HMD KONTRO Sealless Pumps

EQUIPMENT DATA SHEET
(INCL. PREDICTED PERFORMANCE CURVE)

CLIENT	:	Air Products Manufacturing LLC
PROJECT NAME/NO.	:	WEP Renewables
CLIENT PO NO	:	4505726924
HMD DOCUMENT NO	:	HMD-4505726924-C04-01
CLIENT DOCUMENT NO	:	EN207125-SNDYN-9V3-00023
HMD PUMP NO	:	840113 A/B
EQUIPMENT TAG NO	:	19-P-052 A/B

1	27/10/2022	ISSUE FOR REVIEW	AFS	KW	NW
0	16/09/2022	ISSUE FOR REVIEW	KW	AFS	NW
REV	DATE	DESCRIPTION	PREPARED BY	CHECKED BY	APPROVED BY

NOTE:

RESOLUTION SHEET

Comment Number	Document Name: Equipment Data Sheet (incl. Predicted Performance Curve)		Revision from which comment first appeared	Comment Status: Open\Closed - (Date Closed:)
	CLIENT COMMENT	HMD RESPONSE	Current Rev:	
1	Please correct the format - typical comment	Noted and updated.	0	Closed (27/10/2022)
2	Correct MAWP at 300 Deg F	Noted and updated.	0	Closed (27/10/2022)
3	Mention in PSI	Noted and updated.	0	Closed (27/10/2022)
4	Specify make/model	Noted and updated.	0	Closed (27/10/2022)

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WORLD ENERGY PARAMOUNT
World Energy Renewables Project
Paramount, California

MECHANICAL EQUIPMENT DATASHEET
Document Number: A8KM-19-090-540211-A
Rev. 1, 27-Oct-2022
EN203076-FLUOR-GD1-00050

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WORLD ENERGY RENEWABLES PROJECT

MECHANICAL EQUIPMENT DATA SHEET FOR 19-P-052A/B

DECANTING TANK OIL PUMPS

Document No. HMD-4505726924-C04-01

Fluor Project No: A8KM

1	27-Oct-22	Issue for Review	5	AFS	KW	NW
0	16-Sep-22	Issue for Review	5	KW	AFS	NW
REV	**DATE**	**DESCRIPTION**	**PAGES**	**ORIG**	**CHK'D**	**APPV'D**

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ASME B73.3 SEALLESS PUMP DATA SHEET

Contract:	A8KM
Item No.:	19-P-052A/B
Revision:	1
Date:	27-Oct-2022
P.O No.	4505726924
Inquiry No.	A8KM-4-615
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ISSUED FOR: ☐ PROPOSAL ☑ PURCHASE ☐ AS BUILT — 1

SITE: World Energy Renewables Project / Paramount California

ITEM NAME: Decanting Tank Oil Pumps
ITEM TAG NO.: 19-P-052A/B
SERVICE: Decanting Tank Oil Pumps
UNIT: Pretreat Wastewater Treatment Unit (PWTU)
TYPE: Magnetic Drive Pump

CLIENT: World Energy Paramount
PROJECT NO.: A8KM
PURCHASER ORDER NO.: A8KM-4-615-PO-3
SUPPLIER/LOCATION: Sundyne, HMD Kontro / Eastbourne, UK
SUPPLIER ORDER/SERIAL NOS.: / 840113 A/B

DATA PROVIDED BY: ◆ PURCHASER ◆ SUPPLIER SUPPLIER IF NOT BY PURCHASER — 1

GENERAL

NO. REQ.: 2 x 100% ◆ PUMP SIZE: GSA 1.5x1x8 ◆ MODEL GSA Frame 1

NUMBER MOTOR DRIVEN:	Two (2)	NUMBER TURBINE DRIVEN:	N/A		
MOTOR ITEM NUMBER:	19-P-052AM/BM	TURBINE ITEM NUMBER	N/A	GEARBOX ITEM NUMBER:	N/A
MOTOR PROVIDED BY:	Pump Supplier	TURBINE PROVIDED BY:	N/A	GEARBOX PROVIDED BY:	N/A
MOTOR MOUNTED BY:	Pump Supplier	TURBINE MOUNTED BY:	N/A	GEARBOX MOUNTED BY:	N/A

OPERATING CONDITIONS

	RATED	MAX.	NORMAL	MIN.	
NPSHa Datum	C.L.Impeller				
CAPACITY:	16.5		15	4.5	gpm
SUCTION PRESSURE:	7.0	10.0			psig
DISCHARGE PRESSURE:	28.1				psig
DIFFERENTIAL PRESSURE:	21.1				psi
DIFFERENTIAL HEAD:	54.0				ft
HYDRAULIC POWER	0.2				HP
AT DESIGNATED CAPACITY:	RATED	MAX.	NORMAL	MIN.	
OPERATING TIME:					%
NPSH AVAILABLE:	51.03	Excludes Req'd 3ft Margin			ft

SYSTEM DESIGN:
☑ STAND ALONE OPERATION ☐ PARALLEL OPERATION
☐ SERIES OPERATION WITH ITEM NUMBER:
SUCTION PRESSURE MIN/MAX: / psig
SERVICE:
☐ CONTINUOUS ☑ INTERMITTENT: STARTS/DAY
SYSTEM CONTROL METHOD:
☐ SPEED ☐ FLOW ☑ LEVEL ☐ TEMPERATURE
☐ PRESSURE ☐ PIPE FRICTION RESISTANCE ONLY

PERFORMANCE

PERFORMANCE CURVE NO.: K6/60-4

MEASURED AT CAPY.:	RATED	MAX.	NORMAL	MIN.
NPSH REQ'D.:	1.3			

TOTAL DIFFERENTIAL HEAD @ RATED IMPELLER: 54
MAX. DIFFERENTIAL HEAD @ RATED IMPELLER: 63.5
MINIMUM CONTINUOUS FLOW:
THERMAL: GPM STABLE: 2.78 GPM
ALLOWABLE OPERATING REGION: 2.774 TO: 37.6 GPM

BEST EFFICIENCY POINT FOR RATED IMPELLER: 27.9 GPM
SUCTION SPECIFIC SPEED: 5590
IMPELLER DIA.: RATED: 8 MAX.: 8.15 MIN.: 5.51
PUMP RATED POWER: 1.8 BHP EFFICIENCY: 12.1%
MAXIMUM POWER @ RATED IMPELLER: 2.1 BHP
CASE PRESSURE RATING:
X MAX. ALLOWABLE WORKING PRES.: 230 PSIG @ 300 °F — 1
X HYDROSTATIC TEST PRESSURE: 425 PSIG
CONTAINMENT SHELL PRESSURE RATING:
MAX. ALLOWABLE WORKING PRES.: 230 PSIG @ 300 °F — 1
HYDROSTATIC TEST PRESSURE: 425 PSIG

PUMPED FLUID

PUMPED FLUID: Decanted Oil

	RATED	MAX.	NORMAL	MIN.	
PUMPING TEMP.:	120	250			°F
AT DESIGNATED TEMP.:					
SPECIFIC GRAVITY:	0.904				
VAPOR PRESSURE:	1.69				psia
VISCOSITY:	25.14				cP
SPECIFIC HEAT:					btu/lb°F

☐ VAPOR PRESSURE VS TEMPERATURE CURVE PROVIDED
LIQUID: ☐ HAZARDOUS ☐ FLAMMABLE
CORROSIVE / EROSIVE AGENT:
CHLORIDE CONCENTRATION: ppm
H_2S CONCENTRATION: ppm
OTHER:
% SOLIDS: MAX. PARTICLE SIZE: in

SITE CONDITIONS

LOCATION:
☐ INDOOR ☐ HEATED ☐ UNDER ROOF
☑ OUTDOOR ☐ UNHEATED ☐ PARTIAL SIDES
ALTITUDE: 69 m
RANGE OF AMBIENT TEMPS. MIN./MAX.: 35 / 104 °F
ELECTRICAL CLASSIFICATION:
CL.: I GR.: B/C/D DIV.: 2 TEMP: T3C
☐ NON HAZARDOUS ☐ WINTERIZATION REQUIRED

UTILITY CONDITIONS:
VOLTAGE: 460
PHASE: 3
HERTZ: 60

NOTES:

2.1. Pump centerline is assumed to be 3'-0" above grade and 27" above top of foundation.

2.2. Pump supports shall meet design load requirements per Project Spec. A8KM-PP-000-400002-A, Structural Data for Mechanical Equipment, and A8KM-PP-000-200001-A, Plant Site Data Sheet.

2.3 Pump to be electrically heat traced by others. ~~Pump vendor to supply a fitted insulation blanket for the pump casing.~~

2.4 This is a light liquid service which requires ~~either a dual seal or~~ a sealless pump

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ASME B73.3 SEALLESS PUMP DATA SHEET

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MAGNETIC DRIVE PUMPS

- [x] MAGNETIC COUPLING
- [ ] EDDY CURRENT
- [ ] SOFT START REQUIRED

MAGNET SIZED TO HANDLE:
- [x] RATED CAPACITY [ ] BEP [ ] FULL LOCKED MOTOR TORQUE

CONTAINMENT SHELL:

RADIAL CLEARANCE TO OUTER MAGNET RING: **0.042/0.028** in

RADIAL CLEARANCE TO INNER ROTOR: 0.037/0.020 in

MAGNET & BEARING FLUSHING (INT. / EXT.): **INT**

EDDY CURRENT LOSSES THROUGH SHELL: **0.25kW**

HEAT GENERATION IN THE SHELL:

DECOUPLE TORQUE: **30.97** lb ft SAFETY FACTOR: **5.75 at duty conditions**

LOCKED ROTOR TORQUE: lb ft

	OUTER	INNER	
MOUNTING METHOD:	**Mechanical retianed and glued**	**Mechanical retianed and glued**	
TEMP. LIMITATION:	**401**	**401**	°F
HERMETICALLY SEALED:	**Yes**	**Yes**	
NUMBER OF MAGNETS:	**24**	**24**	
TOTAL TORQUE:			lb ft

EXTERNAL ROTOR BEARINGS:

◆ MANUFACTURER: **SKF**

COUPLING END BEARING TYPE / NO.: **BALL-RACE-CST-6209-STD FIT**

IMPELLER END BEARING TYPE / NO.: **BALL-RACE-CST-6209-STD FIT**

LUBRICATION: [ ] GREASE [x] FLINGER [x] CONSTANT LEVEL OILER

OTHER: [x] 3/4in BULLS EYE SIGHT GLASS [x] HOUSING VENT

(Note 3.2) [x] ESCO SINGLE PIECE SIGHT GLASS FOR OIL DRAIN

[x] MAGNETIC DRAIN PLUG IN HOUSING REQUIRED

BEARING ISOLATORS: **Inpro**

OIL VISCOSITY ISO GRADE:

COUPLING (Note 3.5)

MANUFACTURER: **John Crane** TYPE: Flexible Disc

SIZE: **TSKS 13** MODEL: **Metastream TSKS**

SPACER LENGTH: **100** mm

◆ COUPLING GUARD: [x] MANUFACTURER'S STANDARD

[x] NON-SPARK COUPLING GUARD REQUIRED

MATERIAL IF NOT SPECIFIED BY PURCHASER:

CANNED MOTOR PUMPS

SOFT START REQ'D

STATOR LINER: [ ] SECONDARY CONTAINMENT TO FULL PRESSURE RATING REQUIRED

RADIAL CLEARANCE TO ROTOR: in

◆ LINER TO CASING SEALING METHOD:

[ ] SEAL WELDED [ ] OTHER:

HEAT GENERATION IN THE LINER: btu/hr

LOCKED ROTOR TORQUE: lb ft

◆ STATOR CAVITY:

[ ] DRY [ ] OIL FILLED [ ] OTHER:

ROTOR BEARINGS:

IMPELLER END BEARING TYPE:

OUTBOARD END BEARING TYPE:

NOTES:

◆ MOTOR DRIVER (See sheet 6)

MANUFACTURER: **Balder**

HORSEPOWER: **5** SPEED: **1750** rpm

FRAME: **184 T** ENCLOSURE: **Cl.1 Div.2 Gr.A,B,C,D T3C**

TYPE: SERVICE FACTOR:

NOTE: see notes below

◆ MECHANICAL DATA

PUMP MUST MEET ASME B73.3 DIMENSIONAL REQUIREMENTS:

[x] YES [ ] NO

NOZZLE CONNECTIONS:

	SIZE	RATING	FACING
SUCTION:	**1.5**	**150#**	**RF**
DISCHARGE:	**1**	**150#**	**RF**
VENT			
DRAIN:	**1/2**	[ ] Threaded	[x] Welded and Flanged

IMPELLER TYPE:

[x] CLOSED [ ] OPEN [ ] SEMI-OPEN

[ ] OTHER:

CASING MOUNTING:

[x] FOOT [ ] CENTERLINE [ ] VERTICAL IN-LINE

CONTAINMENT SHELL / STATOR LINER PRESSURE RATING: 274 psi 1

PAINT AND SHIPMENT PREPARATION

PUMP:	BASEPLATE:
[x] MANUFACTURER'S STD.	[x] MANUFACTURER'S STD.
[x] OTHER: Note 3.3	[x] OTHER: Note 3.3

SHIPMENT:

[x] DOMESTIC [ ] EXPORT [ ] EXPORT BOXING REQ'D.

NUMBER OF MONTHS OF STORAGE: 12

[x] TOTAL WEIGHT: **1100** lbs

INSPECTION AND TESTING

[x] FINAL INSPECTION REQUIRED

[x] DAYS NOTIFICATION REQUIRED: 10

TEST	NON.-WITNESSED	WITNESSED	CERTIFICATE
HYDROSTATIC:	[x]	[ ]	[x]
PERFORMANCE:	[x]	[ ]	[x]
NPSHR: (Note 3.1)	[ ]	[ ]	[ ]
VIBRATION:	[x]	[ ]	[x]
OTHER:	[ ]	[ ]	[ ]

[ ] DISMANTLE AND INSPECT AFTER TEST

[x] CASTING REPAIR PROCEDURE APPROVAL REQUIRED

MATERIAL CERTIFICATION REQUIRED:

[x] CASING [x] COVER [x] IMPELLER [x] SHAFT

[ ] OTHER:

INSPECTION REQUIRED FOR CONNECTION WELDS:

[x] MANUFACTURER'S STANDARD [ ] NDT INSPECTION

INSPECTION REQUIRED FOR CASTINGS:

[x] MANUFACTURER'S STANDARD [ ] NDT INSPECTION

[ ] OTHER:

MANUFACTURER DOCUMENTATION REQUIREMENTS

FOR DATA REQUIREMENTS REFER TO: **Attached SDDC form**

REMARKS:

3.1. Deleted

3.2. Constant level oiler shall be Trico

3.3. Manufacturer's standard paint in compliance with ISO 12944-5 C4 is required.

3.4. Crating/packaging sufficient for 12 months of storage is required for equipment shipping from overseas.

3.5 Deleted

3.6. The bulls eye sight glass will be supplied in 3/4" size.

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◆ **COOLING OR HEATING PIPING** (N/A)

NAME OF FLUID:

SUPPLY TEMP. NORM: °F

ALLOWABLE TEMP. RISE: °F

Cl_2 ppmw

SUPPLY PRESSURE: psig

MAX. ALLOWABLE ΔP: psi

☐ GALVANIZED PIPE ☐ STAINLESS STEEL TUBING

☐ SIGHT FLOW INDICATOR

☐ OUTLET SHUT-OFF VALVE

REMARKS:

◆ **PIPING PLANS: ASME B73.3**

HEATING AND COOLING PIPING PLAN:

PUMP FLUID CIRCULATION PLAN: 101 or 111

◆ **MATERIALS**

MATERIAL CLASS CODE:	**CD4**
CASING:	**25% Chrome Duplex (CE3MN Gr.5A)**
IMPELLER:	**25% Chrome Duplex (CE3MN Gr.5A)**
CASE / IMPELLER WEAR RINGS:	**ASTM A276 S32760 / NA**
SHAFT:	**25% Chrome Duplex (ASTM A276 S32750)**
CONTAINMENT SHELL:	**Alloy C 276**
STATOR LINER:	**N/A**
MAGNET (OUTER DRIVE RING):	**Samarium Cobalt (Fully Encapsulated)**
INNER ROTOR:	**Alloy C 276**
SLEEVE BEARING:	**Silicone Carbide**
THRUST BEARING:	**Silicone Carbide**
DRIVER BEARING HOUSING:	**SG IRON**
WETTED FASTENERS:	**Alloy C 276**
BASEPLATE:	**Carbon Steel**
COUPLING GUARD:	**Non-Spark Brass**
ELECTRICAL PENETRATION SEALANT:	

REMARKS: **25% Cr DSS in lieu of CD4 is acceptable.**

However, the nitrogen content shall be 0.14% minimum.

INSTRUMENTATION

LEAK DETECTOR – SECONDARY CONTAINMENT BY:

☐ PURCHASER ☑ SUPPLIER **(Note 4.1)**

◆ MAKE / MODEL: Magnetrol - Echotel 961 1

VIBRATION MONITORING BY:

☐ PURCHASER ☐ SUPPLIER

MAKE / MODEL:

MOTOR LOAD PROTECTION BY:

☑ PURCHASER ☐ SUPPLIER

☐ MAKE / MODEL:

☐ MINIMUM FLOW BYPASS PROVIDED BY PURCHASER

◆ TEMPERATURE & PRESSURE:

☐ TEMPERATURE GAUGES

☐ THERMOWELLS

☐ PRESSURE GAUGES

☐ CONTAINMENT SHELL TEMPERATURE PROBES -MDP, CMP

☐ CANNED MOTOR WINDING THERMOSTATS

☐ BEARING WEAR INDICATOR - CMP

NOTES:- **4.1. Magnetrol liquid level probe to be included for leak detection.**

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Predicted Pump Curve:

Performance curve	K6/60-4		
Impeller type	Radial Vane		
Direction of rotation	Clockwise from the drive end		
Impeller construction	Closed		
Impeller Eye Area	4.0951 sq in	NSS (US unit)	5590
Frequency	60 Hz Hz	Speed	1750 rpm

Impeller type		Radial Vane	
Impeller construction		Closed	
Impeller Ø	Max.	inch	8.15
	Designed	inch	8
	Min.	inch	5.51
Flow	Nominal	US g.p.m.	16.9
	Max.	US g.p.m.	37.6
	Min.	US g.p.m.	2.78
Head	Nominal	ft	56.5
	at Max Flow-	ft	29
	at Min Flow-	ft	62.6
Head H(Q=0)		ft	63.5
NPSH 3%		ft	1.3
Shaft power		hp	1.8
Max. shaft power sel. Impeller		hp	2.1
Efficiency		%	12.1

Power data referred to: Decanted Oil [100%] ; 250°F; 0.904kg/dm³; 27.8cSt