Base Load Power Hub (BLPH)

TDS - Hydrogen Vent Package - Q-43004

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Document Class: 2

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Rev.	Date	Description	Prepared	Reviewed	Approved

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Revision / Change Log

Rev.	Description
00	ISSUE FOR REVIEW (IFR)
01	ACCEPTED FOR CONSTRUCTION (AFC)
02	ACCEPTED FOR CONSTRUCTION (AFC)

HOLDS LIST

No.	Description
1.	
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DATA SHEET GENERAL NOTES

		Rev
1.	The Package Q-43004 includes the Hydrogen Vent and Liquid Seal Drum	
2.	The gas composition is Hydrogen (H2) 100% during venting scenario. During normal op. there is N2 continuous purge (N2 97%)	01
3.	Liquid inside seal drum is 50% v/v pf monoethylene glycol in water	01
4.	Min/max ambient temperature -8.4ºC/+25ºC	
5.	Liquid seal drum is part of the hydorgen vent and to be installed at the bottom of the hydrogen vent (see sketch note 7)	
6.	Noise requirements shall be compliant with ISO Standard 15664. Max Sound Pressure Level< 85 dBA @1m distance	
7.	Liquid Seal Drum, instrument connections, drain line to be electrically traced for avoiding ice formation (set temp: +5°C).	
8.	Dip pipe included in Vendor scope of supply. Inlet dip leg submersion height by Vendor	
9.	Vent to be equipped with bird screen	01
11.	Painting shall be in compliance with spec.: 123A90-DDL-MAT-SP-60006	
12.	Minimum Design Metal Temperature -29 ºC	
13.	Ladders and platform (if any) shall be included in scope of supply	
14.	Liquid seal drum I.D., height and seal liquid mass to be calculated by Vendor	
15.	The package, as whole, shall conform to PED (single declaration) if deemed necessary by Vendor;	
16.	Package Battery Limit as per 123A90-DDL-PR-PID-80029	
17.	All battery limits flange shall be ASME B16.5	
18.	Ensure that consideration of the 6 month period between maintenance interventions which will allow top up of the glycol seal in vent Q43004 is made in the design	
19.	Vendor shall be responsible for the engineering design, sizing, safety, reliability, control, operability of the whole package, including all the equipment and ancillaries necessary for a proper, effective and safely operation.	
20.	Steel stack structural design and verification shall be in accordance with ASME STS-1.	
21.	All the pressure vessels shall be designed, manufactured and tested in accordance with ASME Sec.VIII Div.1.	
22.	All the equipment and apparatus in classified area shall conform to the minimum safety req. of ATEX (2014/34/EU).	
23.	Technical solutions for the equipment shall be in compliance with the best available technologies and they shall be well proven and referenced.	
24.	Vendor shall formally provide performance guarantee of the whole package at the outlet battery limit of supply.	
25.	The Cold Vent shall be provided with Navigation Aid Light (by RM) and painted (by Vendor) with colours according to CAP 437	01

PROCESS CONDITIONS

Description	Hydrogen Vent		Units	Rev
Composition	see General note 2			
Min/Max Ambient temperature	see General note 4			
Opearting Pressure	ATM		barg	
Pressure at inlet flange	Max allowable backpressure Nozzle N1 0.35		barg	
Design temperature	-10 / +80		°C	
Design Pressure	3.5		barg	
c.a.	3		mm	
Vent Height	see sketch sh 7		mm	
Vent I.D.	see sketch sh 7		mm	
Inclination	Vertical			
Material	LTCS			
Area Classification				
ZONE 2 IIC T 1				
Process Conditions				
	Case *Hot Blowdown*	*Case* *Cold Blowdown*		
Max Flow	13485	1781	kg/h	
Temperature min./max.	+10 / +120	-27 / AMB	°C	
MW	**2.0**	**2.0**	kg/kmol	2
Mach Number	by Vendor	by Vendor		
Description	**Liquid Seal Drum**			
Content	see General note 3			
Min/Max Ambient temperature	see General note 4			
Operating Pressure	0		barg	
Design Temperature	-10 / +80		°C	
Design Pressure	3.5		barg	
Material	LTCS			
c.a.	3		mm	
Seal drum I.D.	see sketch sh 7		mm	
Seal drum Height (T.L.-T.L.)	see sketch sh 7		mm	

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NOZZLES LIST

Rev

ITEM	DIAM. (inch)	TYPE	CLASS	FACING 2)	THICKNESS (sch/mm)	ELEVAT. 5)	DISTANCES 5)	DIA.REINF.	THK. REINF.	SERVICE
N1	**10"**	**WN**	**150**	**RF**	**MFR**	**hold**	**MFR**	**MFR**	**MFR**	**Vent Inlet from V-43001 (with dip pipe)**
N2	**1"**	**LWN**	**150**	**RF**	**MFR**	**hold**	**MFR**	**MFR**	**MFR**	**Drain**
N3	**1"**	**LWN**	**150**	**RF**	**MFR**	**hold**	**MFR**	**MFR**	**MFR**	**Swan Neck Connection**
N4	**1"**	**LWN**	**150**	**RF**	**MFR**	**hold**	**MFR**	**MFR**	**MFR**	**Filling Line**
K1A/B	**1"**	**LWN**	**300**	**RF**	**MFR**	**hold**	**MFR**	**MFR**	**MFR**	**Level Transm. (size and class to be conf. by RM)**
HW	**MFR**	**MFR**	**MFR**	**MFR**	**MFR**	**MFR**	**MFR**	**MFR**	**MFR**	**HAND HOLE**

Accessories:

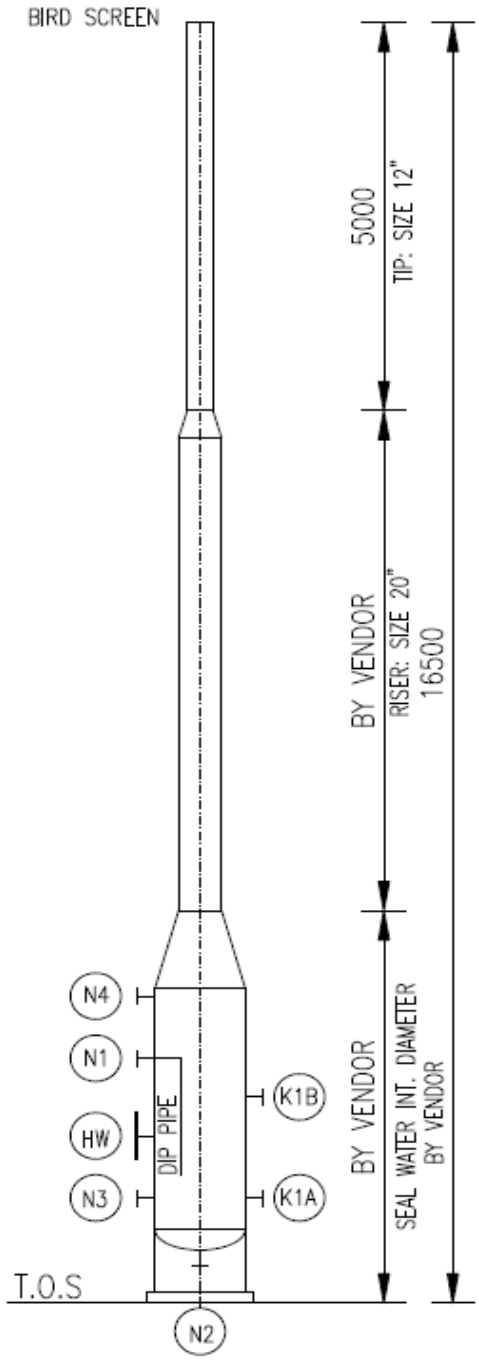
Support base plate: Yes
Platforms and Ladders: Yes (IF ANY)
Drainig System: No
Electrical tracing and insulation:Yes (Junction Box included in scope of supply)
Aircraft warning system: Yes (to be confirmed)
Flanges for vent parts connection: yes (if any)
Gasket and bolting: Yes (if any)
Silencer: Yes (if any)
Any further material/equipment not indicated in the above list, but necessary to complete the supply and to make it suitable for a proper safe operation

01

VENT SKETCH

Rev

REFERENCE DOCUMENT : P&ID doc n° 123A90-DDL-PR-PID-80029



Rev

Process Minimum Requirements and notes

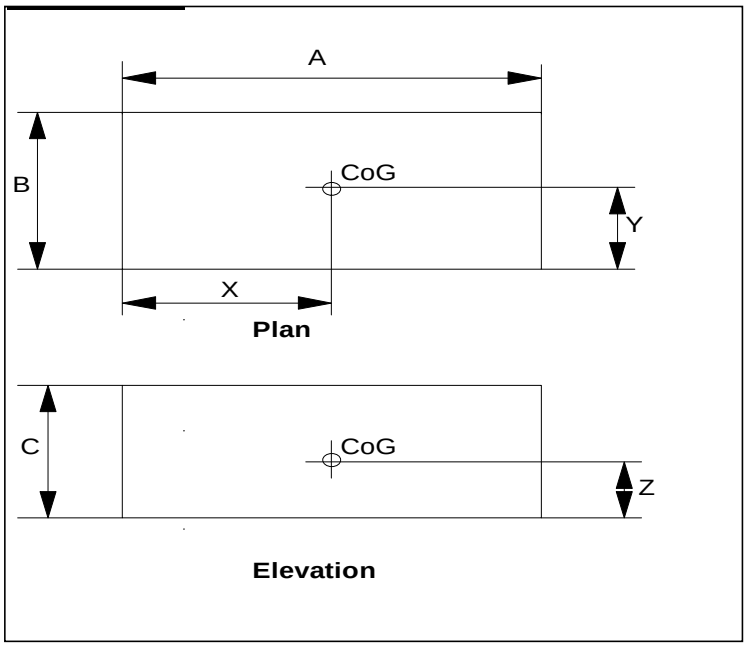
1. Vendor is responsible to verify / define the material selection of whole package (main equipment, ancillaries and piping) considering the fluids characteristics and the operating conditions.
2. Process Design codes:
   API STD 521
3. Liquid drain lines inside the package to be routed to ensure gravity drain
   Seal leg and drum dimensions will be determinated on the maximum vapour-released scenario
   as well as to provide a sufficient seal such that any vacuum generated within the vent system upstream
   will not break the seal
4. Ensure the design of the vent Q43004 exit minimises the potential for rain ingress which
   may dilute the seal liquid resulting in blocked outlet for the H2 vent system due to freezing.

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WEIGHT DATA (kg) to be filled in by Vendor

		Areas for input by Supplier
Dry Weight	(I)	kg
Content	(II)	kg
Operating Weight	(I+II)	kg
Auxiliaries' weight, included in I (specify under Notes)		kg
Test weight, i.e. filled with water		kg
Transport weight		kg

CENTRE OF GRAVITY (CoG) DATA FOR INSTALLED DRY CONDITIONto be filled in By Vendor



Overall dimensions	
A =	mm
B =	mm
C =	mm

CoG location (mm)	
X =	mm
Y =	mm
Z =	mm

NOTES

WEIGHT AND CoG STATUS (TICK OFF AS APPROPRIATE)

☐ Estimated ☐ Calculated

☐ Catalogue data ☐ Weighed

NOISE DATA SHEET

The following data shall be provided by the equipment VENDOR:

Blue To be confirmed by the VENDOR. Black To be filled by the VENDOR.

Identified points	Sound pressure level dB(lin) in octave or 1/3 octave band (Hz)								Global level
Location	63	125	250	500	1000	2000	4000	8000	dBA
1									85
2									
3									
4									
5									
6									
7									
8									
9									
Mean									

Notes

VENDOR shall fill the above table with the calculated sound pressure levels.
Pressure levels shall be indicated at identified points distributed all along a perimeter located 1m away from the edge of the crane/motor room and at 1.6 m above the top of the main beams of the motor room
These points shall be regularly spaced on the perimeter.
There shall be a sufficient number of points to obtain a meaningful calculation result.
The above table shall indicate noise levels without any enclosure (partial or total) on the package.
All efforts shall be deployed to limit the average sound pressure level around the equipment < 85 dB(A) at one meter.

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