Ballard Power Systems Europe A/S
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Revision history		
Rev.	**Date.**	**Description**
001	5/30/2023	First Issue
002	8/11/2023	Expanded, completed list
003	9/15/2025	Updated, As build

Document Title:	**BLPH Project - Piping Line List and Speciality Item List**
Document Number:	K559-2254-CWIWP4202202-C05-001
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Code:	C05
Requsition Number:	n/a
Customer:	CrossWind C.V., Rotterdam, The Netherlands

Piping Class Overview and Piping Line List

Crosswind/Shell Baseload Power Hub, Fuel Cell Container 1MW, no BESS

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		3	P&I diagram: Piping overview : Hydrogen - Hydrogen	08-Sep-25
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		5	P&I diagram: Piping overview : Ventilation - ProcessExhaust	28-Mar-25
		6	P&I diagram: Piping overview : HT_Coolant - HT_Coolant	15-Oct-24

Reference Item Number	Ballard Part # TBD
EPLAN Project Name	601456B - Shell Baseload Power Hub
EPLAN Revision	06
EPLAN Project Pages	574
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DRAWING	K559-2254-CWIWP4202202-C05-001	REVISION	06
DRAWING TITLE	Piping Line List (C05-001)		
SHEET TYPE/DESC	Document C05 Introduction		
ALL SHEETS ARE THE SAME REVISION STATUS	SIZE A3	LANGUAGE EN	SHEET/TOTAL 1 / 6

Pre-planning: Pipe class overview

F49_001

Pipe class		Description	Standard	Nominal pressure level	Material
1	Customer Scope	Piping is within Customer Scope	Customer Scope	Customer Scope	AISI 316 Suggested
2	DN25-PIPE	Seamless hydraulic pipe, acid-resistant	EN 10216-5, ASTM A269/A213	166 bar dynamic, 194 static (DIN2421)	AISI 316
3	DN32-PIPE	Seamless hydraulic pipe, acid-resistant	EN 10216-5, ASTM A269/A213	166 bar dynamic, 194 static (DIN2421)	AISI 316
4	DN50-PIPE	Stainless Steel Pipe, 2mm wall thickness	EN 10216-5	2mm pipe wall thickness	AISI 304
5	DN50x1.6	60,3 x 1,6mm Pipe, Material 1.4404	EN 1092-1	n/a	1.4404 (X2XrNiMo17-12-2)
6	DN80x2.0	88.9 x 2.0 mm Pipe, Material 1.4404	EN 1092-1	n/a	1.4404 (X2XrNiMo17-12-2)
7	RadiaCord-122	Ø 122mm x 6,0mm, Flexible Coolant Hose	DIN 73411	4bar	EPDM

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P&I diagram: Piping overview

F37_001-BPSE

Piping Name	From (Source)	To (Target)	Pipe Class	Length	Substance (Contents)	Pressure	Flow	Temperature	
-HKN70_H2	=HKN70-C01	=HA01+DA02-XM01	CustomerScope		Hydrogen	4.0 - 6,5 barg	0,9 - 29,4 g/s	-8,4 - 25°C	
-WP_H2900	=HA01+DA02-XM01	=HA01+DA02-QM00	DN32-PIPE		Hydrogen	3,5 - 6,5 barg	0,9 - 29,4 g/s	-8,4 - 80°C	
-WP_H2901	=HA01+DA02-QM00	=HA01+DA02-QM04	DN32-PIPE		Hydrogen	3,5 - 6,5 barg	0,9 - 29,4 g/s	-8,4 - 80°C	
-WP_H2902	=HA01+DA02-QM2.6	=HA01+DA02-QM1.6	DN25-PIPE	220 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2903	=HA01+DA02-QM2.5	=HA01+DA02-QM1.5	DN25-PIPE	220 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2904	=HA01+DA02-QM2.4	=HA01+DA02-QM1.4	DN25-PIPE	220 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2905	=HA01+DA02-QM2.3	=HA01+DA02-QM1.3	DN25-PIPE	220 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2906	=HA01+DA02-QM2.2	=HA01+DA02-QM1.2	DN25-PIPE	220 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2907	=HA01+DA02-QM1.1	=HA01+DA02-QM2.1	DN25-PIPE	220 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2912	=HA01+DA02-QM2.6	=HA01+DA02-XT06	DN25-PIPE	5477 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2913	=HA01+DA02-QM2.5	=HA01+DA02-XT05	DN25-PIPE	4390 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2914	=HA01+DA02-QM2.4	=HA01+DA02-XT04	DN25-PIPE	3303 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2915	=HA01+DA02-QM2.3	=HA01+DA02-XT03	DN25-PIPE	3462 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2916	=HA01+DA02-QM2.2	=HA01+DA02-XT02	DN25-PIPE	4547 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2917	=HA01+DA02-QM2.1	=HA01+DA02-XT01	DN25-PIPE	5637 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2922	=HA01+DA02-XT06	=RE02+GB06-XM01	DN25-PIPE	5477 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2923	=HA01+DA02-XT05	=RE02+GB05-XM01	DN25-PIPE	4390 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2924	=HA01+DA02-XT04	=RE02+GB04-XM01	DN25-PIPE	3303 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2925	=HA01+DA02-XT03	=RE01+GB03-XM01	DN25-PIPE	3462 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2926	=HA01+DA02-XT02	=RE01+GB02-XM01	DN25-PIPE	4547 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2927	=HA01+DA02-XT01	=RE01+GB01-XM01	DN25-PIPE	5637 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	12 - 80°C	
-WP_H2942	=HA01+DA02-CM01-WP06	=HA01+DA02-QM06	DN25-PIPE	190 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	-8,4 - 80°C	
-WP_H2943	=HA01+DA02-CM01-WP05	=HA01+DA02-QM05	DN25-PIPE	190 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	-8,4 - 80°C	
-WP_H2944	=HA01+DA02-CM01-WP04	=HA01+DA02-QM04	DN25-PIPE	190 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	-8,4 - 80°C	
-WP_H2945	=HA01+DA02-CM01-WP03	=HA01+DA02-QM03	DN25-PIPE	190 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	-8,4 - 80°C	
-WP_H2946	=HA01+DA02-CM01-WP02	=HA01+DA02-QM02	DN25-PIPE	190 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	-8,4 - 80°C	
-WP_H2947	=HA01+DA02-CM01-WP01	=HA01+DA02-QM01	DN25-PIPE	190 mm	Hydrogen	3,5-6,5 barg	<4,9 g/s	-8,4 - 80°C	

Reference Item Number	Ballard Part # TBD
EPLAN Project Name	601456B - Shell Baseload Power Hub
EPLAN Revision	06
EPLAN Project Pages	574
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DRAWING	K559-2254-CWIWP4202202-C05-001	REVISION	06
DRAWING TITLE	Piping Line List (C05-001)		
SHEET TYPE/DESC	P&I diagram: Piping overview : Hydrogen - Hydrogen		
ALL SHEETS ARE THE SAME REVISION STATUS	SIZE A3	LANGUAGE EN	SHEET/TOTAL 3 / 6

P&I diagram: Piping overview

F37_001-BPSE

Piping Name	From (Source)	To (Target)	Pipe Class	Length	Substance (Contents)	Pressure	Flow	Temperature	
	+DA01-X10	=HKN70-XM02			Water		<13,2 l/min	10-50°C	
	=HKN70-XM02				Water		<6,6 l/min	50-80°C	
	=HKN70-XM02				Water		<6,6 l/min	50-80°C	
		=HKN70-XM02	DN50-PIPE		Water		<13,2 l/min	50-80°C	
					Water			Ambient Temp	

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DRAWING TITLE	Piping Line List (C05-001)		
SHEET TYPE/DESC	P&I diagram: Piping overview : Water - Water		

ALL SHEETS ARE THE SAME REVISION STATUS	SIZE A3	LANGUAGE EN	SHEET/TOTAL 4 / 6

P&I diagram: Piping overview

F37_001-BPSE

Piping Name	From (Source)	To (Target)	Pipe Class	Length	Substance (Contents)	Pressure	Flow	Temperature	
-WP_A2010	=JA02+DA02-WM07		DN50x1.6		Ventilation	<50mbarg	120 Nm³/h	5-45°C	
-WP_A2011	=JA02+DA02-WM08		DN50x1.6		Ventilation	<50mbarg	120 Nm³/h	5-45°C	
-WP_A2012	=JA02+DA02-WM09		DN50x1.6		Ventilation	<50mbarg	120 Nm³/h	5-45°C	
-WP_A2013	=JA02+DA02-WM10		DN50x1.6		Ventilation	<50mbarg	120 Nm³/h	5-45°C	
-WP_A2014		=JA02+DA02-WM11	DN50x1.6		Ventilation	<50mbarg	120 Nm³/h	5-45°C	
-WP_A2015	=JA02+DA02-WM12		DN50x1.6		Ventilation	<50mbarg	120 Nm³/h	5-45°C	
-WP_A2015	=JB01+DA02-HQ01	=JB01+DA02-HQ01	DN50x1.6		Ventilation	<50mbarg	<10 Nm³/h	25-65°C	
-WP_A2020	=JA02+DA02-WM01		DN80x2.0		ProcessExhaust	<50mbarg	650 Nm³/h	50-80°C	
-WP_A2021	=JA02+DA02-WM02		DN80x2.0		ProcessExhaust	<50mbarg	650 Nm³/h	50-80°C	
-WP_A2022	=JA02+DA02-WM03		DN80x2.0		ProcessExhaust	<50mbarg	650 Nm³/h	50-80°C	
-WP_A2023		=JA02+DA02-WM04	DN80x2.0		ProcessExhaust	<50mbarg	650 Nm³/h	50-80°C	
-WP_A2024	=JA02+DA02-WM05		DN80x2.0		ProcessExhaust	<50mbarg	650 Nm³/h	50-80°C	
-WP_A2025		=JA02+DA02-WM06	DN80x2.0		ProcessExhaust	<50mbarg	650 Nm³/h	50-80°C	

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DRAWING TITLE	Piping Line List (C05-001)		
SHEET TYPE/DESC	P&I diagram: Piping overview : Ventilation - ProcessExhaust		

ALL SHEETS ARE THE SAME REVISION STATUS	SIZE A3	LANGUAGE EN	SHEET/TOTAL	5 / 6

P&I diagram: Piping overview

F37_001-BPSE

Piping Name	From (Source)	To (Target)	Pipe Class	Length	Substance (Contents)	Pressure	Flow	Temperature	
-WP_C101		=HE01+DA02-EG01	RadiaCord-122		HT_Coolant		<100 m³/h	40-55 °C	
-WP_C102		=HE02+DA02-EG01	RadiaCord-122		HT_Coolant		<100 m³/h	40-55 °C	
Overflow					HT_Coolant			Ambient Temp	
Overflow					HT_Coolant			Ambient Temp	

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SHEET TYPE/DESC	P&I diagram: Piping overview : HT_Coolant - HT_Coolant		

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