROP (kgf / cm2)	(Note 1)		(Note 1)	
8	DEPOSIT COEFFICIENT (h.m2°C/kcal)	(Note 1)		(Note 1)	
9	EXCHANGED HEAT (kcal/h)	666,540			
10	TRANSF. COEF. - SERVICE(kcal/hm2 °C)	(Note 1)			
11	CONSTRUCTION OF AN APPARATUS (note 1)				
12		COLD SIDE		HOT SIDE	
13	PRESSURE: DESIGN / TEST (kgf / cm2 G)	6.0 / 9.0		6.0 / 9.0	
14	DESIGN TEMPERATURE (° C)	92		194	
15	NUMBER OF PASSES:	(Note 1)		(Note 1)	
16	FLOW DIRECTION OF PASSES:	(Note 1)		(Note 1)	
17	HOT SIDE CONNEC.:	DN	CLASS	STANDARD	NUMBER
18	INLET:	6"	150	ASME/ANSI B16.5	1
19	OUTLET:	2"	150	ASME/ANSI B16.6	1
20	DRAIN:	-	-	-	-
21	PURGE:	-	-	-	-
22	COLD SIDE CONNEC.:	DN	CLASS	STANDARD	NUMBER
23	INLET:	4"	150	ASME/ANSI B16.5	1
24	OUTLET:	4"	150	ASME/ANSI B16.6	1
25	DRAIN:	-	-	-	-
26	PURGE:	-	-	-	-
27	REAL N° OF PLATES:	(Note 1)	EFFECTIVE: (Note 1)		AREA (m²): (Note 1)
28	TYPE OF PLATE:	SIMPLE	MATERIAL: AISI 316L		THICKNESS (mm): (Note 1)
29	JOINTS OF PLATES:		MATERIAL: (Note 1)		THICKNESS (mm): (Note 1)
30	STATIONARY HEAD:		MATERIAL: (Note 1)		THICKNESS (mm): (Note 1)
31	TIGHTENING PLATE:		MATERIAL: AISI 316L		THICKNESS (mm): (Note 1)
32					
33					

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CLIENT NR: PRD-MEC-DSH-023

TITLE

SHEET: 6/7

HOT WATER SKID - HX-7B-1

REV.: 0

CLIENT:	Takeda / Baxalta	SERVICE.:	Air Conditioning Units (7B Bld)
LOCATION:	Goiana - PE	EQUIPMENT TAG:	HX-7B-1
PLANT:	Hemobrás' site	QTY.:	1 unit
APPLICABLE TO:	<input checked="" type="checkbox"/> Proposal <input type="checkbox"/> Purchase <input type="checkbox"/> As Built		

1	BASE: CARBON STEEL	MATERIAL: ASME/ASTM A-36	PLATES MAX. No.: (Note 1)
2	TIGHTENING ROD:	MATERIAL: (Note 1)	DIAMETER (mm): (Note 1)
3	EMPTY WEIGHT (kg):	OP. WEIGHT (kg): (Note 1)	
4	LENGTH (mm): (Note 1)	WIDTH (mm): (Note 1)	HEIGHT (mm): (Note 1)
5	ACCESSORIES		
6	<input checked="" type="checkbox"/> ELECTRICAL PANEL		
7	<input checked="" type="checkbox"/> PLC (PROTOCOL IN ETHERNET AND COMPATIBLE WITH THE WONDERWARE PLATFORM (BMS SYSTEM)).		
8	<input checked="" type="checkbox"/> EXPANSION TANK		
9	<input checked="" type="checkbox"/> CONTROL VALVE - ELECTRICALLY ACTUATED		
10	<input checked="" type="checkbox"/> RELIEF VALVE		
11	<input checked="" type="checkbox"/> INSTRUMENTS AND PIPING		
12	HOT WATER SKID DIMENSIONS		
13	EMPTY WEIGHT (kg):	OP. WEIGHT (kg): (Note 1)	
14	LENGTH (mm): (Note 1)	WIDTH (mm): (Note 1)	HEIGHT (mm): (Note 1)
15	GENERAL 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 hot water 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 V 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-009 (TECHNICAL SPECIFICATION – HOT WATER GENERATION SKID)
- 13- Pump with a variable water flow
- 14- The manufacturer shall evaluate the need to install a desuperheater

CLIENT NR:	PRD-MEC-DSH-023
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SHEET: 7/7

REV.: 0

SERVICE.:	Air Conditioning Units (7B Blds)
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EQUIPMENT TAG: HX-7B-1

QTY.: 1 unit

APPLICABLE TO: ☒ **Proposal** ☐ **Purchase** ☐ **As Built**

BATTERY LIMITS

