BARAN ISRAEL

תשתיות נפט ואנרגיה בע"מ
קו מוצרי דלק בע"מ

PETROLEUM & ENERGY INFRASTRUCTURE LTD.

SPECIFICATION FOR DEAERATOR

SPEC. No. _____

PEI PROJECT No._2533_

PEI – Engineering Division

September 2020

REV.	DATE	ISSUE	PREPARED	APPROVED	CLIENT APP'D
P0	24.09.2020	FOR COMMENTS	N.Z.	I.A.	

CONTENT

ATTACHMENTS

A. DEAERATOR DATA SHEET

B. BILL OF QUANTITIES

1. GENERAL

This document covers the minimal technical requirements for design, materials, manufacturing, and assembly, testing marking, inspection, packing and delivery of Vertical Deaerators.
The Vertical Deaerators shall process Diesel fuel as part of project number 2533 in Petroleum & Energy Infrastructure LTD Israel.

2. DEVIATIONS AND EXCLUSIONS

The Supplier shall identify any requirement for which he is unable to comply with and shall list all deviations and exclusions to all requirements in question.
Unless deviations / exclusions are specifically identified by the Supplier in the bid proposal and agreed to by the Client, the Supplier shall be deemed to have confirmed full compliance with all listed requirements.

3. SCOPE OF SUPPLY

3.1. COMPONENTS

3.1.1. One (1) complete Vertical Deaerator, delivered completely assembled and ready for field erection, including all the necessary internals, nozzles, inspection openings, supports, etc., and according to Baran document - SPECIFICATIONS FOR DEAERATOR, Doc. No. BAR-ESM-SPC-006 latest revision (see ATTACHMENT A for REV. P0)

3.1.2. Deaerator will include at least the followings:

- 3.1.2.1. Vent Connection furnished with an Automatic Air Release (AAR) with all the appurtenances required for a good and safe operation. Supplier shall provide sizing calculations.
- 3.1.2.2. Inspection openings with blind flanges, gaskets, nuts and bolts.
- 3.1.2.3. Connections for Instruments according to supplier detail design.
- 3.1.2.4. Grounding clips.
- 3.1.2.5. Insulation and fireproofing supports (if required)
- 3.1.2.6. Special tools (if any)
- 3.1.2.7. Equipment supporting legs with base plates.
- 3.1.2.8. Lifting lugs.
- 3.1.2.9. Painting in the workshop. The Supplier shall guarantee the durability and environment compatibility as indicated for an outdoor equipment.

3.1.3. Auxiliary materials for on-site erection and testing, including gaskets, nuts, bolts, welding rods etc., and all the consumables that will be required.
3.1.4. Stud bolts, nuts and gaskets for all blind flanges (permanent and temporary), pad flanges and ARR. Plugs for NPT nozzles.
3.1.5. Characteristics stainless steel nameplate
3.1.6. Any required instrument for good operation and to comply with current legislation and standards (as presented in section 4 hereafter).

3.2. MATERIALS AND SERVICES

3.2.1. Complete engineering of the equipment, including civil guide (foundation loads, anchor bolts design, etc.).
3.2.2. All loads and moments shall be calculated according to applicable codes for all the nozzles and shall be indicated on fabrication drawings.
3.2.3. The supplier shall confirm deaerator design conditions according to applicable codes to comply with the operating conditions as defined in this document.
3.2.4. Design, Manufacturing and testing to comply with Pressure Equipment Directive (PED) regulation.
3.2.5. Tests and inspections in applicable codes and standards.
3.2.6. Welds will be performed as required .The quality of welds should confirmed by are Ultrasonic RT and X-ray tests
3.2.7. Paint according to manufacture standard but not less than epoxy paint 250 micron, sizable for operating conditions. Stainless steel parts are not to be painted.
3.2.8. In case Israeli regulation is contradictory with the required standards and normative in this datasheet, Israeli regulation shall be followed (i.e SI4295)

4. CODES, STANDARDS, REGULATIONS AND REFERENCES

ANSI/ASME B16.5, *Pipe Flanges and Flanged Fittings*. Flange connections are to be according to ANSI B16.5 150# RF, in standard, non – offset horizontal nozzle position.

Vertical Deaerator casing are to be designed to the latest editions of ASME *Boiler and Pressure Vessel Code, Section VIII, Division 1* for the rate design condition

5. DIESEL FUEL PROPERTIES

Density 150 C	0.842
Kinematics viscosity (CP)	5

6. SITE CONDITIONS

6.1 The Vertical Deaerator shall be installed outdoor.
6.2 Site approximate is about 0-200 m' above sea level.
6.3 Ambient temperature varies between 0°C- 45°C.
6.4 Relative humidity varies between 15% - 90%.
6.5 Rainfall around 200-400 mm' / year.
6.6 Dusty environment

7. TECHNICAL REQUEST

7.1. The Vertical Deaerator design shall comply with the duty and material requirements of the data sheet (see Att.A).
7.2. The supplier will supply the Pressure Drop graph.
7.3. The supplier will supply the Deaerator Efficiency to release air
7.4. Inlet and Outlet nozzles will be tangential. The Nozzle Arrangements will be in Flow Direction and Right Hand Spin, 180 DEG between nozzles.
7.5. Threaded connections shall be according to NPT.
7.6. The Vertical Deaerator shall include Automatic Air Release (AAR) with 3/4" NPT Vent on Head equipped with sight glass
7.7. The Vertical Deaerator include Inspection Opening. The supplier will supply the optional connection for liquid level control system.
7.8. The Vertical Deaerator shall include a 2" drain. NPT threaded and plugged drains are according to code.
7.9. The Vertical Deaerator shall be fitted with supporting legs and lifting lugs.
7.10. All internal welds shall be ground flush and the corners shall be rounded.

8. DIMENSION AND FLANGE (Class Range):

The Vertical Deaerator nozzles shall have flanged ends, according to ANSI B16.5 150# RF and confirm to the nozzle list (see data sheet -Att.A).

- Inlet connection ends shall be 6".
- Outlet connection ends shall be 8".
- Drain end shall be 2"
- Vent Connection -Automatic Air Release device with 3/4" NPT 3000# Vent.
- Inspection Opening 120 mm

- Connection for liquid level control optional by supplier.

9. MATERIALS:

Body Material: CS, A 216 Gr. WCB.
Corrossion Allowance: 1 mm.
Gasket Type: Spiral Wound w/ inner and outer ring (FLEXITALLIC or equivalent)
Gasket Material: SS winding / Graphite filled
Nameplate: Stainless steel.

10. PROCESS DATA:

Max Flow-rate: 420 m3/h @ 45m'.
Temperature operating: varies between 0^{0}C- 50^{0}C.
Design Temperature: 65 ^{0}C.
Design pressure: 20 bar. / F.V.
Max Allowable Pressure drop: – 300 mbar

11. GENERAL TERMS:

Information and documentation to be provided with the proposal:

11.1. Schedule of works (as preliminary).
11.2. inspection and testing plan (preliminary);
11.3. Engineering Dossier including all calculation reports, drawings, data sheet, list for the Vertical Deaerator and Accessories.
11.4. Documentation including support for engineering as Heat and Mass Balances, Operation (ie including control of the sliding pressure), etc.
11.5. Documentation including complete manufacturing of the equipment, including related processes.
11.6. Hydrostatic test certification.
11.7. COC of materials.
11.8. Quality assurance and Quality control protocols (when required)
11.9. List of recommended spare parts and consumables for 2 and 5 years of operation with pricing.
11.10. Manuals for operation and maintenance, Installation/erection manuals shall be both in English.
11.11. A complete system logic description for incorporation of the equipment control and monitoring into the distributed control system (DCS) of the plant (to

be furnished and programmed by others). Including all the functions, interlocking, protections, alarms, set points, etc. required for the proper equipment operation.

11.12. The equipment and special tools and other accessories shall be provided with suitable seaworthy packing prepared to be storage outdoors on site until its installation.

11.13. Delivery date.

11.14. List of customer's reference in Israel including contact details.

11.15. Price for the offer. Unit price and total price.

11.16. The price should include the packing and preparation for seaworthy shipment and delivery CIF ASHDOD Port.

11.17. Export packing suitable for Marine Condition with “Preservation Certification”.

12. PREPARATION FOR SHIPMENT (IF MANUFACTURING OUT OF ISRAEL)

After hydraulic test, the vessel shall be dried and cleaned. During shipment, all the nozzles shall be sealed with blind metallic flanges and the internal surfaces shall be protected with silica gel (0.5 kg/m3).

All the nozzles shall be plugged for humidity proof with a rigid metallic disk and metallic gaskets and closed by suitable no of bolts.
Detailed procedure for preservation of equipment during short time and long time of storage shall be provided in the final documentation.
Vendor shall provide all necessary supports/reinforcement in order to avoid any deformation during transport as well as all instruction for the removal of the same in field.

13. EQUIPMENT STORAGE

Detailed procedure for preservation of equipment during short time and long time of storage during transportation and after installation shall be provided in the final documentation.
A certificate of preservation shall include the following information:-

- date of preservation
- grade of preservation materials
- type of internal packing
- storage conditions
- protection duration without DE preservation
- preservation life
- de preservation method

14. GUARANTEE:

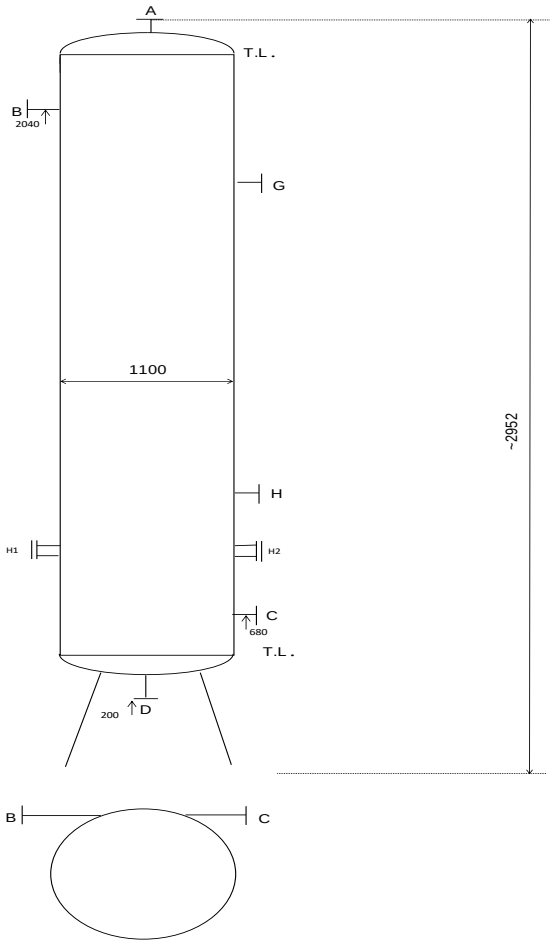
The vender shall guarantee materials and workmanship for a period of 18 months from the date of delivery.
Should any defect due to faulty design, materials or bad workmanship become apparent during the guarantee period, the vendor shall repair or otherwise rectify the defects, and free of charge to purchaser. Changes shall be made at a time and a manner agreeable to the client.
All documents required to obtain Standards Institution of Israel approval and certificated for each vessels.

ATTACHMENT A

DEAERATOR DATA SHEET

(Details for unit number, location, etc. Will delivered in detailed design).

BARAN ISRAEL — תשתיות נפט ואנרגיה בע"מ קו מוצרי דלק בע"מ



All Dimensions are in mm

Service PRMS STATION, ESHEL Terminal

NOTES:
(1)All additional loads shall be considered by the supplier according to applicable codes. All loads and moments shall be calculated for all the nozzles and shall be indicated in fabrication drawings.

(2) All dimensions shown are preliminary, the supplier is required to confirm final dimensions for production.

JOB No . 2533

P0	08.09.2020	FOR COMMENTS	NZ	IT	CH
הוצאה ISSUE	תאריך DATE	DESCRIPTION תיאור	הוכן DRN.	נבדק CHK..	אושר APD.

DESIGN SPECIFICATIONS

No	ITEM		-
	REQUIRED		**5**
CONTENTS	FLUID SPEC.		**DIESEL FUEL**
	FLOWRATE	m3/h	**500**
	DENSITY	kg/m3	**0.842 @150 C°**
PRESSURE	DESIGN	barg	**20**
	OPERATING	barg	-
	TEST	barg	**CODE**
TEMP.	DESIGN	°C	**65**
	OPERATING	°C	**0-50**
SHELL	INSIDE DIA./HEIGHT	mm	**NOTE 2**
	THICKNESS	mm	**NOTE 2**
	MATERIAL		**CS**
	CORR. ALLOW.	mm	**1**
HEAD	TYPE		**NOTE 2**
	THICKNESS	mm	**NOTE 2**
	MATERIALS		**NOTE 2**
	CORR. ALLOW.	mm	**1**
BASE	SKIRT MAT'L		-
	LEGS / SADDLE MAT'L		**CS**
	BASE RING MAT'L		-
	CORR. ALLOW.	mm	-
NOZZ. MANWAYS. ETC.	NOZZLES :		**WN**
	NECK THICKNESS :		**NOTE 2**
	NECK MAT'L :		
	NOZZ. PROJ. FROM SHELL :		
	FLANGES :		**NOTE 2**
	FLANGES MAT'L :		**NOTE 2**
	MANWAYS		
	COUPLINGS :		
DESIGN & CONST.	CODES :		**ASME VIII DIV I**
	STRESS RELIEVE		**NO**
	RADIOGRAPH		**SPOT**
	PAINTING		**YES**
	INSULATION		**NO**
	INSPECTION		**YES**
	CODE STAMP		**NO**
	GASKETS		**FLEXITALLIC**
WT	WEIGHT EMPTY : **NOTE 2**		kg
	WEIGHT FULL OF WATER : **NOTE 2**		kg

NOZZLES

Item	Service	No.	Size in	Rat.& Fac #	
A	Vent Connection- Automatic Air Release	1	TBD(1)	-	-
B	INLET	1	8	150	RF
C	OUTLET	1	10	150	RF
G	LEVEL INDICATOR / TRANSMITTER	1	TBD(1)	-	-
H	LEVEL INDICATOR / TRANSMITTER	1	TBD(1)	-	-
H1/H2	INSPECTION OPENING W.BL.FL.	2	120 mm	150	RF
D	DRAIN	1	2"	150	RF

SPECIFICATIONS FOR DEAERATOR

Doc. No. BAR-ESM-SPC-006	Rev P0	SHEET 1 OF 1	דף מתוך

ATTACHMENT B

BILL OF QUANTITIES

item	Tag	Type	Size	Location	Qty	Unit price	Total
VERTICAL DEAERATOR					Acc to bill quantity		