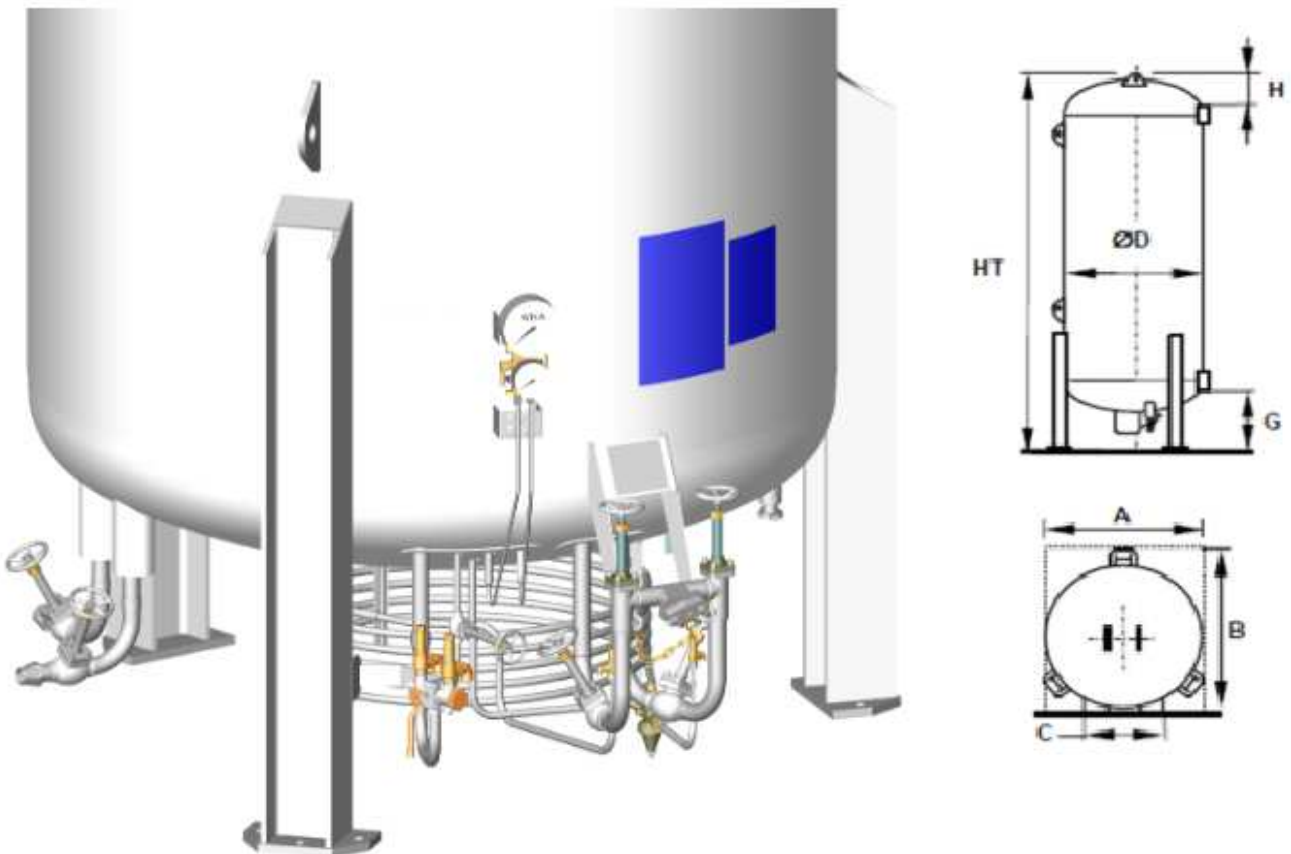


CRYOLOR ASIA PACIFIC introduces the latest generation vacuum insulated cryogenic tank, the **RHPA Céline 3**, for Liquid Nitrogen, Oxygen or Argon service. Available in a range of sizes with a Maximum Allowable Working Pressure of **390 psig** (≈ 27 bar), **RHPA Céline 3** is designed in accordance with **ASME Section VIII Division 1 with 'U' stamp**.

Moreover, the support legs used in the Céline 3 range are calculated **to resist high winds and earthquakes (IBC code)**

- **The widest range of standard options:** Introduced by CRYOLOR, our innovative modular design using prefabricated piping modules, allows the basic model to be customized to satisfy virtually all possible technical requirements.
- **A maximum use of Stainless steel:** Only RHPA Céline 3 uses as much stainless in its construction to guarantee the lowest life cycle costs - valves, interconnecting piping, pressure raising coil and all welded connections are stainless steel.
- **Components selected for their operational reliability:** Mono-bloc pressure building economizer - regulator, safety system with dual relief valves and burst discs as standard, stainless steel valves.
- **Reduced overall operational costs:** Optimized pipework layout with fewer connections minimize potential leaks and facilitate operation & servicing, filling assembly isolation valves, proven painting techniques guarantee years of carefree operation.



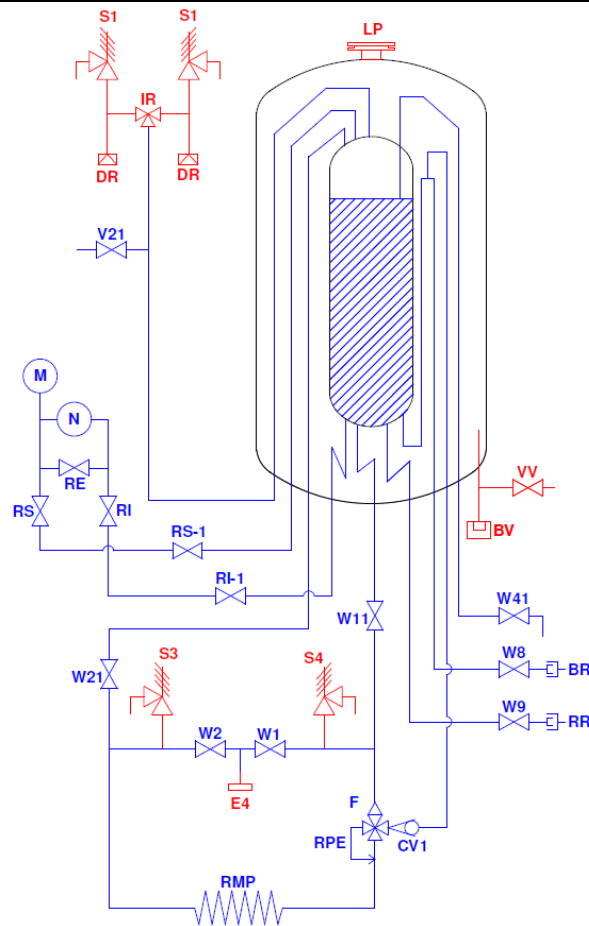
| Type | RHPA06 (1.5 KUSG) | | RHPA11 (3 KUSG) | | RHPA14 (4 KUSG) | | RHPA19 (5 KUSG) | | RHPA21 (6 KUSG) | |
|--|------------------------------|--------|----------------------------|--------|----------------------------|--------|----------------------------|--------|----------------------------|--------|
| Gross capacity (liters / USG) * | 6 150 | 1 625 | 10 540 | 2 784 | 14 910 | 3 939 | 19 290 | 5 096 | 23 660 | 6 250 |
| Net capacity (liters / USG) * | 5 535 | 1 462 | 9 486 | 2 506 | 13 419 | 3 545 | 17 361 | 4 586 | 21 294 | 5 625 |
| Boil off Rate O ₂ (%) | 0.28 | | 0.26 | | 0.24 | | 0.23 | | 0.22 | |
| Empty weight (kg / lbs) | 4 510 | 9 943 | 6 250 | 13 779 | 7 700 | 16 976 | 9 500 | 20 944 | 10 750 | 23 700 |
| Weight full Nitrogen (kg / lbs) - LIN | 8 982 | 19 803 | 13 915 | 30 677 | 18 543 | 40 879 | 23 528 | 51 870 | 27 956 | 61 631 |
| Weight full Oxygen (kg / lbs) - LOX | 10 825 | 23 866 | 17 074 | 37 641 | 23 011 | 50 731 | 29 309 | 64 615 | 35 046 | 77 264 |
| Weight full Argon (kg / lbs) - LAR | 12 220 | 26 941 | 19 464 | 42 911 | 26 393 | 58 186 | 33 684 | 74 260 | 40 413 | 89 094 |
| Continuous flow rate for 8 Hours at 16 bar (Nm ³ /h) - LIN | 200 | | 200 | | 200 | | 200 | | 400 | |
| ∅ Diameter (mm / feet) | 2 200 | 7.2 | 2 200 | 7.2 | 2 200 | 7.2 | 2 200 | 7.2 | 2 200 | 7.2 |
| HT height (mm / feet) | 4 200 | 13.8 | 5 200 | 17.1 | 7 660 | 25.1 | 8 700 | 28.5 | 10 235 | 33.6 |
| H (mm / feet) | 520 | 1.7 | 520 | 1.7 | 520 | 1.7 | 520 | 1.7 | 520 | 1.7 |
| G (mm / feet) | 1 055 | 3.5 | 1 055 | 3.5 | 1 055 | 3.5 | 1 055 | 3.5 | 1 055 | 3.5 |
| A (mm / feet) | 2300 | 7.5 | 2300 | 7.5 | 2300 | 7.5 | 2300 | 7.5 | 2300 | 7.5 |
| B (mm / feet) | 2 500 | 8.2 | 2 500 | 8.2 | 2 500 | 8.2 | 2 500 | 8.2 | 2 500 | 8.2 |
| C (mm / feet) | 1 245 | 4.1 | 1 245 | 4.1 | 1 245 | 4.1 | 1 245 | 4.1 | 1 245 | 4.1 |

* Manufacturing tolerance : ± 4%

| Type | RHPA27 (7.5 KUSG) | | RHPA33 (9 KUSG) | | RHPA41 (11 KUSG) | | RHPA47 (13 KUSG) | |
|--|------------------------------|---------|----------------------------|---------|-----------------------------|---------|-----------------------------|---------|
| Gross capacity (liters / USG) * | 28 040 | 7 407 | 34 340 | 9 072 | 41 300 | 10 910 | 47 530 | 12 556 |
| Net capacity (liters / USG) * | 25 236 | 6 667 | 30 906 | 8 164 | 37 170 | 9 819 | 42 777 | 11 300 |
| Boil off Rate O ₂ (%) | 0.20 | | 0.18 | | 0.16 | | 0.15 | |
| Empty weight (kg / lbs) | 12 300 | 27 117 | 15 700 | 34 613 | 18 050 | 39 793 | 20 600 | 45 415 |
| Weight full Nitrogen (kg / lbs) - LIN | 32 691 | 72 071 | 40 672 | 89 666 | 48 083 | 106 006 | 55 164 | 121 615 |
| Weight full Oxygen (kg / lbs) - LOX | 41 094 | 90 597 | 50 964 | 112 356 | 60 461 | 133 293 | 69 409 | 153 019 |
| Weight full Argon (kg / lbs) - LAR | 47 454 | 104 617 | 58 752 | 129 526 | 69 828 | 153 944 | 80 188 | 176 785 |
| Continuous flow rate for 8 Hours at 16 bar (Nm ³ /h) - LIN | 400 | | 400 | | 400 | | 400 | |
| ∅ Diameter (mm / feet) | 2 200 | 7.2 | 2 840 | 9.3 | 2 840 | 9.3 | 2 840 | 9.3 |
| HT height (mm / feet) | 11 740 | 38.5 | 8 850 | 29.03 | 10 510 | 34.5 | 11 543 | 37.87 |
| H (mm / feet) | 520 | 1.7 | 650 | 2.2 | 650 | 2.2 | 650 | 2.2 |
| G (mm / feet) | 1 055 | 3.5 | 1 100 | 3.6 | 1 100 | 3.6 | 1 100 | 3.6 |
| A (mm / feet) | 2300 | 7.5 | 2 950 | 9.7 | 2 950 | 9.7 | 3 020 | 9.8 |
| B (mm / feet) | 2 500 | 8.2 | 3 300 | 10.8 | 3 300 | 10.8 | 3 350 | 11 |
| C (mm / feet) | 1 245 | 4.1 | 1 530 | 5 | 1 530 | 5 | 1 530 | 5 |

* Manufacturing tolerance : ± 4%

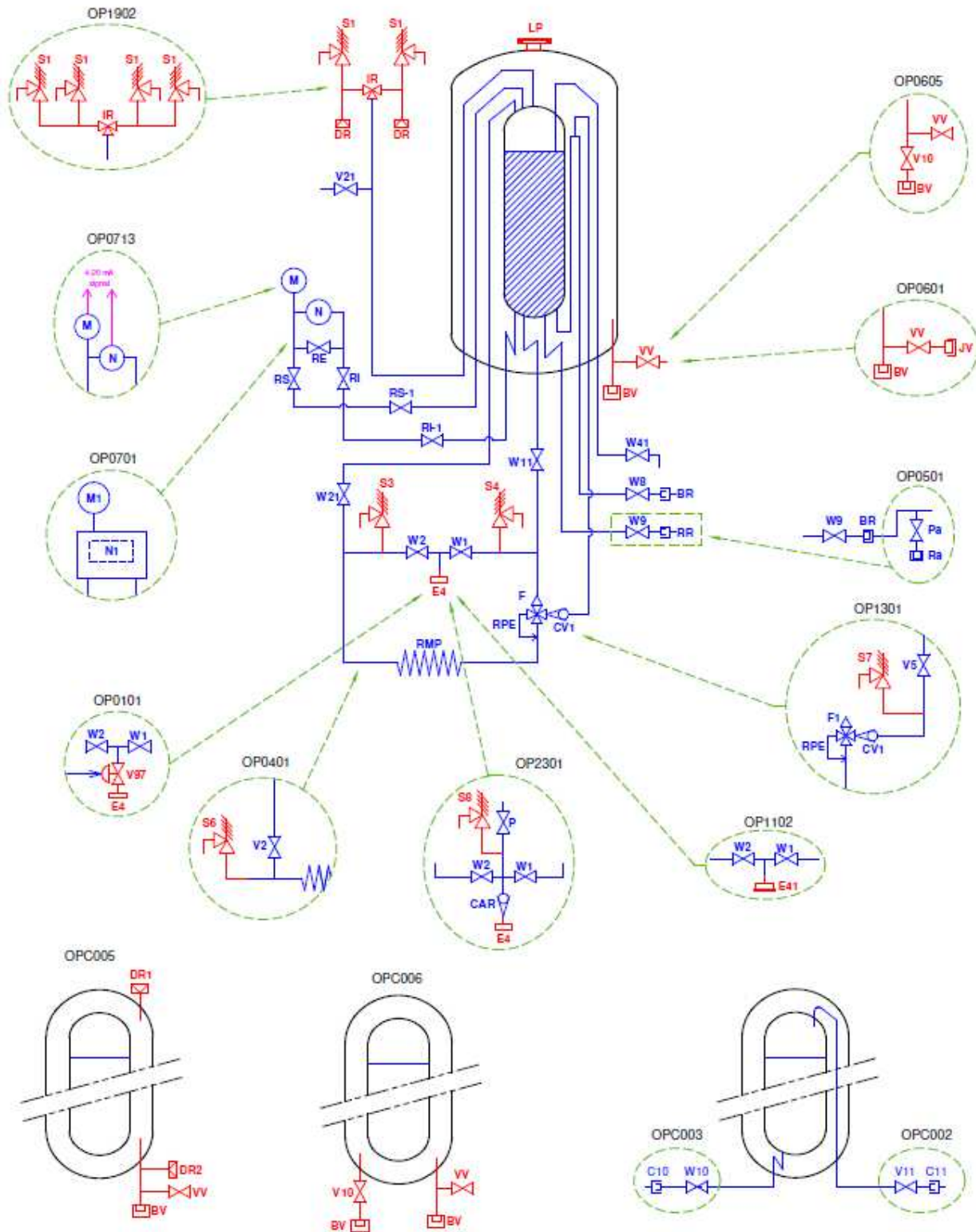
FLOW DIAGRAM (Standard)



| REFERENCE | NOMENCLATURE | SIZE |
|--------------------|---|-----------------------|
| W1, W11 | Bottom Filling Valves | DN 25 < 21 kl Tanks |
| W2, W21 | Top Filling Valves | DN 40 ≥ 21 kl Tanks |
| S3-S4 | Line Safety Valve | 1/4" |
| E4 | Filling Connection | DN 40 |
| S1 | Inner Vessel Safety Valve | 1/2" |
| DR | Inner Vessel Protection Device | 1/2" |
| IR | 3-Way Valve | DN 20 |
| M | Pressure Indicator | - |
| N | Level Indicator | |
| RI | Level Gauge Manifold, Liquid | |
| RE | Level Gauge Manifold, Equalizer | |
| RS | Level Gauge Manifold, Gas | |
| W41 | Full trycock Valve | DN 15 |
| LP | Lift Plate | As per Cryolor design |
| BV | Vacuum Connection | - |
| W8 + BR | Withdrawal Valve - Gas + Connection | DN 25 < 21 kl Tanks |
| W9 + RR | Withdrawal Valve - Liquid + Connection | DN 40 ≥ 21 kl Tanks |
| RPE & F | Pressure Regulator / Economizer with Filter | - |
| CV1 | Check Valve | |
| RMP | Pressure Building Coil | |
| V21 | Vent Valve | DN 15 |
| VV | Vacuum probe isolation valve | - |

Note : All operating valves are “Bestobell” make as per standard.

FLOW DIAGRAM (with Options)



Red = EIS (Element Important for Safety)

| REFERENCE | NOMENCLATURE (OPTIONS) | SIZE |
|---------------|---|---------------------|
| OP0101 | Over pressurization protection (To avoid over pressure filling & Ensure vessel safety while filling) | |
| V97 | Over pressurization protection valve | DN 40 |
| C6 | MG 97 valve connection | |
| OP0401 | Pressure Building Coil Isolation valve | |
| S6 | Line Safety Valve | 1/4" |
| V2 | Pressure Building Coil Isolating Valve | DN 15 |
| OP0501 | Liquid Analysis Connection | |
| Pa | Liquid Analysis Valve | DN 15 |
| Ra | Quick Connection | |
| OP0601 | Annular space vacuum detection / Vacuum sensor / Vacuum measuring probe | |
| VV | Vacuum Isolation Valve | 1/8" |
| JV | Vacuum Thermocouple Connection | 1/8" |
| OP0605 | Vacuum Isolation valve | |
| V10 | Vacuum isolation valve -Edwards Vacuum valve Type SP10K & SP25K | |
| OP0701 | Teleflo Diva | |
| M & N | Digital Level indicator & Analog Pressure indicator | |
| OP0713 | Wika with Telemetry (4-20mA) option 4-20 mA Telemetry provision with wika gauge | |
| OP1102 | ISO filling connection / Optional adaptor 1 1/2" 300 lbs | |
| E41 | ISO Flange connection for Filling | DN 40 |
| OP1301 | Economizer Isolation valve | |
| V5 | Globe Valve With Check | DN 15 |
| S7 | Line Safety Valve | 1/4" |
| OP1902 | Additional safety relief valves 4 Number of safety relief valves without bursting disc | |
| OP2301 | Filling assembly with Check valve, Check valve & Purge valve | |
| S8 | Line Safety Valve | 1/4" |
| P | Purge Valve | |
| CAR | Check Valve | |
| OP5301 | Footprint template Footprint drawing available before tank shipment (For foundation work at customer site) | |
| OPC001 | 10% Trycock Net capacity of tank with 10% gas phase | |
| OPC002 | Additional Top filling / Gas withdrawal line | |
| V11 | Top filling / Gas withdrawal valve | DN 25 < 21 kl Tanks |
| C11 | Top filling / Gas withdrawal connection | DN 40 ≥ 21 kl Tanks |
| OPC003 | Additional Liquid withdrawal line | |
| W10 | Liquid withdrawal valve | DN 25 < 21 kl Tanks |
| C10 | Liquid withdrawal connection | DN 40 ≥ 21 kl Tanks |
| OPC005 | Rupture disc for Outer vessel safety relief | |
| DR1 & DR2 | Vacuum bursting disc (Instead of lift plate) | |
| OPC006 | Additional vacuum pumping line for vacuum valve | |
| BV | Vacuum pump down connection | |
| V10 | Vacuum isolation valve -Edwards Vacuum valve Type SP10K & SP25K | |

| REFERENCE | NOMENCLATURE (OPTIONS) | SIZE |
|---------------|--|------|
| OPC008 | Metal P&ID Metal P&ID instead of Laminated sheet P&ID | |
| OPC009 | Upsizing liquid withdrawal valve (W9) to DN 50 / 2" Liquid withdrawal valve size increased to DN50 / 2" (Valve size DN50, Pipe size DN25/DN40) | |
| OPC010 | Liquid withdrawal line (W9) to DN 50 / 2" Liquid withdrawal line size DN50 / 2" (Both Pipe & Valve) | |
| OPC012 | LAR-CGA connection on Filling cluster CGA-Filling connection for Liquid Argon | |
| OPC013 | LOX-CGA connection on Filling cluster CGA-Filling connection for Liquid Oxygen | |
| OPC014 | LIN-CGA connection on Filling cluster CGA-Filling connection for Liquid Nitrogen | |
| OPC015 | MOM Certificate MOM certificate available | |
| OPC016 | Herose valves (Instead of Bestobell valves) Operating valves are Herose make, instead of Bestobell make | |
| OPC017 | Customer LOGO Customer requirement LOGO fixed on tank. | |