

EQUIPMENT DATA SHEET (INCL. PREDICTED PERFORMANCE CURVE)

CLIENT : Air Products Manufacturing LLC

PROJECT NAME/NO. : WEP Renewables

CLIENT PO NO : 4505608736

HMD DOCUMENT NO : HMD-4505608736-C04-02

CLIENT DOCUMENT NO : EN207123-SNDYN-9V3-00035

HMD PUMP NO : 839914 A/B

EQUIPMENT TAG NO : 18-P-1856 A/B

3	26/05/2023	ISSUE FOR REVIEW	AFS	KW	NW
2	29/09/2022	ISSUE FOR REVIEW	KW	AFS	NW
1	13/04/2022	ISSUE FOR REVIEW	JLW	AFS	NW
0	17/02/2022	ISSUE FOR REVIEW	AFS	AFS	NW
REV	DATE	DESCRIPTION	PREPARED BY	CHECKED BY	APPROVED BY

NOTE:



RESOLUTION SHEET

Comment Number	Document Name: Equipment Data Shee	Revision from which comment first appeared	Comment Status: Open\Closed -	
	CLIENT COMMENT	HMD RESPONSE	Current Rev:	(Date Closed:)
1	28 NPSH AVAILABLE: 23.9 Excludes Req'd 3 ft margin	Noted and amended.	2	Closed (26/05/2023)
2	Max Allowable Operating Region - 35.7 per page 5	Noted and amended.	2	Closed (26/05/2023)
3	ALTITUDE: 69 ft -m-	Noted and amended.	2	Closed (26/05/2023)
4	Confirm drain connection is correct. P-1855 is flanged.	Confirm. Same as P-1855.	2	Closed (26/05/2023)
5	include note numbers	Wording has been deleted as it is no longer applicable.	2	Closed (26/05/2023)



WORLD ENERGY PARAMOUNT
World Energy Renewables Project
Paramount, California

MECHANICAL EQUIPMENT DATASHEET

Document Number: A8KM-18-078-540161-A

HMD-4505608736-C04-02

Rev. 3, 26/05/2023



WORLD ENERGY RENEWABLES PROJECT

MECHANICAL EQUIPMENT DATA SHEET FOR 18-P-1856A/B CAUSTIC DISTRIBUTION PUMP

Document No. HMD-4505608736-C04-02

Fluor Project No: A8KM

3	26-May-23	ISSUE FOR REVIEW	5	AFS	KW	NW	
2	29-Sep-22	ISSUE FOR REVIEW	5	KW	AFS	NW	
1	13-Apr-22	ISSUE FOR REVIEW	6	JLW	AFS	NW	
0	17-Feb-22	ISSUE FOR REVIEW	4	AFS	AFS	NW	
REV	DATE	DESCRIPTION	PAGES	ORIG	CHK'D	APPV'D	CLIENT

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world energy
FLUOR .

ASME B73.3

Contract:	A8KM		
Item No.:	18-P-1856A/B		
Revision:	3		
Date:	26-May-2023		
P.O No.	4505608736		
Inquiry No.	4-615-RQ		
Sheet	2 of	5	F

		SEALLESS DATA SI		Date: P.O No.	26-May-2023 4505608736	
ELUC		2		Inquiry No.	4-615-RQ	
FLUC)R _e			Sheet	2 of	5
ISSUED FOR:	✓ PROPO	SAL D PURCH.	1ASE	S BUILT		-
SITE		gy Renewables Project / Paramou		3 BOILT		
	tic Distribution Pump		CLIENT	World Energy Param	nount	
	1856A/B	<u>, </u>	PROJECT NO.:	A8KM	iount	
	tic Distribution Pump		PURCHASER ORDER			
	ies and Offsites Firew		SUPPLIER/LOCATION		ro / Fasthourne UK	
<u> </u>		<u> </u>			·	
	netic Drive Pump		SUPPLIER ORDER/S		/ 839914 A/B	
DATA PROVIDED BY:	PUR	RCHASER SUPPLI	ER	R IF NOT BY PURCHASER		
GENERAL						
1 NO. REQ.: 2 x 100%		SIZE: 1.5 x 1 x 8	MODEL GSA Frame 1			
NUMBER MOTOR DRIVE	EN: Two (2)	NUMBER TURBINE DR	RIVEN: N/A	_		
MOTOR ITEM NUMBER:		I/BM TURBINE ITEM NUMBE	ER N/A	GEARBOX ITEM NUMBE	:R: N/A	
4 MOTOR PROVIDED BY:	Pump Supp	lier TURBINE PROVIDED E	•	GEARBOX PROVIDED B	Y: N/A	
MOTOR MOUNTED BY:	Pump Supp	lier TURBINE MOUNTED B	BY: N/A	GEARBOX MOUNTED B	Y: N/A	
OPERATING CO	NDITIONS		PERFORMANCE			
3	RATED	MAX. NORMAL MIN.	PERFORMANCE CUF	RVE NO.: K6-13/60-2		
9 NPSHa Datum		C.L.Impeller	MEASURED AT CAPY	r.: RATED MAX.	NORMAL MIN.	
CAPACITY: (Note-2.3)	30	9	gpm NPSH REQ'D.:	4.64		
1 SUCTION PRESSURE:	-2.2	7	psig TOTAL DIFFERENTIA	AL HEAD @ RATED IMPELLER	: <u>177ft</u>	
DISCHARGE PRESSURI	E: 91		psig MAX. DIFFERENTIAL	HEAD @ RATED IMPELLER:	242 ft	
DIFFERENTIAL PRESSU	JRE: 92.9		psi MINIMUM CONTINUC	OUS FLOW:		
DIFFERENTIAL HEAD:	177		ft THERMAL:	GPM STAB	LE: <u>5.9</u> GPM	
HYDRAULIC POWER	1.6		HP ALLOWABLE OPERA	TING REGION: 5.9	TO: 35.7 GPM	
AT DESIGNATED CAPA	CITY: RATED	MAX. NORMAL MIN.		·		
OPERATING TIME:			% BEST EFFICIENCY P	OINT FOR RATED IMPELLER:	30.9 GPM	
NPSH AVAILABLE:	23.9	Excludes Required 3ft margin	ft SUCTION SPECIFIC S	SPEED: 6201		
SYSTEM DESIGN:	·		IMPELLER DIA.: R	ATED: 7.75 MAX.: 8.	.15 MIN.: 5.51	
STAND ALONE O	OPERATION	PARALLEL OPERATION	PUMP RATED POWE	R: 12.3 BHP EI	FFICIENCY: 13.3	
	TION WITH ITEM NUM	MBER:	MAXIMUM POWER @		BHP	
SUCTION PRESSUR	RE MIN/MAX:	/ psig	CASE PRESSURE RA			
SERVICE:		<u> </u>	X MAX. ALLOW	ABLE WORKING PRES.: 24	42.2 PSIG @ 190) °F
4 CONTINUOUS		ENT: STARTS/DAY	X HYDROSTAT	TIC TEST PRESSURE: 42	24.9 PSIG	
SYSTEM CONTROL ME				LL PRESSURE RATING:		
SPEED 2		LEVEL TEMPERATURE			42.2 PSIG @ 190) °F
PRESSURE	PIPE FRICTION RE		 	-	24.9 PSIG	· .
PUMPED FLUID	THETRIOTION	CIOTATOL CITET	SITE CONDITION		L4.0 1 010	
PUMPED FLUID:	2	20wt% Caustic	LOCATION:	<u>-</u>	UTILITY CO	ONDITIONS:
)		MAX. NORMAL MIN.	INDOOR	□ _{HEATED} □		AGE: 460
PUMPING TEMP.:		140 °F	OUTOOR	UNHEATED	PARTIAL SIDES PHAS	·
2 AT DESIGNATED TEMP.		- 	ALTITUDE: 69	ft	HERT	-
SPECIFIC GRAVITY:	1.21		RANGE OF AMBIENT		35 / 105	∠. <u>oo</u> °F
VAPOR PRESSURE:	0.67	nois		_	100	F
		psia cP			TEMD: T2C	
VISCOSITY:	3.3		CL.: I G		_ TEMP:T3C	
SPECIFIC HEAT:		0.87 btu/l	•	DOUS — WINTERI	ZATION REQUIRED	
		RE CURVE PROVIDED	NOTES:	II 1 40 0II 1 1 1 1 1	1.0	
B LIQUID: 🖳 HAZA	ARDOUS U	FLAMMABLE	2.1. Pump center	line is 10.2" above top of foun	dation.	
CORROSIVE / EROS	SIVE AGENT:	NaOH	2.2. Pump suppo	rts shall meet design load req	uirements per Project Spec.	A8KM-
		ppm		Structural Data for Mechanica		
CHLORIDE CONCEN		ppm		001-A, Plant Site Data Sheet.	<u>, , , , , , , , , , , , , , , , , , , </u>	
	ON:					
1 H₂S CONCENTRATIO	ON:					
1 H ₂ S CONCENTRATION 2 OTHER:		ICLE SIZE: in	_			
1 H₂S CONCENTRATIO	ON:	ICLE SIZE:in	- I <u> </u>			

				Contract:	A8KM	
1	world energy	1		Item No.:	18-P-1856A/B	
1	world energy	ASME B73.3		Revision:	3	
1		SEALLESS PU		Date:	26-May-2023	
		DATA SHEE	Τ	P.O No.	4505608736	
1	FLUOR 。	1		Inquiry No.	4-615-RQ	
				Sheet	3 of 5	Rev
1	MAGNETIC DRIVE PUMPS		◆ MOTOR DRIVER	(See sheet 5)		
2	MAGNETIC COUPLING		MANUFACTURER:	(BALDOR	
3	☐ EDDY CURRENT		HORSEPOWER: 20		SPEED: 3450 rpm	_
4	☐ SOFT START REQUIRED		FRAME: 284 TS	ENCLOS	SURE: CI.1 Div.2 Gr.A,B,C,D T3C	
5	MAGNET SIZED TO HANDLE:		TYPE:	SERVICI	E FACTOR:	
6	☑ RATED CAPACITY ☐ BE	EP	NOTE:			3
7	CONTAINMENT SHELL:					
9	RADIAL CLEARANCE TO OUTER MA	GNET RING: 0.036 in	◆ MECHANICAL DA	.ΤΛ		
10	RADIAL CLEARANCE TO INNER RO			SME B73.3 DIMENSION	NAL REQUIREMENTS:	
11	MAGNET & BEARING FLUSHING (IN		YES	NO	VALINEQUINEWENTS.	
12	EDDY CURRENT LOSSES THROUGH		NOZZLE CONNECTIO			
13	HEAT GENERATION IN THE SHELL:			SIZE RATING	FACING	
14	DECOUPLE TORQUE: 61.95	lb ft SAFETY FACTOR:	SUCTION:	1.5 150#	RF	
15	LOCKED ROTOR TORQUE:	lb ft	DISCHARGE:	1 150#	RF	
17		OUTER INNER	VENT		 	
18	MOUNTING METHOD:	Bonded Bonded/Potted	DRAIN:	0.5 Threaded	Welded and Flanged	
			<u> </u>	inreaded	a vvelueu anu Flangeu	\vdash
19	TEMP. LIMITATION:	302 302 °F No Yes	IMPELLER TYPE: CLOSED	OPEN	SEMI-OPEN	
20	HERMETICALLY SEALED:		OTHER:	OPEN	SEIVII-OPEN	
21 22	NUMBER OF MAGNETS: F TOTAL TORQUE:	Proprietary Proprietary	CASING MOUNTING:	Radial Vane		- ⊢
	EXTERNAL ROTOR BEARINGS:	ID IL	FOOT	☐ CENTERLIN	E VERTICAL IN-LINE	
24	◆ MANUFACTURER: N/A		_		PRESSURE RATING: 242.2	
25	WANDI ACTORER.		CONTAINWENTS	INCLE / STATOR LINER	11 NESSONE NATING. 242.2	_
26	COUPLING END BEARING TYPE / NO	O.: N/A	PAINT AND SHIP	MENT PREPARATION		
27	IMPELLER END BEARING TYPE/NO	D.: N/A	PUMP:	_F	BASEPLATE:	
28	LUBRICATION: GREASE	FLINGER CONSTANT LEVEL OILER	MANUFACTUR	RER'S STD. └┘	MANUFACTURER'S STD.	
29	OTHER: LI 1in BULLS EY	E SIGHT GLASS HOUSING VENT	OTHER: No	ote 3.4	OTHER: Note 3.4	
30	(Note 3.2) ESCO SINGLE	E PIECE SIGHT GLASS FOR OIL DRAIN	SHIPMENT:		-	_
31	(Note 3.3) MAGNETIC D	RAIN PLUG IN HOUSING REQUIRED	☑ DOMESTIC	☐ _{EXPORT}	EXPORT BOXING REQ'D.	
32	BEARING ISOLATORS: OUTBOA	ARD INPRO	NUMBER OF MON	NTHS OF STORAGE:	12 (Note 3.5)	
33	OIL VISCOSITY ISO GRADE: 68	3	☑ TOTAL WEIGH	HT: 1100	Ibs	
35	COUPLING:	_	INSPECTION AND) TESTING	-	
36	MANUFACTURER: John Cra	ane TYPE: Disc-type	FINAL INSPEC	CTION REQUIRED		
37	SIZE: TSKS 0013	MODEL: Metastream TSKS	☐ DAYS NOTIFIC	CATION REQUIRED:		
38	SPACER LENGTH: 100	mm	<u>TEST</u>	NONWITNESSED	WITNESSED CERTIFICATE	
39		ANUFACTURER'S STANDARD	HYDROSTATIC:		닏	
40	✓ NO	ON-SPARK COUPLING GUARD REQUIRED	PERFORMANCE:			
41	MATERIAL IF NOT SPECIFIED BY PU	JRCHASER:	NPSHR:	Ш		
43	SANNED MOTOR PUMPS		VIBRATION:	[J]	ПП	
44	SOFT START REQ'D		OTHER:	🗆		
45	STATOR LINER: ☐ SECONDARY	CONTAINMENT TO FULL PRESSURE		AND INSPECT AFTER T	EST	
46	RATING REQ	UIRED	CASTING REF	PAIR PROCEDURE APP	PROVAL REQUIRED	
47	RADIAL CLEARANCE TO ROTOF		MATERIAL CERTIFICA			
48	LINER TO CASING SEALING METHO	DD:	CASING U	COVER IMPE	ELLER U SHAFT	
49	SEAL WELDED OTHE	R:	OTHER:			_ L
50	HEAT GENERATION IN THE LINER:	btu/hr	_	RED FOR CONNECTION	NWELDS:	
51	LOCKED ROTOR TORQUE:	lb ft	✓ MANUFACTUR	RER'S STANDARD	☐ NDT INSPECTION	
52	◆ STATOR CAVITY:		INSPECTION REQUIR	RED FOR CASTINGS:		
53	OIL FILLED	OTHER:		RER'S STANDARD	☐ NDT INSPECTION	
54	ROTOR BEARINGS:		OTHER:			_ L
56	IMPELLER END BEARING TYPE:		MANUFACTURER	R DOCUMENTATION RE	EQUIREMENTS	
57	OUTBOARD END BEARING TYPE:		FOR DATA REQUIRE	MENTS REFER TO:	Attached SDDC form	
58	NOTES:		REMARKS: 3.1. De	eleted.		
59			3.2. Constant leve	el oiler shall be Trico o	r equivalent.	_
60			3.3 Standard oil b	ath lubrication will be	supplied for bearing	_ L
61		_	housing.			_
62		_		's standard paint in co	mpliance with	_
63			ISO 12944-5 C4 is	•		_
64				aging sufficient for 12 i	<u> </u>	_ _
65			required for equip	oment shipping from o	verseas.	_
66 67			-			- ⊨
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				Contract:	A8KM	
				Item No.:	18-P-1856A/B	
	world energy	ASME B73.	3	Revision:	3	
		SEALLESS PU	JMP	Date:	26-May-2023	
		DATA SHEE	ET l	P.O No.	4505608736	
j	FLUOR 。	1		Inquiry No.	4-615-RQ	
				Sheet	4 of 5	Re
1	COOLING OR HEATING PIPING	(N/A)	INSTRUMENTATIO)N		
2	NAME OF FLUID:			ECONDARY CONTAINM	ENT BY:	
3	SUPPLY TEMP. NORM:	°F	PURCHASER	✓ SUPPLII	ΞR	
4	ALLOWABLE TEMP: RISE:	°F	◆ MAKE / MODEL			_
5	Cl ₂	ppmw	VIBRATION MONITORI		 	
6	SUPPLY PRESSURE:	psig	☐ _{PURCHASER}	SUPPLII	ΞR	
7	MAX. ALLOWABLE ΔP:	psi	MAKE / MODEL	<u> </u>		_
8	GALVANIZED PIPE	STANLESS STEEL TUBING	MOTOR LOAD PROTEC	CTION BY:		
9	SIGHT FLOW INDICATOR		PURCHASER	∐ _{SUPPLII}	ΕR	
10	U OUTLET SHUT OFF VALVE		MAKE / MODEL	<u> </u>		
11	REMARKS:		☐ MINIMUM FLOV	W BYPASS PROVIDED	BY PURCHASER	
12			◆ TEMPERATURE &	PRESSURE:		
13			TEMPERATURE	E GAUGES		
_			THERMOWELL	.S		
	HEATING AND COOLING PIPING PLAN:		PRESSURE GA			
	PUMP FLUID CIRCULATION PLAN:	101 or 111			E PROBES -MDP, CMP	<u> </u>
17			-	OR WINDING THERMOS	STATS	
-	♦ MATERIALS		7	AR INDICATOR - CMP		
	MATERIAL CLASS CODE:	316LSS		gnetrol iquid level prob	e to be included for leak	_
	CASING:	316LSS	detection.			_
	IMPELLER:	316LSS				_
	CASE / IMPELLER WEAR RINGS:	316LSS				
	SHAFT:	316LSS				
	CONTAINMENT SHELL:	316LSS / Alloy C 276				
25	STATOR LINER:	N/A				
26	MAGNET (OUTED DRIVE DINO)	Samarium Cobalt (Fully				
	MAGNET (OUTER DRIVE RING): INNER ROTOR:	Encapsulated) N/A				\vdash
	INNER ROTOR: SLEEVE BEARING:	N/A Silicon Carbide				
	THRUST BEARING:	Silicon Carbide Silicon Carbide				<u> </u>
	DRIVER BEARING HOUSING:	Carbon Steel				
	WETTED FASTENERS:	316LSS				
	BASEPLATE:	Carbon Steel				
	COUPLING GUARD:	Non-Spark Brass				
	ELECTRICAL PENETRATION SEALANT:					
35	REMARKS:					
36						
37						
38						
39						
40	1					
41	1					\vdash
42						
43						
44 45						<u> </u>
45 46						
46 47	1					\vdash
4 <i>7</i> 48	1					\vdash
48 49	1					\vdash
50	1					\vdash
51	1					
52	1					
53						
54	1					
55	1					
56						
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ASME B73.3 SEALLESS PUMP DATA SHEET

 Contract:
 A8KM

 Item No.:
 18-P-1856A/B

 Revision:
 3

 Date:
 26-May-2023

 P.O No.
 4505608736

 Inquiry No.
 4-615-RQ

 Sheet
 5 of 5

4.64 ft

Predicted Pump Curve:

 K6-13/60-2, Sundyne HMD Kontro

Impeller														
	Ø	Flow			He	ad	Shaft power P2		Performance curv e	K6-13/60-2				
		US g.p.m. Operation Range n		fi	ft hp		Impeller ty pe	Radial Vane						
	inch	Min.	Max.	Max.	H(Q=0)	Max.	P2(Q=0)	Max.	Max.	Direction of rotation	Clockwise fro	m the drive end		
Actual	7.75	5.9	35.7	30.9	242	173	10.2	12.9	12.3	Impeller construction	Closed			
Min.	5.51	1	1	21.2	117	82.7	6.5	7.51	7.61	Impeller Ey e Area	4.0951 sq in	NSS (US unit)	6201	
Max.	8.15	1	1	32.4	270	198	11.2	14.5	13.6	Frequency	60 Hz Hz	Speed	3500	rpm

Power data referred to: 20wt% Caustic [100%]; 140°F; 1.21kg/dm³; 2.73cSt -Application range 14.3% 177 ft 120-Efficiency shell curves include magnetic coupling losses 12.3 hp Ø 7.78 8.45 (F2) Shaft power P2 Ø 7.75 (P2) -Ø 5.512 (P2) Ø 5.512 (P2)

Efficiency

16

17,798.15

13,3 %

10

8

6

4

2

30 US g.p.m.

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 [US g.p.m.]

Note1: Solid lines represent without coupling losses Note2: Dashed lines represent with coupling losses

NPSH-values

[ft]

5.2 4.8

4.4

3.6

3.2

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