

HORIZONTAL CRYOGENIC STORAGE TANK

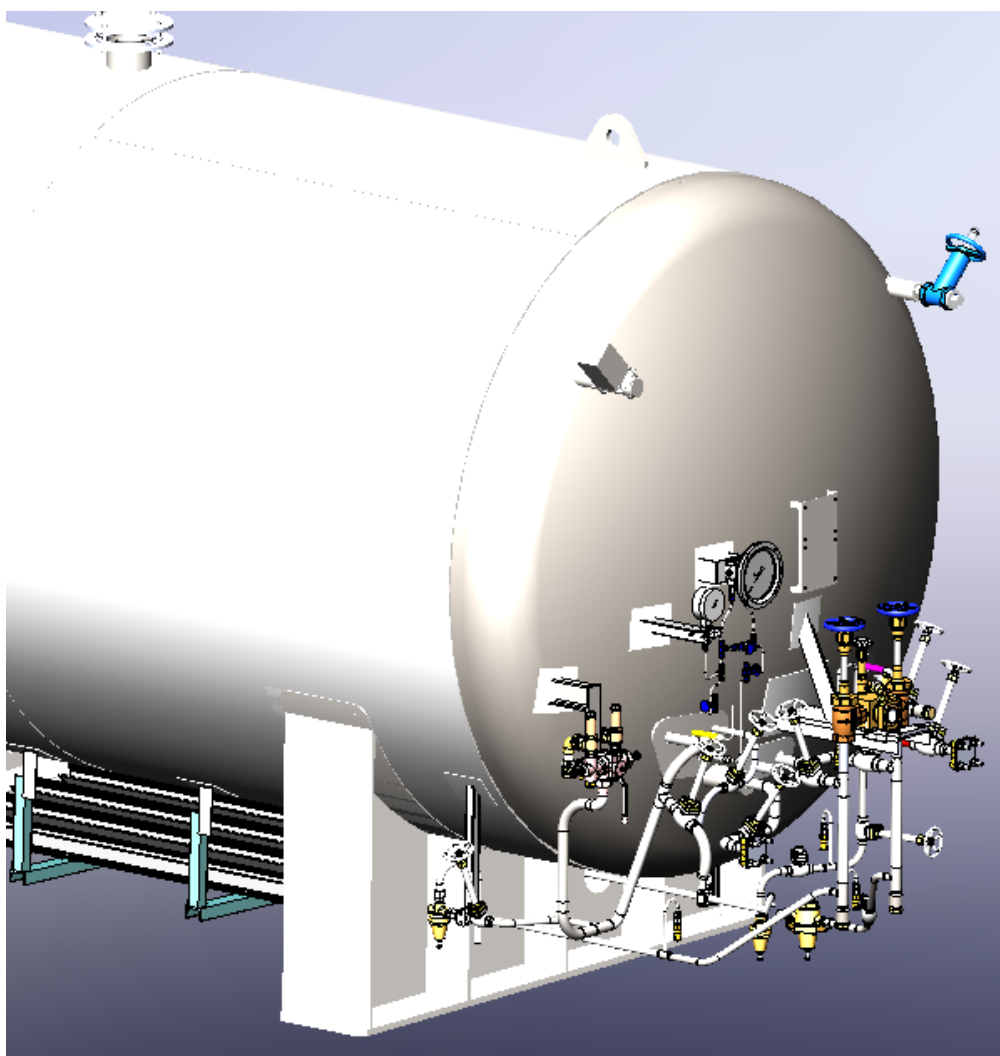
EFHA 250 / 500 PSIG

CRYOLOR ASIA PACIFIC introduces the latest generation vacuum insulated cryogenic tank, the **EFHA**, for Liquid Nitrogen, Oxygen or Argon service. Available in a range of sizes with a Maximum Allowable Working Pressure of **250 psig** (≈ 17 bar) & **500 psig** (≈ 35 bar). **EFHA** is designed in accordance with **ASME Section VIII Division 1 + Mandatory appendix-44 (cold stretch) with 'U' stamp**.

Moreover, the support legs/saddles used in the EFHA range are calculated **to resist high winds and earthquakes according to IBC code Zone 0 to Zone 4**.

- **A maximum use of Stainless steel:** Only EFHA uses as much stainless in its construction to guarantee the lowest life cycle costs.
- **Components selected for their operational reliability** - mono-bloc pressure building economizer - regulator, safety system with dual relief valves and bursting discs as standard, aluminium star fin pressure building unit.
- **Reduced overall operational costs** - optimized pipe work layout with fewer connections minimize potential

leaks and facilitate operation & servicing, filling assembly isolation valves, proven painting techniques guarantee years of problem free operation.

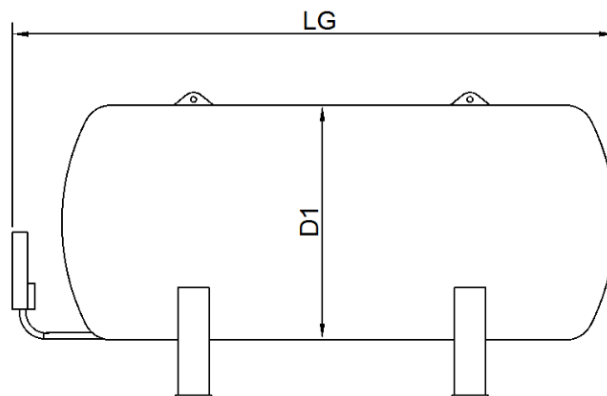
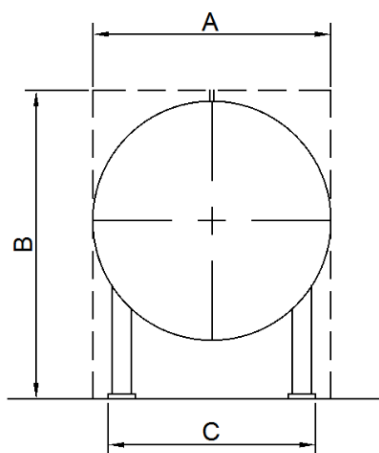
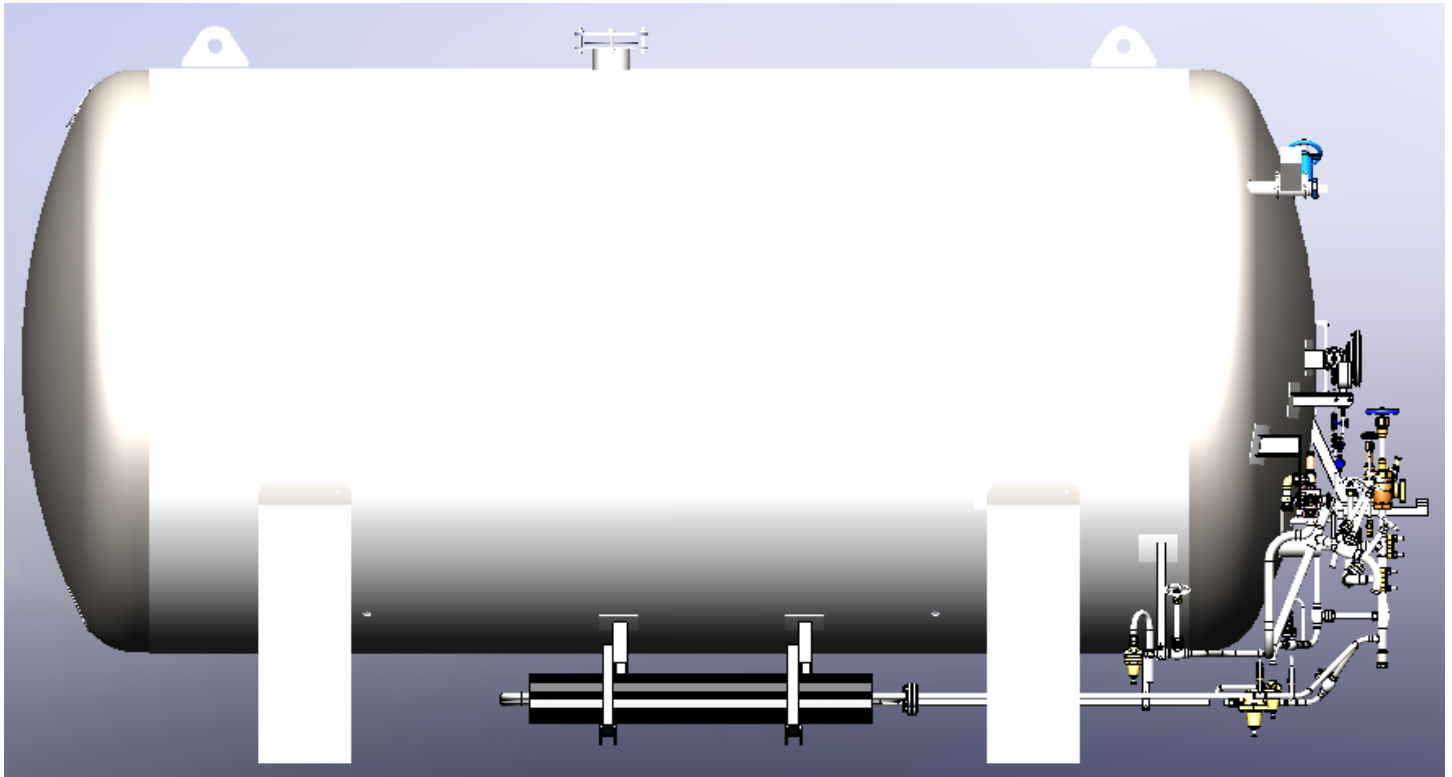


Disclaimer: The image shown above is just a representation of the tank, The actual product may vary on its appearance and size.

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TANK VIEW



Note: The above picture is not an actual view, the tanks will be built with saddles for larger vessels.

HORIZONTAL CRYOGENIC STORAGE TANK

EFHA 250 / 500 PSIG



EFHA 250 Psig

TYPE	EFHA06 (1.5 KUSG)		EFHA11 (3 KUSG)		EFHA21 (6 KUSG)	
	Gross capacity (liters / USG) *	6150	1625	10540	2784	23660
Net capacity (liters / USG) *	5843	1544	10013	2645	22477	5938
Boil off Rate O2 (%)	0.80		0.46		0.32	
Empty weight (kg / lbs)	4800	10582	6200	13669	10500	23149
Weight full Nitrogen (kg / lbs) - LIN	9521	20991	14291	31505	28661	63188
Weight full Oxygen (kg / lbs) - LOX	11467	25280	17625	38856	36146	79689
Weight full Argon (kg / lbs) - LAR	12939	28526	20148	44419	41810	92176
Continuous flow rate for 8 Hours at 116 Psi (SCFH)	18700					
∅ Diameter (in / feet)	86.6 / 7.2					
LG (in / feet)	169.3	14.1	216.5	18.1	402.9	33.6
A (in / feet)	90.5 / 7.5					
B (in / feet)	112.2 / 9.3					
C (in / feet)	78.7 / 6.5					

TYPE	EFHA33 (9 KUSG)		EFHA41 (11 KUSG)		EFHA47 (13 KUSG)	
	Gross capacity (liters / USG) *	34340	9072	41300	10910	47530
Net capacity (liters / USG) *	32623	8618	39235	10365	45154	11928
Boil off Rate O2 (%)	0.27		0.26		0.24	
Empty weight (kg / lbs)	15000	33069	17200	37920	19100	42108
Weight full Nitrogen (kg / lbs) - LIN	41359	91182	48902	107810	55584	122543
Weight full Oxygen (kg / lbs) - LOX	52223	115132	61967	136614	70621	155692
Weight full Argon (kg / lbs) - LAR	60444	133256	71854	158412	82000	180778
Continuous flow rate for 8 Hours at 116 Psi (SCFH)	18700					
∅ Diameter (in / feet)	111.8 / 9.3					
LG (in / feet)	350.4	29.2	409.4	34.1	456.7	38.1
A (in / feet)	111.8 / 9.3					
B (in / feet)	122.0 / 10.2					
C (in / feet)	102.4 / 8.5					

* Manufacturing tolerance : ± 4%

Note : Trycock level is 95% for 250 psig tanks.

HORIZONTAL CRYOGENIC STORAGE TANK

EFHA 250 / 500 PSIG



EFHA 500 Psig

TYPE	EFHA06 (1.5 KUSG)		EFHA11 (3 KUSG)		EFHA21 (6 KUSG)	
	Gross capacity (liters / USG) *	6150	1625	10540	2784	23660
Net capacity (liters / USG) *	5535	1462	9486	2506	21294	5625
Boil off Rate O2 (%)	0.80		0.46		0.32	
Empty weight (kg / lbs)	5700	12566	7500	16535	13500	29762
Weight full Nitrogen (kg / lbs) - LIN	10172	22426	15165	33432	30706	67694
Weight full Oxygen (kg / lbs) - LOX	12015	26489	18324	40396	37796	83327
Weight full Argon (kg / lbs) - LAR	13410	29565	20714	45666	43163	95157
Continuous flow rate for 8 Hours at 435 Psi (SCFH)	10000					
∅ Diameter (in / feet)	86.6 / 7.2					
LG (in / feet)	169.3	14.1	216.5	18.1	402.9	33.6
A (in / feet)	90.5 / 7.5					
B (in / feet)	112.2 / 9.3					
C (in / feet)	78.7 / 6.5					

TYPE	EFHA33 (9 KUSG)		EFHA41 (11 KUSG)		EFHA47 (13 KUSG)	
	Gross capacity (liters / USG) *	34340	9072	41300	10910	47530
Net capacity (liters / USG) *	30906	8164	37170	9819	42777	11300
Boil off Rate O2 (%)	0.27		0.26		0.24	
Empty weight (kg / lbs)	19000	41888	22000	48502	24400	53793
Weight full Nitrogen (kg / lbs) - LIN	43972	96942	52033	114714	58964	129993
Weight full Oxygen (kg / lbs) - LOX	54264	119631	64411	142002	73209	161397
Weight full Argon (kg / lbs) - LAR	62052	136801	73778	162652	83988	185162
Continuous flow rate for 8 Hours at 435 Psi (SCFH)	10000					
∅ Diameter (in / feet)	111.8 / 9.3					
LG (in / feet)	350.4	29.2	409.4	34.1	456.7	38.1
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B (in / feet)	122.0 / 10.2					
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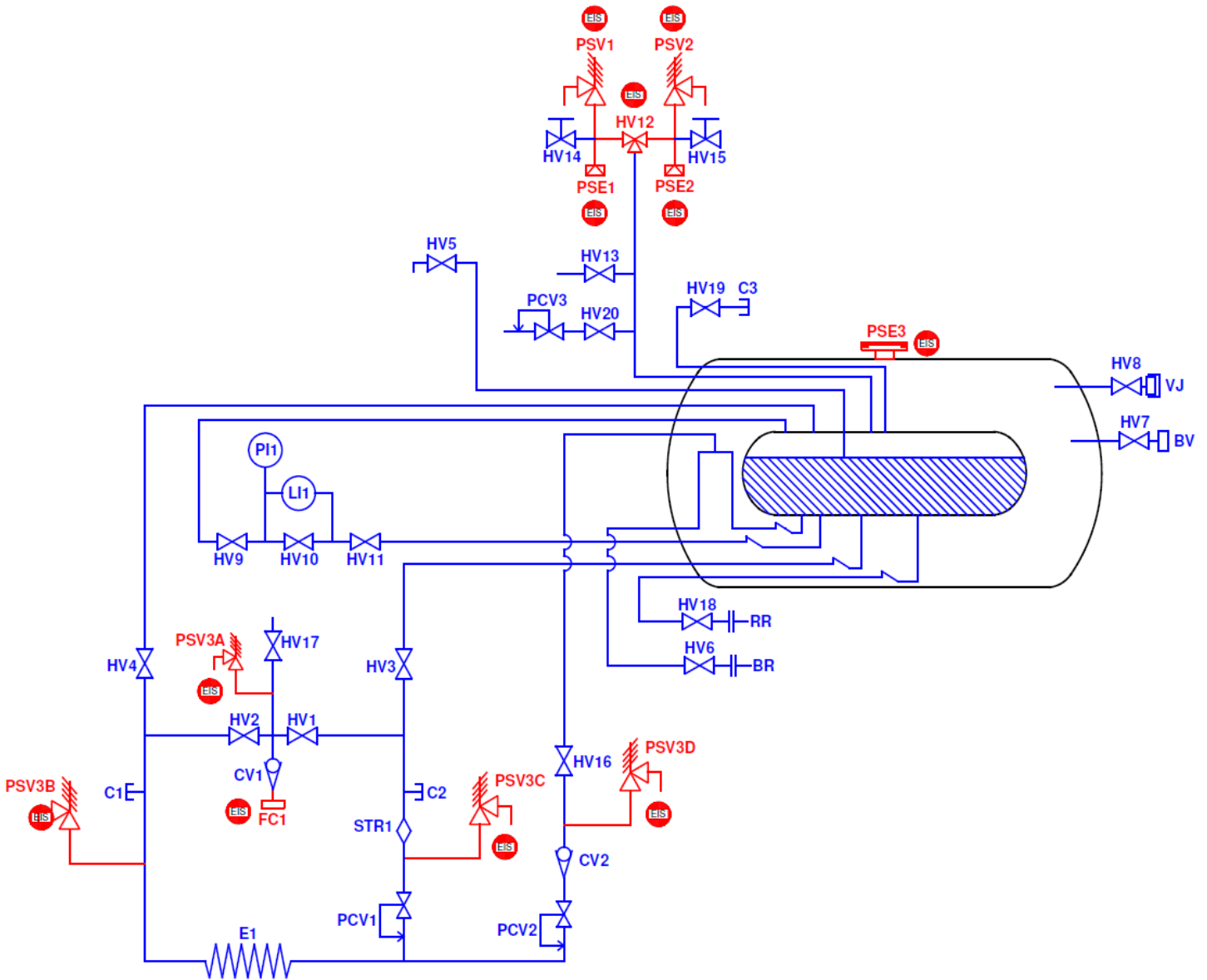
* Manufacturing tolerance : ± 4%

Note : Trycock level is 90% for 500 psig tanks.

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FLOW DIAGRAM



RED : EIS (Elements Important for Safety)

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NOMENCLATURE (HEROSE valves with REGO fill cluster)

REFERENCE	DESCRIPTION	SIZE		VALVE REFERENCE	
		Below 5 KUSG	Above 5 KUSG	MANUFACTURER	MODEL NUMBER
BV	Vacuum pump down connection	-		-	-
BR	Vaporizer connection	1"	1 1/2"	-	Groove type Mueller flange
C1, C2	Connections for additional PBU	1"		-	Threaded plug
C3	Connection of vapour return	1"	1 1/2"	-	Threaded plug
FC1	Filling coupling	1 1/2"		Rego	1" : CFM00002D 1 1/2" : CFM00004D
CV1	Filling check valve	1"	1 1/2"		
HV1	Filling liquid	1"	1 1/2"		
HV2	Filling gas				
HV17	Purge valve	1/2"			
HV3	Doubling filling liquid	1"	1 1/2"	Herose	1" : 01321.2533.0014 1 1/2" : 01321.4048.0014
HV4	Doubling filling gas	1"	1 1/2"	Herose	1" : 01321.2533.0014 1 1/2" : 01321.4048.0014
HV5	Full trycock	1/2"		Herose	01321.1521.0014
HV6	Gas use	1"	1 1/2"	Herose	1" : 01321.2533.0014 1 1/2" : 01321.4048.0014
HV7	Vacuum isolation valve	1 1/2"		Saunders	1.5"-2205-S-11R-E2
HV8	Vacuum probe isolation Valve	-		Hoke	4551-F2B-1/8"
LI1	Mechanical liquid level gauge	-		WIKA	712.15.160
PI1	Mechanical pressure gauge				
HV9	Level gauge manifold, Gas				
HV10	Level gauge manifold, Equalizer				
HV11	Level gauge manifold, Liquid				
HV12	3 way diverter	3/4"	1 1/4"	Herose	3/4": 06510-2040-6426 1 1/4": 06510-3210-6227
HV13	Gas purge	1"		Herose	01321.2533.0014
HV14 & HV15	Vent valve for safety tree	1/4"		Swagelok / Rego	B-4JNA2-SC11 / CMM250A
HV16	Economizer isolation valve	1/2"		Herose	01321.1521.0014
HV18	Liquid use	1"	1 1/2"	Herose	1" : 01321.2533.0014 1 1/2" : 01321.4048.0014

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NOMENCLATURE (HEROSE valves with REGO fill cluster)

REFERENCE	DESCRIPTION	SIZE		VALVE REFERENCE	
		Below 5 KUSG	Above 5 KUSG	MANUFACTURER	MODEL NUMBER
HV19	Vapour Return line	1"	1 1/2"	Herose	1" : 01321.2533.0014 1 1/2" : 01321.4048.0014
HV20	Ext. Economizer isolation valve	1/2"		Herose	01321.1521.0014
PSE1, PSE2	Vessel bursting disk	1/2"	1"	BS&B	Plug type
PSE3	Annular space pressure relief	-		Cryolor	Lift plate
PSV1 & PSV2	Vessel safety valve	1/2"	1"	Herose	1/2" : 06388-1004-5000 1" : 06388-1510-5000
PSV3A-PSV3D	Thermal expansion valve	-		Generant	CRB-250B-K-580
PCV1	Pressure build regulator	1/2"		Cash Acme	250 psi tank : B type; Set at 116 psi 500 psi tank : G60 type; Set at 435 psi
PCV2	Economiser regulator	1/2"		Cash Acme	250 psi tank : FRM2 type; Set at 123 psi 500 psi tank : FR-6 type; Set at 442 psi
PCV3	Economiser regulator to atmosphere	1/2"		Cash Acme	250 psi tank : FRM2 type; Set at 232 psi 500 psi tank : FR-6 type; Set at 493 psi
STR1	Strainer	1/2"		Herose	08414.1521.0004
CV2	Economizer check valve	1/2"		Herose	05416.1521.0004
RR	Liquid use connection	1"	1 1/2"	-	Groove type Mueller flange
VJ	Vacuum gauge	-		Teledyne Hastings	DV-6R
E1	Pressure build-up vaporizer	-		-	Aluminium Fin 250 psi tanks :18700 SCFH 500 psi tanks :10000 SCFH

Note (*):

- This technical specification is purely an indication, It can't be considered as a contractual document.
- This technical specification is subject to change without prior intimation.