DOC NUMBER: **569-DB7A-MEC-725-003**	CLIENT NUMBER: **PRD-MEC-DSH-012**
CLIENT: **TAKEDA**	
PROJECT: **BURITI EPCVM PROJECT**	

DATA SHEET
HOT WATER SKID
HX-7A-1

REV	DATE	DESCRIPTION	EXEC	CHECK	APPROV
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

1. REVISION HISTORY

Rev	Reason For Change
A	ORIGINAL ISSUE
B	PAGE 3, line 5: changed capacity from 691,092 kcal/h to 574,615 kcal/h
	PAGE 3, line 6 and 18: changed temperature from 50.0 °C to 52.5 °C
	PAGE 3, line 16: changed from operation to design.
	PAGE 3, line 22: changed discharge pressure from 3.6 barg to 4.4 barg
	PAGE 3, line 23: changed differencial pressure from 2.8 bar to 3.6 bar
	PAGE 3, line 24: changed total head from 30.0 mH2O to 38.0 mH2O
	PAGE 3, line 25: changed NPSH available from 18.4 mH2O to 17.6 mH2O
	PAGE 4, line 23: changed water total flow from 77,069 kg/h to 66,815 kg/h
	PAGE 4, line 23: changed steam total flow from 1,560 kg/h to 1,103 kg/h
	PAGE 4, line 24: changed steam inlet flow from 1,560 kg/h to 1,103 kg/h
	PAGE 4, line 25: changed liquid flow from 1,560 kg/h to 1,103 kg/h
	PAGE 4, line 28: changed water flow from 77,069 kg/h to 66,815 kg/h
	PAGE 4, line 29: changed steam temperature from 162°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 4.4 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 3, line 22: changed discharge pressure from 4.4 barg to 4.2 barg
	PAGE 3, line 23: changed differencial pressure from 3.6 bar to 3.4 bar
	PAGE 3, line 24: changed total head from 38.0 mH2O to 35.0 mH2O
	PAGE 4, line 29: changed steam temperature from 127.1°C to 165.0°C
	PAGE 6: added note 14

NUMBER:	569-DB7A-MEC-725-003	CLIENT NR:	PRD-MEC-DSH-012

TITLE: **HOT WATER SKID - HX-7A-1**

SHEET: 3/7

REV.: 0

CLIENT:	*Takeda / Baxalta*	***SERVICE.:***	*Air Conditioning Units (7A Bld)*
LOCATION:	*Goiana - PE*	***EQUIPMENT TAG:***	*HX-7A-1*
PLANT:	*Hemobrás' site*	***QTY.:***	*1 unit*

PROCESS CONDITIONS:

	GENERAL - PERFORMANCE DATA	
	MANUFACTURER:	*(Note 1)*
	MODEL:	*(Note 1)*
	UNITS:	*1*
	UNIT EFFECTIVE CAPACITY (Kcal/h):	*574,615*
	WATER ENTERING TEMPERATURE (°C):	*52.5*
	WATER LEAVING TEMPERATURE (°C):	*61.1*
	STEAM PRESSURE (bar g)	*2.0*
	PUMP	
	OPERATION CONDITIONS	
	QUANTITY:	*2 (one stand-by)*
	PUMP TYPE:	*Centrifugal*
	MANUFACTURER / MODEL:	*(Note 1)*
	MANUFACTURING STANDARD:	*ASME B 73.1*
	SERVICE:	*Hot water*
	DESIGN FLOW (m³/h):	*68.0*
	DENSITY AT OPERATION TEMPERAT. (kg/m³):	*987*
	OPERATION TEMPERATURE (°C):	*52.5*
	VISCOSITY AT OPERATION TEMPERAT. (cP):	*0.53*
	VAPOUR PRESSURE OF WATER AT OPER. TEMP. (bar):	*0.14*
	SUCTION PRESSURE (bar g):	*0.8*
	DISCHARGE PRESSURE (bar g):	*4.2*
	DIFFERENTIAL PRESSURE (bar):	*3.4*
	TOTAL HEAD (mH2O):	*35.0*
	NPSH AVAILABLE (mH2O):	*17.6*
	CONSTRUCTION AND MATERIALS (Note 1 and 2)	
	IMPELLER	*RADIAL, OVERHUNG AND CLOSED*

	CONNECTIONS:	***DN***	***CLASS***	***STANDARD***	***NUMBER***	***FACE***
	SUCTION:		*150#*	*ANSI/ASME*	*B16.5*	*RF*
	DISCHARGE:		*150#*	*ANSI/ASME*	*B16.5*	*RF*
	CASING DRAIN:		*3000#*	*ANSI/ASME*	*NPT*	*RF*

	SHAFT SEALING:	*MECHANICAL SEAL*
	CASING MATERIAL:	*A48 CL 30B OU SIMILAR*

NUMBER:	569-DB7A-MEC-725-003	CLIENT NR:	PRD-MEC-DSH-012
TITLE	HOT WATER SKID - HX-7A-1	SHEET:	4/7
		REV.:	0

CLIENT:	*Takeda / Baxalta*	***SERVICE.:***	*Air Conditioning Units (7A Bld)*
LOCATION:	*Goiana - PE*	***EQUIPMENT TAG:***	*HX-7A-1*
PLANT:	*Hemobrás' site*	***QTY.:***	*1 unit*

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):*** *1800*	***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 Nº:***	
14	***REQUIRED NPSH (mcl):***	
15	***EFFICIENCY (%):***	
16	***BRAKE HORSEPOWER - BHP (kW/CV):***	
17	***ROTATION (RPM):***	
18	***SOUND PRESSURE (dBA):***	
19	***PLATE HEAT EXCHANGE (NOTE 5)***	
20	***PERFORMANCE BY UNIT***	

21	***FLUID LOCATION***	***COLD SIDE***		***HOT SIDE***	
22	***FLUID***	*WATER*		*STEAM*	
23	***TOTAL FLOW (kg /h)***	*66,815*		*1,103*	
24	***STEAM (INLET / OUTLET) (kg/h)***	-	-	*1,103*	-
25	***LIQUID (kg/h)***	-	-	-	*1,103*
26	***WATER STEAM (kg/h)***	-	-	-	-
27	***NON-CONDENSABLE (kg / h)***	-	-	-	-
28	***WATER (kg /h)***	*66,815*	*66,815*	-	-
29	***INLET / OUTLET TEMPERATURE (°C)***	*52.5*	*61.1*	*165.0*	*165.0*
30	***DENSITY - LIQUID (kg/m3)***	*987*	*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*

NUMBER:	569-DB7A-MEC-725-003	CLIENT NR:	PRD-MEC-DSH-012

TITLE

HOT WATER SKID - HX-7A-1

SHEET: 5/7

REV.: **0**

CLIENT:	*Takeda / Baxalta*	***SERVICE.:***	*Air Conditioning Units (7A Bld)*
LOCATION:	*Goiana - PE*	***EQUIPMENT TAG:***	*HX-7A-1*
PLANT:	*Hemobrás' site*	***QTY.:***	*1 unit*

1	***MOL. WEIGHT - NON-CONDENSABLE (g/mol)***	-	-	-	-	
2	***SPECIFIC HEAT (kcal/kg ° C)***	*1.0*	*1.0*	-	-	
3	***THERMAL CONDUCTIBILITY (kcal/h.m°C)***	*(Note 1)*		*(Note 1)*		
4	***LATENT HEAT (kcal/kg))***	-		*520.7*		
5	***OPERATING PRESSURE - INPUT (bar g)***	*4.2*		*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)***	*574,615*				
10	***TRANSF. COEF. - SERVICE(kcal/hm2 °C)***	*(Note 1)*				
11	***CONSTRUCTION (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*		*192*		
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***	***FACE***
18	***INLET:***	*6"*	*150*	*ASME/ANSI B16.5*	*1*	*RF*
19	***OUTLET:***	*2"*	*150*	*ASME/ANSI B16.6*	*1*	*RF*
20	***DRAIN:***	-	-	-	-	-
21	***PURGE:***	-	-	-	-	-
22	***COLD SIDE CONNEC.:***	***DN***	***CLASS***	***STANDARD***	***NUMBER***	***FACE***
23	***INLET:***	*4"*	*150*	*ASME/ANSI B16.5*	*1*	*RF*
24	***OUTLET:***	*4"*	*150*	*ASME/ANSI B16.6*	*1*	*RF*
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						

NUMBER:	**569-DB7A-MEC-725-003**	CLIENT NR:	**PRD-MEC-DSH-012**
TITLE	**HOT WATER SKID - HX-7A-1**	SHEET:	6/7
		REV.:	**0**

CLIENT:	*Takeda / Baxalta*	***SERVICE.:***	*Air Conditioning Units (7A Bld)*
LOCATION:	*Goiana - PE*	***EQUIPMENT TAG:***	*HX-7A-1*
PLANT:	*Hemobrás' site*	***QTY.:***	*1 units*

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):*** *(Note 1)*	***OP. WEIGHT (kg):*** *(Note 1)*	
4	***LENGTH (mm):*** *(Note 1)*	***WIDTH (mm):*** *(Note 1)*	***HEIGHT (mm):*** *(Note 1)*
5	***ACCESSORIES***		
6	☑ ***ELECTRICAL PANEL***		
7	☑ ***PLC (PROTOCOL IN ETHERNET AND COMPATIBLE WITH THE WONDERWARE PLATFORM (BMS SYSTEM)).***		
8	☑ ***EXPANSION TANK***		
9	☑ ***CONTROL VALVE - ELECTRICALLY ACTUATED***		
10	☑ ***RELIEF VALVE***		
11	☑ ***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

NUMBER:	**569-DB7A-MEC-725-003**	CLIENT NR:	**PRD-MEC-DSH-012**
TITLE	**HOT WATER SKID - HX-7A-1**	SHEET:	7/7
		REV.:	**0**

CLIENT:	*Takeda / Baxalta*	***SERVICE.:***	*Air Conditioning Units (7A Bld)*
LOCATION:	*Goiana - PE*	***EQUIPMENT TAG:***	*HX-7A-1*
PLANT:	*Hemobrás' site*	***QTY.:***	*1 unit*

BATTERY LIMITS