



WORLD ENERGY PARAMOUNT
World Energy Renewables Project
Paramount, California

MECHANICAL EQUIPMENT DATASHEET
Document Number A8KM-18-059-540068-A
Rev. D, 17-Jan-2023
EN203076-FLUOR-GD1-00060



WORLD ENERGY RENEWABLES PROJECT

MECHANICAL EQUIPMENT DATA SHEET FOR 18-P-357A/B

JET STRIPPER VAPOR KNOCK-OUT DRUM PUMPS

Document No. A8KM-18-059-540068-A

Fluor Project No: A8KM

REV	DATE	DESCRIPTION	PAGES	ORIG	CHK'D	APPV'D	CLIENT
D	17-Jan-2023	Issued for Purchase	8	NKP	JF AD ME	BT	
C	25-Aug-2022	Issued for Quotation	7	NKP	JF AD ME	BT	
B	7-Jul-2022	Issued for Client Review	7	NKP	JF AD ME	BT	
A	30-Jun-2022	Issued for Internal Review	7	NKP	JF		

		SEALLESS REGENERATIVE TURBINE PUMP DATA SHEET				Contract: A8KM																																																													
		Item No: 18-P-357A/B		Revision: D Date: 17-Jan-23																																																															
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Note: This Data Sheet has been modified from that in Annex R of API 685, Second Edition.																																																																			
CLIENT: World Energy Paramount																																																																			
SERVICE: Jet Stripper Vapor Knock-Out Drum Pumps				PLANT: World Energy Renewables Plant		SITE: Paramount, CA																																																													
NO. REQ'D : 2 x 100% (Note 2.1)		PUMP SIZE : 2" x 1-1/2"		TYPE: MAGNETIC DRIVEN		NO. STAGES : One																																																													
MANUFACTURER: ROTH Pump Company				MODEL: MDW5129BSA		SERIAL NO.: 65061 - 1 & 2																																																													
APPLICABLE TO : ☒ PURCHASE																																																																			
INFORMATION BELOW TO BE COMPLETED: ☐ BY PURCHASER ☒ BY SUPPLIER ☐ BY EITHER																																																																			
● LIQUID CHARACTERISTICS				OPERATING CONDITIONS - CONTINUED																																																															
LIQUID TYPE OR NAME: Jet Stripper Vapor Knock-Out Liquid				SERVICE : INTERMITTENT																																																															
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● OPERATING CONDITIONS (6.1.2)				*IF INTERMITTENT NO. OF STARTS / DAY																																																															
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				PARTICULATE SIZE (DIA. IN MICRONS):																																																															
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				THERMAL EXPANSION: in/in/°F																																																															
				POLYMERIZATION CHARACTERISTICS: (6.1.3.3)																																																															
SITE AND UTILITY DATA																																																																			
LOCATION:				COOLING WATER: IF APPLICABLE																																																															
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MOUNTED AT: GRADE ☐ TROPICALIZATION REQ'D				TEMP °F																																																															
ELECTRICAL AREA CLASSIFICATION: ☐ NON CLASSIFIED				PRESSURE psig																																																															
CLASS: I GROUP: B,C,D DIVISION: 2				SOURCE																																																															
ZONE: GROUP: TEMP. CLASS T3C				COOLING WATER CHLORIDE CONCENTRATION: <840 ppmw																																																															
SITE DATA:				INSTRUMENT AIR: MAX: N/A psig MIN: N/A psig																																																															
ELEVATION (MSL): 69 ft BAROMETER: 14.7 psia				NITROGEN: MAX: psig MIN: psig																																																															
RANGE OF AMBIENT TEMPS: MIN / MAX 35 / 104 °F																																																																			
RELATIVE HUMIDITY: MIN / MAX AVG / 54 %																																																																			
UNUSUAL CONDITIONS:				STEAM																																																															
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2.1 2 x 100% pumps; 1 operating and 1 spare.																																																																			
2.2 Pump centerline is assumed to be 3'-0" above grade and 27" (2'-3") above top of foundation.																																																																			
2.3 Pump Control Method: On/Off (HLL/LLL) on Gap Level Control with manual throttle valve																																																																			
2.4 Reported normal and maximum density are based on carry-over jet liquid draw, with maximum density based on standard conditions.																																																																			
Alternate liquid case of condensed liquid has a normal specific gravity of 0.57.																																																																			
2.5 Pump is in Flammable Service																																																																			
2.6 The discharge line relief valve set pressure to be considered as 145 psig.																																																																			



SEALLESS REGENERATIVE TURBINE PUMP DATA SHEET

Note: This Data Sheet has been modified from that in Annex
R of API 685, Second Edition.

Contract: A8KM
Item No: 18-P-357A/B
Revision: D Date: 17-Jan-23
Unit: RJFU - B
Doc. No.: A8KM-18-059-540068-A
Inquiry No.: A8KM-4-626
Sheet 3 of 8

PERFORMANCE		SYSTEM DESCRIPTION	
1	PROPOSAL CURVE NO.: N/A RPM 3500	ROTOR CHAMBER TEMP RISE OPERATING:	
2	As Tested Curve No.:	AT RATED CONDITIONS °F	
3	IMPELLER DIA.: RATED: 4.25 MAX: N/A MIN: N/A in	AT MAXIMUM PUMP FLOW °F	
4	HYDRAULIC EFFICIENCY AT RATED POINT:	ROTOR CHAMBER TEMP RISE ON SHUTDOWN: °F	
5	HYSTRERESIS & MECHANICAL LOSSES: 2 HP		
6	RATED POWER: 3.3 HP EFFICIENCY: 36 %	SOUND LEVELS (AT 3 FT)	
7	RATED CURVE BEP FLOW (at rated impeller dia.) N/A gpm	MAX ALLOWABLE SOUND PRESSURE LEVEL 85 dBA	
8	MIN. FLOW THERMAL: gpm STABLE: 5 gpm	ESTIMATED MAX SOUND PRESSURE LEVEL dBA	
9	PREFERRED OPERATING REGION: (6.1.11) N/A to gpm		
10	ALLOWABLE OPERATING REGION: 5 to 17 gpm		
11	MAX. HEAD @ RATED IMPELLER: 500 ft		
12	MAX. POWER @ RATED IMPELLER: 4.7 HP		
13	PERCENT RISE TO SHUTOFF: 48 %		
14	ORIFICE USED TO STEEPEN CURVE OR GIVE CONT. RISE? NO		
15	NPSH3 at RATED FLOW : 1 ft		
16	CL PUMP TO U/S BASEPLATE: ft		
17	NPSH MARGIN at RATED FLOW : 4.8 ft		
18	SPECIFIC SPEED: (6.1.16) gpm,rpm,ft N/A		
19	SUCTION SPECIFIC SPEED LIMIT: N/A		
20	SUCTION SPECIFIC SPEED: gpm,rpm,ft N/A		
21			
22	CONSTRUCTION		
23	API PUMP TYPE: OH1 [Based on API 610 Definitions]	CASING MOUNTING: FOOT	
24		CASING TYPE: (6.3.10) SINGLE VOLUTE	
25	NOZZLE CONNECTIONS: (6.4.5)	ROTATION: (VIEWED FROM COUPLING END) CCW	
26		CASE PRESSURE RATING:	
27	SUCTION 2" RF 300 END	MAWP: (6.2.2) 458 psig @ 565 °F	
28	DISCHARGE 1-1/2" RF 300 TOP	HYDROTEST: 1100 psig @ 100 °F	
29	FLANGE THICKNESS REQ'S NON-STD BOLT LENGTH		
30	PRESSURE CASING AUXILIARY CONNECTIONS: (6.3.3)		
31			
32	PURGE/FLUSH OUT 1 1/2" BW RF 300 TOP		
33	DRAIN 2 1/2" BW RF 300 BOTTOM		
34	VENT 1 1/2" BW RF 300 TOP		
35	PRESSURE SENSOR		
36	TEMP SENSOR		
37	WARM-UP LINE		
38	EXTERNAL		
39	2ND DRAIN		
40			
41	GUSSET SUPPORT REQUIRED (6.3.3.5): FOR DRAIN ONLY YES		
42	DRAIN CONNECTION FOR SECONDARY CASING N/A		
43	ROTOR CAVITY DRAINABLE THROUGH 2ND DRAIN: N/A		
44	DRAIN VALVE SUPPLIED BY: PURCHASER		
45	VENT VALVE SUPPLIED BY: PURCHASER		
46	NO THREAD CONS TO SECONDARY CASING:		
47	SPECIAL FITTINGS FOR TRANSITIONING (6.3.3.2):		
48	CYLINDRICAL THREADS REQUIRED (6.3.3.11.3):		
49	MACHINED AND STUDDED CONNECTIONS (6.3.3.7):		
50			
51			
52			
53			
54	NOTES		
55	3.1 Flanges for spiral wound gaskets shall have flange surface finish of 125 µin Ra to 250 µin Ra maximum. Finishes shall be judged by visual comparison with		
56	surface roughness standards conforming to ASME B46.1		
57	3.2 Pump shall be design for FV (Full Vacuum) / 400 Deg F		
58			
59			
60			



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REV

CONSTRUCTION (CONT'D)			
MATERIAL (6.10.1.1)		MAGNETIC DRIVEN PUMP SPECIFIC (9.1)	
APPENDIX H CLASS: A-8: 316 SS / 316 SS		DRIVER TYPE MOTOR GEAR NO	
MINIMUM DESIGN METAL TEMP (6.10.4.1) psig @ 32 °F		CLOSE COUPLED DESIGN APPROVED (9.1.1.2):	
IMPACT TEST SPECIFICATION		DESIGN FOR REMOVAL OF DRIVE END WITHOUT DISTURBING THE	
REDUCED HARDNESS MATERIALS REQ'D (6.10.1.11)		PRESSURE CASING OR DRIVER (9.1.1.4): YES	
APPLICABLE HARDNESS STANDARD (6.10.1.11)		DESIGN CONTAINMENT SHELL FOR VACUUM (6.2.4):	
COPPER IN CONTACT W/ PROCESS FLUIDS		CONTAINMENT SHELL VACUUM DESIGN: psig	
CASING & COVER: 316 SS		MAGNETIC COUPLING TYPE: SYNCHRONOUS	
IMPELLER: 316 SS		MAGNETS:	
SHAFT: 316 SS		MAGNETIC MATERIAL	
WEAR RINGS: N/A		MOUNTING METHOD	
CONTAINMENT SHELL/STATOR LINER: Hastelloy C		TEMP. LIMIT °F	
INNER MAG SHEATH/ROTOR LINER:		HERMETIC. SEALED	
BEARING SLEEVE:		NO. OF MAGNETS	
BEARING BRUSHING: Silicon Carbide		PROTECTION OF OUTER MAG RING (9.1.3.5):	
STATOR HOUSING/FRAME: Iron		STARTING REQUIREMENT: ACROSS-THE-LINE	
INSPECTION CLASS LEVEL 2		TORQUE RATING (DECOUPLING) 340.7 ft-lb	
PRESSURE VESSEL DESIGN CODE REFERENCES		MAX TORQUE REQ'D ON STARTING (9.1.3.7a) ft-lb	
THESE REFERENCES MUST BE LISTED BY THE MANUFACTURER:		PUMP TORQUE AT RATED (+5%), (9.1.3.7b) ft-lb	
SOURCE OF MATERIAL PROPERTIES ASTM		DESIGN FOR FULL CURVE TORQUE REQUIREMENTS (9.1.3.7c)	
CASTING FACTORS USED IN DESIGN (TABLE 3)		TORQUE REQ'D FOR FULL CURVE (120% BEP), (9.1.3.7c) ft-lb	
WELDING AND REPAIRS		REQUIRED/ACTUAL SERVICE FACTOR (9.1.3.8) /	
ALTERNATE WELDING CODES AND STANDARDS		SUBMIT MAG-COUPLING TORQUE VS TEMP. CURVE YES	
WELDER QUALIFICATION		SUBMIT SPEED VS TORQUE CURVE (9.1.3.10) YES	
WELD PROCEDURE QUALIFICATION		BEARINGS AND LUBRICATION (9.1.4)	
MP OR LP EXAM OF PLATE EDGE		DRIVE MAGNET BEARING (TYPE / NUMBER):	
POST WELD HEAT TREAT		RADIAL SINGLE ROW BALL /	
POST WELD HEAT TREAT OF CASING		THRUST DOUBLE ROW BALL /	
ALTERNATE STD/ACCEPT CRITERIA APPLIES		LUBRICATION METHOD: FLINGER	
INSPECTION METHOD CASTINGS FABRICATIONS		OIL VISC. ISO GRADE VG 68	
RADIOGRAPH		CONSTANT LEVEL OILER (9.1.4.2.1)	
ULTRASONIC		PREFERENCE Note 5.2	
MAG PARTICLE		HOUSING VENT Required	
LIQ PENETRATE		SUMP COLLECTOR REQUIRED (9.1.4.2.2)	
VISUAL		BEARING HOUSING END SEALS Inpro-or-Equal	
MOTOR REQUIREMENTS APPLICABLE TO ALL (7.1.2), See Sheet 8		SHAFT COUPLING & GUARD: (9.1.5.2)	
MANUFACTURER: ABB Baldor		COUPLING MANUFACTURER: TB Woods	
FRAME OR MODEL: 184 TC		MODEL Elastomeric Spacer - Type S SPACER LENGTH in	
ORIENTATION: HORIZONTAL		RATING (POWER / 100 RPM) SERVICE FACTOR min. 1.5	
NAMEPLATE POWER HP 5		COUPLING BALANCED TO ISO 1940-1G6.3 (9.1.5.2.3) G2.5	
SERVICE FACTOR 1.15		COUPLING TO ISO 14691 (9.1.5.2.9)	
NOMINAL RPM 3500		COUPLING GUARD STANDARD (9.1.5.2.11) ANSI B15.1	
RATED LOAD RPM 3439		IGNITION HAZARD ASSESSMENT REQUIRED (9.1.5.2.11.5) N/A	
VARIABLE SPEED REQUIRED NO		SPARK RESISTANT MATERIAL (9.1.5.2.11.6) YES	
SOURCE OF VARIABLE SPEED		BASEPLATE (9.1.5.3)	
VOLTAGE 460		API BASEPLATE NUMBER (9.1.5.3.3):	
PHASE 3		BASEPLATE CONSTRUCTION (9.1.5.3.1.1): FULL TOP DECKING	
HERTZ 60		BASEPLATE DRAINAGE (7.3.1) DRAIN RIM	
MINIMUM STARTING VOLTAGE 80%		MOUNTING: EPOXY GROUTED	
INSULATION CLASS F		NON-GROUT CONSTRUCTION (9.1.5.3.13) NOT REQUIRED	
FULL LOAD AMPS 5.7		OPEN DECK DESIGN (9.1.5.3.14):	
LOCKED MOTOR AMPS 36.3		PROVIDE STAINLESS SPACER PLATE UNDER ALL EQUIP. FEET (9.1.5.3.6):	
START CONDITION OPEN VALVE (FULLY-LOADED)		OTHER Furnish two (2) diagonally opposed grounding provisions, Note 6.3	
		SEPARATE MOTOR DRIVER, See Sheet 8	
		APPLICABLE SPEC: ENCLOSURE:	
		INCLUDE: SPACE HEATER VIB. SENSOR	
		LUBRICATION:	
		DRIVER MOTOR BEARING (TYPE / NUMBER):	
		RADIAL /	
		THRUST /	

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CANNED MOTOR PUMP SPECIFIC (9.2)				PREPARATION FOR SHIPMENT (8.4.1)																					
MOTOR WINDING INSULATION CLASS (9.2.2.8)				TYPE OF SHIPMENT (8.4.1): DOMESTIC																					
SOLID OR LIQUID HEAT TRANS. MEDIA ALLOWED IN STATOR?				EXPORT BOXING EXPORT REQ'D IF OVERSEAS																					
DESIGN MOTOR FOR FREQUENT STARTS (9.2.2.9)				N2 PURGE DURING SHIPPING (9.2.8.4)																					
STARTS PER				OUTDOOR STORAGE MORE THAN 12 MONTHS YES																					
IMPACT ON LIFE:				PURGE DURING STORAGE (9.2.8.4) NO																					
DESIGN MOTOR FOR (9.2.2.9):				DETAILS OF LIFTING DEVICES																					
UL, FM, ATEX OR EQUIVALENT REQUIRED (9.2.2.10)				SPARE PARTS (include cost & details w/ proposal)																					
CERTIFICATION OF IEEE 252 TEST REQUIRED (5.2.7.1)				START - UP YES																					
DESIGN STATOR LINE FOR VACUUM (6.2.4)				NORMAL MAINTANANCE YES																					
STATOR LINER VACUUM DESIGN: psig				SPARE ASSEMBLY:																					
DECONTAMINATION CONNECTION ON STATOR (9.2.2.11)				OTHER:																					
SECONDARY CONTROL / CONTAINMENT				WEIGHTS lb																					
NFPA RATING:				<table border="1"> <thead> <tr> <th>ITEM NO.</th> <th>PUMP</th> <th>DRIVER</th> <th>GEAR</th> <th>BASE</th> <th>TOTAL</th> </tr> </thead> <tbody> <tr> <td>18-P-357A</td> <td></td> <td></td> <td>NA</td> <td></td> <td>840</td> </tr> <tr> <td>18-P-357B</td> <td></td> <td></td> <td>NA</td> <td></td> <td>840</td> </tr> </tbody> </table>				ITEM NO.	PUMP	DRIVER	GEAR	BASE	TOTAL	18-P-357A			NA		840	18-P-357B			NA		840
ITEM NO.	PUMP	DRIVER	GEAR	BASE	TOTAL																				
18-P-357A			NA		840																				
18-P-357B			NA		840																				
HEALTH: FLAMMABILITY: INSTABILITY:																									
USE ANNEX B HAZARD BASED PROCEDURE																									
HAZARD STATEMENT				HAZARD GROUP																					
RISK PHRASE																									
REQUIRED MEASURE: SECONDARY CONTAINMENT SYSTEM				OTHER PURCHASER REQUIREMENTS																					
SECONDARY CONTROL (3.67)				COORDINATION MEETING REQUIRED (10.1.3) YES																					
MAX LEAKAGE ON PRIMARY FAILURE: gpm				CASTING REPAIR WELD PROCEDURE APPR REQ'D (6.10.2.5) Note 5.1																					
FLOW RESTRICTION: DRY-RUN MECHANICAL SEAL				MAXIMUM DISCHARGE PRESSURE TO INCLUDE (6.2.3):																					
DEVICE MANUFACTURER: Flowserve				MAX RELATIVE DENSITY YES																					
MATERIAL: 316 SS / C vs SiC				OPERATION TO TRIP SPEED																					
ELASTOMERS: Viton				MAX DIAM. IMPELLERS NO																					
MANUFACTURER CODE:				CONNECTION DESIGN APPROVAL (6.10.3.4.4)																					
SECONDARY CONTAINMENT (3.65)				DEMONSTRATE CO-PLANAR MOUNTING PAD SURFACES																					
SECONDARY SEAL:				IN PUMP VENDOR SHOP (9.1.5.3.5) NONE																					
DESIGN PRESSURE: psig				DYNAMIC BALANCE TO ISO 1940-1 gr. G1.0 (6.8.4.2)																					
INSTRUMENTATION (7.4.2)				INSTALLATION LIST IN PROPOSAL (10.2.3.1)																					
DETECT OPER. OUTSIDE ACCEPT. RANGE OR DECOUPLE (7.4.2.1)				INCLUDE VIBRATION SPECTRAS (6.8.3.2.1) - Tabular form YES																					
REQUIRED METHOD: POWER MONITOR				CONNECTION BOLTING COATING PAINTED																					
LOCATION: IN PURCHASER MCC				SUBMIT EST. SPL BY OCTAVE BAND REQUIRED																					
IF LOCAL PROVIDED BY: PURCHASER				MATERIAL CERTIFICATION REQUIRED (6.10.1.7)																					
USE FOR: ALARM & TRIP				CASING YES																					
MONITOR LEAKAGE INTO SECOND CASING: YES				IMPELLER YES																					
METHOD: PRESSURE				SHAFT YES																					
SENSOR BY: SUPPLIER				OTHER: All wetted pressure containing components																					
TYPE: TRANSMITTER				VENDOR SUBMIT TEST PROCEDURES (8.3.1.1) YES																					
USE FOR: ALARM & TRIP				ADDITIONAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1G)																					
MONITOR VIBRATION: NOT REQUIRED				SURFACE PREPARATION AND PAINT																					
METHOD: FLAT SURFACE				MANUFACTURER'S STANDARD YES																					
PROVISION REQUIRED:				MFR STD per A8KM-PP-000-500520-A																					
SENSOR BY:				PUMP:																					
IF FULL TIME, USE FOR:				PUMP SURFACE PREPARATION MFR STD Per A8KM-PP-000-500520-A																					
MONITOR FLOW OF MAG DRIVE FLUSH LINE: REQUIRED				PRIMER MFR std in compliance or exceed ISO 12944-C4																					
METHOD: FLOW				FINISH COAT Same as above																					
SENSOR BY: PURCHASER				BASEPLATE:																					
TYPE: TRANSMITTER				BASEPLATE SURFACE PREPARATION MFR STD Per A8KM-PP-000-500520-A																					
USE FOR: ALARM				PRIMER MFR std in compliance or exceed ISO 12944-C4																					
				FINISH COAT No finish coat on underside. Epoxy grout compatible																					
NOTES																									
5.1 Minor defects of a surface nature in the pressure casting (amounting to less than 20% of the wall thickness and less than 10 in ² in total area) may be repaired without Buyer's approval																									
5.2 Bearing housing oilers shall be Oil-Rite make with sight plug.																									
5.3 Pump Vendor shall provide the coupling from the OEM of their choice. If Rexnord is not Vendor's standard, then Vendor shall provide an optional quote for a Rexnord coupling. Magnetic Coupling Make : Burgmann Model: MAK67, Shaft Coupling Make : TB Woods																									

		SEALLESS REGENERATIVE TURBINE PUMP DATA SHEET Note: This Data Sheet has been modified from that in Annex R of API 685, Second Edition.		Contract: A8KM		REV
				Item No: 18-P-357A/B		
				Revision: D Date: 17-Jan-23		
				Unit: RJFU - B		
				Doc. No.: A8KM-18-059-540068-A		
				Inquiry No.: A8KM-4-626		
Sheet 6 of 8						
1		INSPECTION AND TESTING		TESTING (8.3)		
2		GENERAL (8.1)		HARDNESS TEST REQUIRED (8.2.3.2) NOT REQUIRED		
3		DAYS IN ADVANCE NOTIFICATION OF WITNESSED OR OBSERVED		FOR		
4		TESTS AND INSPECTIONS 10		METHOD		
5		NOTIFICATION OF SUCCESSFUL PRELIMINARY SHOP		COMPONENTS TO BE TESTED		
6		PERFORMANCE TEST (8.1.1.3) REQUIRED		IMPACT TEST - TO		
7		SUBMIT INSPECTION CHECKLIST (8.1.6) REQUIRED		HYDROSTATIC TEST (8.3.2) NON-WITNESS		
8				WETTING AGENT INCLUDED (8.3.2.7)		
9		SHOP INSPECTION (8.2)		PERFORMANCE TEST (8.3.3) NON-WITNESS		
10		ADDITIONAL SUBSURFACE EXAMINATION (6.10.1.5) (8.2.1.3)		TEST DATA POINTS PER 8.3.3.3		
11		PART EXAM		PERFORMANCE CURVE & DATA APPROVAL PRIOR		
12		PART EXAM		TO SHIPMENT (8.3.3.3.5) REQUIRED		
13		PART EXAM		TEST W/ NPSHA LIMITED TO 110% SITE NPSHA		
14		PART EXAM		RUN UNTIL TEMP STABILIZATION ACHIEVED YES		
15				1 HR. MECH RUN TEST (8.3.4.2.2) NON-WITNESS		
16		PMI TESTING REQUIRED (8.2.1.4) REQUIRED		THRUST BEARING LOAD TEST (8.3.4.3)		
17		PARTS TO BE TESTED: Per A8KM-PP-000-500512-A		NPSH3 TEST (8.3.4.4.1) NON-WITNESS		
18		INSPECTION REQUIRED FOR CASTINGS (8.2.2.1)		COMPLETE UNIT TEST (8.3.4.5)		
19		MAG PARTICLE NO		SOUND LEVEL TEST (8.3.4.6) FOR INFORMATION ONLY NON-WITNESS		D
20		LIQUID PENTRANT YES		AUXILIARY EQUIPMENT TEST (8.3.4.7)		D
21		RADIOGRAPHY		SECONDARY CONTROL SYSTEM HYDRO NON-WITNESS		
22		ULTRASONIC		SECONDARY CONTAINMENT / CONTROL SYSTEM		
23		INSPECTION REQUIRED FOR CONNECTION WELDS (6.10.3.4.5)		INSTRUMENT TEST (8.3.4.9)		
24		MAG PARTICLE NO		STATIC TORQUE TEST (9.1.6.1)		D
25		LIQUID PENTRANT YES		RUN UNTIL OIL TEMPERATURE STABILIZED (9.1.6.3)		D
26		RADIOGRAPHY		RESIDUAL UNBALANCE TEST (J.4.1.2)		
27		ULTRASONIC		OTHER:		
28						
29		CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.3.1) NON-WIT				
30						
31						
32						
33		NOTES				
34		6.1 PMI of alloy pressure containment parts, including pipes & valves, is required per Project Specification A8KM-PP-000-500512-A Positive Material				
35		Identification (PMI).				
36		6.2 Pressure containing parts including auxiliaries shall be tested hydrostatically with liquid at a minimum 1.5 times the maximum allowable working				
37		pressure.				
38		6.3 Baseplate grounding tabs shall be 1/4" thick steel with at least (1) 9/16" diameter hole provided. If two (2) are provided, they shall be 9/16" dia.				
39		spaced 1-3/4" on center. Where stainless steel grounding tabs are required, they shall be threaded with one (1) 1/2" - 13 hole, or				
40		either two (2), or four (4), 1/2" - 13 holes all spaced 1-3/4" on center.				
41		6.4 Baseplate shall be constructed with top plate decking and a drain rim. The baseplate shall be epoxy grouted. Jacking screws by Vendor.				
42		Baseplate shall be rigid constructed to accommodate 2 X Allowable Nozzle Loads & Moments in API 685, 2nd Edition. Size: 22"(W) x 22"(H) x 66"(L)				D
43		6.5 Motor requires oversized terminal box.				
44		6.6 An ESCO single piece sight glass is required for the oil drain. A magnetic drain plug in housing is also required.				
45		6.7 Provide a Start-up Spare Parts List and 2-yrs. Operating Spares List, inclusive of coupling and motor parts.				
46		6.8 Pump Supplier shall provide pump performance curves, General Arrangement drawing sized for the driver, completed data sheets &				D
47		Bill of Material, and un-priced Sub-Supplier buyouts with the Proposal.				D
48		6.9 Mechanical run testing is required for each pump. Mechanical run test shall be until oil temperature stabilization at Rated point,				
49		for at least one (1) hour for single-stage pumps, with vibration recordings at 10-minute intervals.				
50		6.10 Flow Transmitter on Flush Line to be provided by Purchaser				
51		6.11 Vendor to confirm requirement of suction strainer mesh size and dirt leg requirement during detail design.				
52		6.12 Structural steel base plates and supports shall meet design load requirements per Project Spec. A8KM-PP-000-400002-A,				
53		Structural Data for Mechanical Equipment, and A8KM-PP-000-200001-A, Plant Site Data Sheet.				
54						
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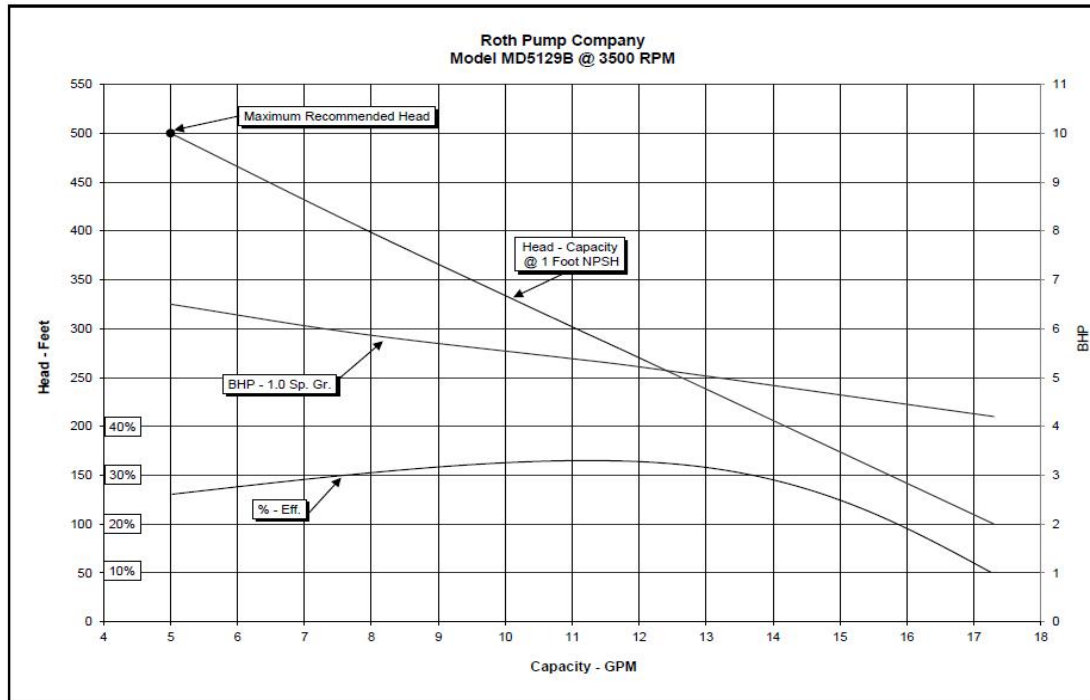


SEALLESS REGENERATIVE TURBINE PUMP DATA SHEET

Note: This Data Sheet has been modified from that in
Annex R of API 685, Second Edition.

Contract:	A8KM		
Item No:	18-P-357A/B		
Revision:	D	Date:	17-Jan-23
Unit:	RJFU - B		
Doc. No.:	A8KM-18-059-540068-A		
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REV



7.1 As per Vendor recommendation a warm up is required for the Pumps based on the specified operating temperature

The warm-up arrangement to be provided by Vendor for each tag shall include followings

1.0 Cast Aluminum (ASTM B179 Gr.A356.1 copper free (max 0.25%) cast aluminum) bolt-on Jacket for a Roth MDW5129BSA 1.5 X 2-10" 300# Horizontal Centrifugal Pump

- Inlet / Outlet Connections: 3/4" 300# CS RFWN FLANGES

- Pressure / Temp. Rating: 232 psig, 430°F

- Heating Medium: Steam

2.0 Flexible connector hoses with insulation.

3.0 Hardening Heat Transfer Compound (The Maximum Service Temperature shall be 750 Deg F)

4.0 Documents required shall be as follows a) Final jacket drawing b) Certificate of Test c) MTR's (Material Traceability Report)

5.0 Removable insulation for a Roth MDW5129BSA 1.5 X 2-10" 300# Horizontal Centrifugal Pump Cast Aluminum bolt-on Jacket

	LOW VOLTAGE MOTOR (IEEE 841) DATA SHEET U.S. CUSTOMARY UNITS		Contract: A8KM		Rev
	APPLICABLE MOTOR SPECIFICATION A8KM-PP-000-50670-A		Item No: 18-P-357A/B	Date: 17-Jan-23	
			Revision: D		
	Doc. No.: A8KM-18-059-540068-A		Unit: RJFU - B	RFQ / P.O. No.: A8KM-4-626	
		Sheet 8 of 8			

1	APPLICABLE TO	☐ PROPOSAL ☒ PURCHASE	AS BUILT		D
2	CLIENT:	World Energy Paramount	SERVICE	Jet Stripper Vapor Knock-Out Drum Pumps	
3	PLANT:	World Energy Renewables Project	MOTOR TAG NO. / NO. REQ'D	18-P-357AM/BM / Two (2)	
4	SITE:	Paramount, CA	DRIVEN EQUIPMENT TYPE / TAG NO.	Regen. Turbine Pump / 18-P-357A/B	
DESIGN DATA AND ACCESSORY EQUIPMENT					
6	NAMEPLATE	5 HP 1.15 S.F. 3500 RPM	POWER (VOLTAGE/PHASE/HERTZ) 460 / 3 / 60		D
7	ROTATION (WHEN FACING MOTOR OPPOSITE DRIVE END):	CW CCW Fans shall be bi-directional			
8	INSULATION CLASS:	☐ B ☒ F ☐ H ☐ VPI	TEMP. RISE	CLASS B / °C over 40 °C AMBIENT	
9	AREA CLASSIFICATION:	CLASS I , GROUP B/C/D	DIV. 2	T-RATING T3C / °F	
10	☐ UNCLASSIFIED				
11	LOCATION:	☐ INDOOR ☒ OUTDOOR ☐ SHELTERED	UNUSUAL CONDITIONS: ☐ DUST ☐ OTHER		
12	AMBIENT TEMPERATURE: MAX 104 °F / MIN. 35 °F		ALTITUDE 69 ft		
13	ENCLOSURE:	☒ TOTALLY-ENCLOSED FAN-COOLED ☐ TOTALLY-ENCLOSED NONVENTILATED ☐ EXPLOSION PROOF			
14	MOUNTING METHOD:	☒ FOOT ☐ FLANGE, TYPE:			
15	MOUNTING ARRANGEMENT:	☒ HORIZONTAL ☐ VERTICAL SHAFT DOWN ☐ VERTICAL SHAFT UP			
16	BEARING TYPE:	☒ BALL ☐ ROLLER	BEARING LUBRICATION:	☒ GREASE ☐ OIL ☐ PURE OIL MIST	
17	CONNECTION TO LOAD:	☒ DIRECT CONNECTED ☐ V-BELT ☐ THROUGH GEAR ☐ CLOSE COUPLED			
18	EQUIPMENT OPERATION:	☐ CONTINUOUS ☐ SPARED CONTINUOUS ☒ INTERMITTENT-CYCLES / DAY			
19	SOUND PRESSURE LEVEL REQUIREMENTS:	85 dBA @ 3 FEET			
20	STARTING:	☒ FULL VOLTAGE ☒ REDUCED VOLTAGE, 80 % OF VOLTAGE Starting Voltage Dip Allowance			
21	☐ UNLOADED ☒ LOADED ☐ CAPACITORS FOR POWER FACTOR CORRECTION				
22	☐ SPACE HEATERS V PHASE °F MAX. TEMP				
23	☒ OVERSIZE TERMINAL BOX ☒ DRAIN PLUGS	Terminal Box shall be the largest feasible for the motor frame.			
24	☒ SS NAMEPLATE ☐ AUXILIARY NAMEPLATE				
25	TEST	☒ ROUTINE ☐ COMPLETE ☒ VIBRATION ☒ REPORT ☒ FOOT FLATNESS			
26	REMARKS:	7.1) This data sheet applies to motors 1/2 hp through 500 hp with anti-friction bearings.			
27		7.2) Deleted.			
28		7.3) IP55 min degree of protection is required.			
29		7.4) Average relative humidity is 54%.			
INFORMATION BELOW TO BE COMPLETED BY VENDOR					
31	MOTOR MFR.	ABB/Baldor	MODEL	CECP83663T-4	SERIAL NO.
32	NAMEPLATE HP	5	FULL LOAD RPM	3439	FRAME
33	MOTOR OUTLINE DRAWING NO.			184 TC	WEIGHT
34	ROTOR CAGE MATERIAL OF CONSTRUCTION				136 LB
35	BEARING MANUFACTURER		SIZE		
36	VERTICAL MOTOR THRUST BEARING:	TYPE	CAPACITY: UP	LBS DOWN	LBS LOCATION
37					
38	LOAD	FULL	3/4	1/2	OTHER
39	AMPERES	5.68	4.25	2.92	
40	EFFICIENCY, %	88.8	90.4	91.6	
41	POWER FACTOR	94.0	93.0	90.0	
42	SPEED, RPM	3439	3481	3523	
43	SOUND LEVEL: GUARANTEED dBA / EXPECTED dBA		LOCKED ROTOR AMPS* 45.42 AMPS		
44	FAN MATERIAL (NON-SPARKING)		FULL LOAD TORQUE* 7.76 FT-LB		
45			LOCKED ROTOR TORQUE* 22.86 LB-FT %		
46			PULL UP TORQUE* 13.42 LB-FT %		
47			BREAKDOWN TORQUE* 33.5 LB-FT %		
48			ACCEL. TIME W/ LOAD (0 TO FULL SPEED)* SEC.		
49			STALL TIMES AT ZERO RPM* - HOT / COLD / SEC.		
50			NUMBER OF CONSECUTIVE STARTS*		
51	* INDICATED AT RATED VOLTAGE				
INFORMATION BELOW TO BE PROVIDED BY VENDOR AFTER PURCHASE (REFER TO RFQ/PO DOCUMENTS)					
52	☒ SAFE TIME - CURRENT CURVE MAX. SURFACE TEMP. DURING NORMAL STARING OR OPERATION OF:				
53	☒ SPEED - TORQUE CURVE ☐ ROTOR °F ☐ STATOR °F ☐ ENCLOSURE °F				
54	☒ SAFE LOCKED ROTOR TIME HOT COLD				
55	NOTES:				
56	7.5 Motor nameplate shall indicate service factor, area classification and T-rating. T-rating relates to both external and internal components.				
57	7.6 Provide accessory loads on submittal documents, e.g. Volts, HP, kVA, etc.				
58	7.7 All motors shall be rated for Cl. I, Div. 2, Gr. B,C,D and a T3C temperature code for project uniformity.				
	7.8 Oversized conduit box is rotatable 90 deg increment, F-1 mounted.				
	7.9 Grounding provisions are required for inside and outside the motor connection box.				
	7.10 Provide all the motor curves. Motor shall be inverter duty.				

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