CROSSWIND

TECHNICAL QUERY
Hollandse Kust Noord

No. TQ :	CW-BALL-TQ-0010	Rev:	A

Originating Party	CrossWind						
Subject	Hydrogen Supply Interface						
Author	Hamant Patel	TQ Aconex unique number: CWHKN-INN-BPH-TQ-00051					
Interface TQ - from		TQ interface source Aconex unique number:					
Type	Query		X	Interface			
	Deviation			Derogation (SHALL[PS])			
	Note: No deviations nor derogations which have an adverse effect on HSSE will be granted						
Work package	Fuel Cell						
Area(s) of application	Design & Eng.	X	Procurement		Construction		
	Commissioning		Operations		Other		
Issue date	17-05-2024		Urgent reply 5 days	X	Routine reply 10 days		
Close-out date	14-06-2024						
Closed-out by	Hamant Patel		TQ status:		Closed-out		

1. Description

Reference documents / Aconex unique numbers:
Ballard P&IDs - K559-2254-CWIWP4202202-C03-001, Revision 004 08/03/2024 ;
RM BLPH P&ID HYDROGEN STORAGE VESSELS HEADER (OUTLET) - 123A90-DDL-PR-PID-80014-001, Revision 01, 24/11/2023 ;
RM BLPH P&ID FUEL CELL PACKAGE - 123A90-DDL-PR-PID-80012-001, Revision 01, 24/11/2023 ;
Attachment 1 – Basis of transient pressure increase estimation calculation; and
Attachment 2 – Sketch of Contractor / Supplier interface P&ID.

Attachement 1 : - HAZOP Action N22 Time_Calc_Rev_02.pdf



Attachement 2 : - H2_RM_BALLARD_Interface_P&ID_R01_HVP.pdf



This communication is issued for the recipient's information and to facilitate the obligations of the Parties under the Contract. This communication has no authority to amend or vary the Contract nor relieve either Party of any duties, obligations or responsibilities.

Contractor kindly asks Ballard to confirm that the transient pressure increase to 13.5 barg experienced during an infrequent lifting of PSV (80-PSV-001, Set Pressure of 10 barg), is acceptable for the piping and instrument components within Ballard scope, see Attachment 1 and Attachment 2.

Please note the lifting of the PSV is an unlikely event, and will only occur in the following scenario:

- Failure of control loop during startup of Fuel Cell (FC)with no forward flow.
  - Under this circumstance it is assumed that the FC heater has yet to come on line, thus no additional pressure increase due to thermal inertia.
- Emergency shutdown of FC resulting in no forward flow.
  - It is assumed that the 6 FC will be isolated by the closure of the 6 x two set of ESD valves (HA01-DM02-QM11 to HA01-DM02-QM16 and HA01-DM02-QM21 to HA01-DM02-QM26) to stop forward flow to FC module by Ballard internal safety system response.
  - Thermal effect needs to be considered under this scenario and this scenario has been analysed by Ballard (Ref.: Ballard, “Hydrogen Preheating System Impact Assessment”, Doc. No. K559-2254-CWIWP4202202-C99-002, Rev.001, 02/04/2024), with pressure increase to 16.2 bara (15.2 barg).

In both cases a conservative approach has been taken by only considering the volume associated with the upstream and downstream volumes at the contractor / supplier interface, respectively.

If a transient pressure increase to 13.5 barg is not acceptable, Ballard are to advise / confirm what pressure they shall accept considering the scenarios outlined above.

2. Response

Reference documents / Aconex unique numbers

Ballard can accept the transient pressure increase with the stated limitations on:

- This event only occurs as a transient event before the PSV lifts, with the PSV setpoint at 10barg
- The duration of the event is expected to be on the order of few hundreds of milliseconds, from pressure rise to PSV fully opening.

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