

HORIZONTAL CRYOGENIC STORAGE TANK

EFHA 250 /390 PSIG

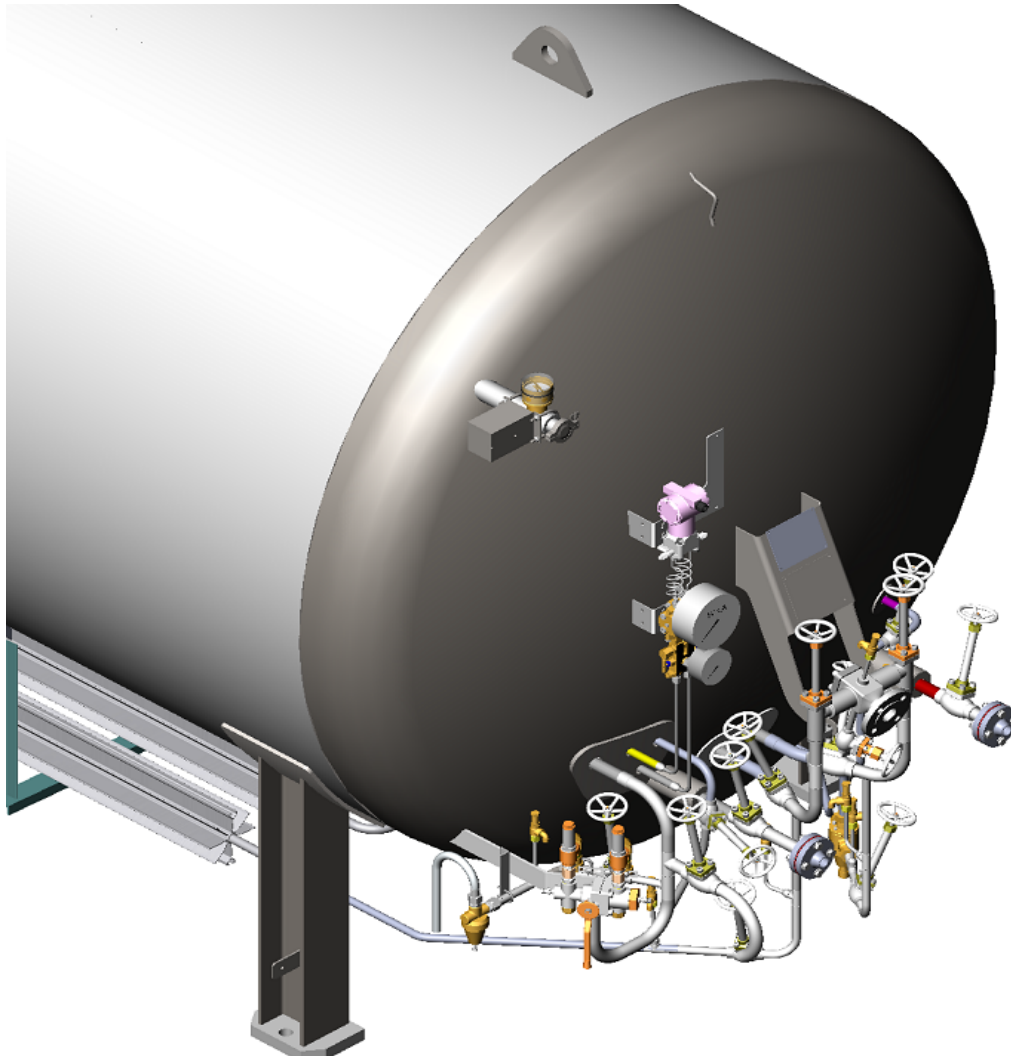


CRYOLOR ASIA PACIFIC introduces the latest generation vacuum insulated cryogenic tank, the **EFHA**, for Liquid Nitrogen, Oxygen or Argon service. Available in a range of sizes with a Maximum Allowable Working Pressure of **250 psig** (≈ 17 bar), & **390 psig** (≈ 27 bar) **EFHA** is designed in accordance 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

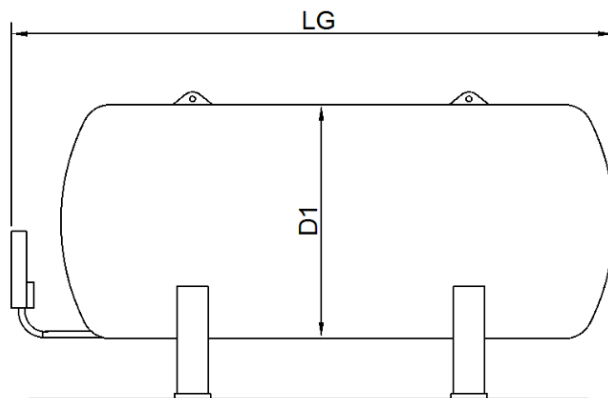
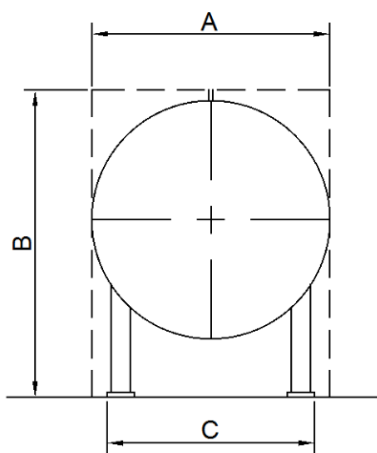
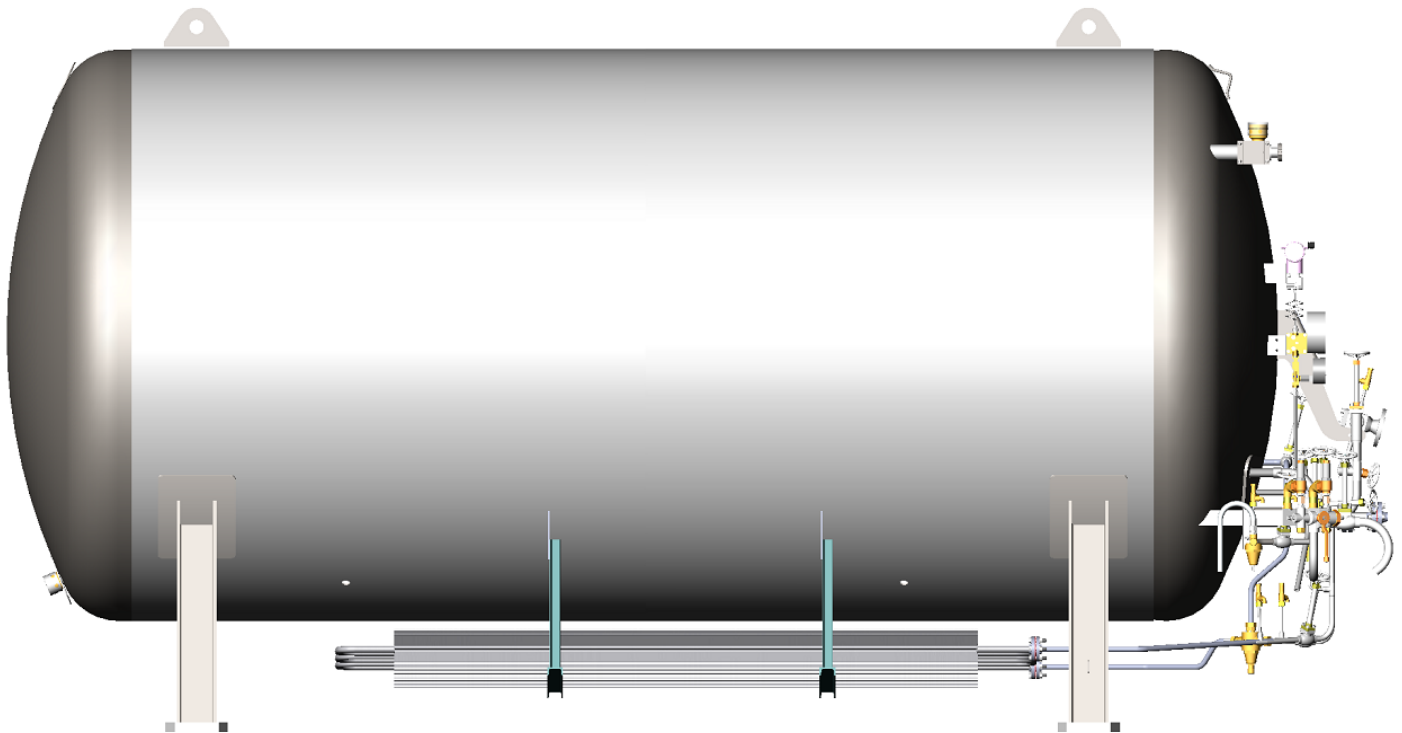
leaks and facilitate operation & servicing, filling assembly isolation valves, proven painting techniques guarantee years of problem free operation.



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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.

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EFHA 250 /390 PSIG



EFHA 17 bar (250 psig)

Type	EFHA06 (1.5 KUSG)		EFHA11 (3 KUSG)		EFHA 21 (6 KUSG)		EFHA 33 (9 KUSG)	
Gross capacity (liters / USG) *	6 150	1 625	10 540	2 784	23 660	6 250	34 340	9 072
Net capacity (liters / USG) *	5 842	1 543	10 013	2 645	22 477	5 938	32 623	8 618
Boil off Rate O ₂ (%)	0.8		0.46		0.32		0.27	
Empty weight (kg / lbs)	4 800	10 582	6 300	13 889	11 500	25 353	15 600	34 3927
Weight full Nitrogen (kg / lbs) - LIN	9 520	20 990	14 390	31 724	29 661	65 392	41 959	92 504
Weight full Oxygen (kg / lbs) - LOX	11 466	25 279	17 725	39 077	37 146	81 893	52 823	116 454
Weight full Argon (kg / lbs) - LAR	12 938	28 525	20 248	44 639	42 810	94 381	61 044	134 578
Continuous flow rate for 8 Hours at 116 psi (SCFH)	18 700							
D1 Diameter (mm / feet)	2 200	7.2	2 200	7.2	2 200	7.2	2 840	9.3
LG (mm / feet)	4300	14.1	5500	18.1	10 235	33.6	8 900	29.2
A (mm / feet)	2 300	7.5	2 300	7.5	2 300	7.5	2 840	9.3
B (mm / feet)	2 850	9.3	2 850	9.3	2 850	9.3	3 100	10.2
C (mm / feet)	2 000	6.5	2 000	6.5	2 000	6.5	2 500	8.2

EFHA 27 bar (390 psig)

Type	EFHA06 (1.5 KUSG)		EFHA11 (3 KUSG)	
Gross capacity (liters / USG) *	6 150	1 625	10 540	2 784
Net capacity (liters / USG) *	5 535	1 462	9 486	2 506
Boil off Rate O ₂ (%)	0.8		0.46	
Empty weight (kg / lbs)	5 000	11 023	6 750	14 881
Weight full Nitrogen (kg / lbs) - LIN	9 472	20 883	14 415	31 779
Weight full Oxygen (kg / lbs) - LOX	11 315	24 946	17 574	38 743
Weight full Argon (kg / lbs) - LAR	12 710	28 021	19 964	44 013
Continuous flow rate for 8 Hours at 290 psi (SCFH)	13 000			
D1 Diameter (mm / feet)	2 200	7.2	2 200	7.2
LG (mm / feet)	4300	14.1	5500	18.1
A (mm / feet)	2 300	7.5	2 300	7.5
B (mm / feet)	2 850	9.3	2 850	9.3
C (mm / feet)	2 000	6.5	2 000	6.5

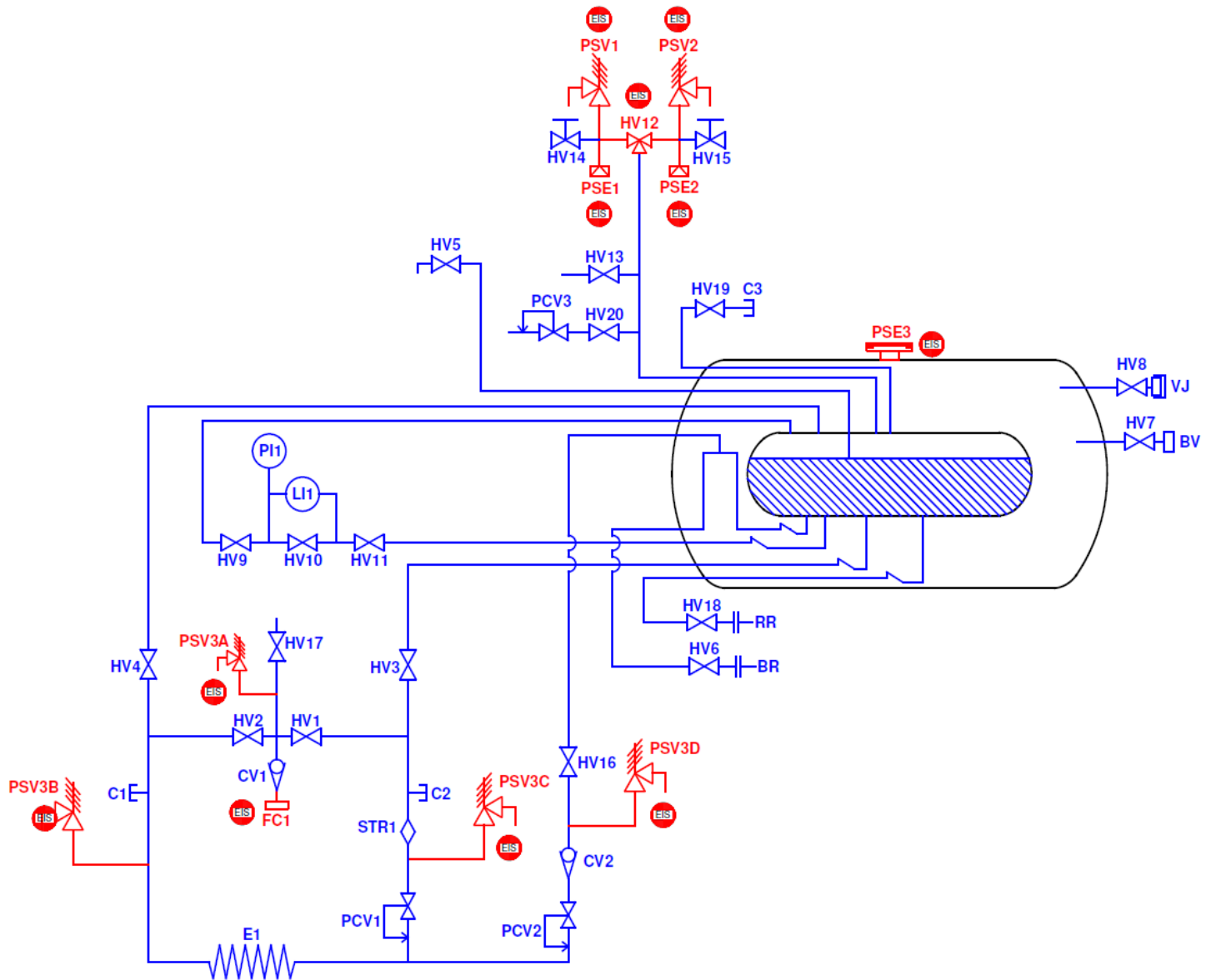
* Manufacturing tolerance : $\pm 4\%$

Note : Trycock level is 95%.

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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 (USG)		VALVE REFERENCE	
		Below 6 USG	Above 6 USG	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	DN25:CFM00002D DN40:CFM00004D
CV1	Filling check valve	1"	1 1/2"		
HV1	Filling liquid	1"	1 1/2"		
HV2	Filling gas	1"	1 1/2"		
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"		ITT	2401-T-903-Vacuum
HV8	Vacuum probe isolation Valve	-		Hoke	4551-F2B-1/8"
HV9	Level gauge manifold, Gas	-		Parker	4A-V4LR-SS-C3
HV10	Level gauge manifold, Equalizer	-		Parker	4A-V4LR-SS-C3
HV11	Level gauge manifold, Liquid	-		Parker	4A-V4LR-SS-C3
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 / Parker	B-4JNA2-SC11 / 4M-V4AR-B-C3
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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REFERENCE	DESCRIPTION	SIZE (USG)		VALVE REFERENCE	
		Below 6 USG	Above 6 USG	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
PI1	Mechanical pressure gauge	-		Wika	232.54
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 390 psi tank : G60 type; Set at 290 psi
PCV2	Economiser regulator	1/2"		Cash Acme	250 psi tank : FRM2 type; Set at 123 psi 390 psi tank : FR-6 type; Set at 297.5 psi
PCV3	Economiser regulator to atmosphere	1/2"		Cash Acme	250 psi tank : FRM2 type; Set at 232 psi 390 psi tank : FR-6 type; Set at 377 psi
STR1	Strainer	1/2"		Herose	8414.1521.0004
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 390 psi tanks : 13000 SCFH
LI1	Mechanical liquid level gauge	-		Midwest	116-0393