VT SERIES
INDIVIDUAL DESIGN
VERTICAL STORAGE TANKS
### Individual Design - Definition

A range of vacuum perlite insulated vertical cryogenic tanks offering fully customized storage solutions from 3,000 to 80,000 litres and pressures from 9.5 up to 37 bar.

Starting with a naked vessel of the desired capacity and pressure, customers select from an extensive list of options and features to configure a bespoke solution according to individual operational specifications.

Suitable for liquid nitrogen, oxygen, argon, carbon dioxide and nitrous oxide.

Designed according to EN 13458 and in conformance with directive 2014/68/EU.

ASME or EAC certification is available on request.

Providing the industry's best insulation system and 5 year vacuum warranty.

Complete list of all options and features available on request.

### Vertical Individual Design - VT

<table>
<thead>
<tr>
<th>Type</th>
<th>VT 3</th>
<th>VT 6</th>
<th>VT 9</th>
<th>VT 11</th>
<th>VT 16</th>
<th>VT 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross volume</td>
<td>Litres</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume (95% filling)</td>
<td>Litres</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Capacity LIN⁰</td>
<td>Kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Capacity LOX⁰</td>
<td>Kg</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Storage Capacity LAR⁰</td>
<td>Kg</td>
<td></td>
<td></td>
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<tr>
<td>Storage Capacity LN₂O³</td>
<td>Kg</td>
<td></td>
<td></td>
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<tr>
<td>Storage Capacity LCO₂⁴</td>
<td>Kg</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Daily evap. rate LOX² for tanks: 18 bar</td>
<td>%/d</td>
<td>0,37</td>
<td>0,26</td>
<td>0,23</td>
<td>0,21</td>
<td>0,19</td>
</tr>
<tr>
<td></td>
<td>%/d</td>
<td>0,27</td>
<td>0,24</td>
<td>0,22</td>
<td>0,2</td>
<td>0,17</td>
</tr>
<tr>
<td></td>
<td>%/d</td>
<td>0,29</td>
<td>0,26</td>
<td>0,23</td>
<td>0,21</td>
<td>0,19</td>
</tr>
<tr>
<td>Max. withdrawal rate LOX-sine flat fin¹</td>
<td>Nm³/h</td>
<td>470</td>
<td>590</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. withdrawal rate LOX-double flat fin³</td>
<td>Nm³/h</td>
<td>940</td>
<td>1 180</td>
<td></td>
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<td></td>
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<tr>
<td>Max. withdrawal rate LCO₂ with el. Vaporiser²</td>
<td>Kg/h</td>
<td>115</td>
<td>140</td>
<td></td>
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<tr>
<td>Weight, empty</td>
<td>Kg</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
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<tr>
<td>10 bar⁶</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 bar⁷</td>
<td>Kg</td>
<td>2 980</td>
<td>4 320</td>
<td>5 750</td>
<td>6 440</td>
<td>8 310</td>
</tr>
<tr>
<td>22 bar</td>
<td>Kg</td>
<td>3 090</td>
<td>4 500</td>
<td>5 980</td>
<td>6 720</td>
<td>8 690</td>
</tr>
<tr>
<td>37 bar</td>
<td>Kg</td>
<td>3 520</td>
<td>5 160</td>
<td>6 880</td>
<td>7 830</td>
<td>10 190</td>
</tr>
<tr>
<td>Diameter (D)</td>
<td>mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Overall width (A)</td>
<td>mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Overall depth (B)</td>
<td>mm</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Height (H)⁵</td>
<td>mm</td>
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</tbody>
</table>

**Notes:**

1) Filling 95% (equilibrium state at 1,013 bar) for 18 bar tanks
2) Based on EN12213 (pressure 1,013 bar and 15°C ambient temperature)
3) Stated withdrawal rates are for short term withdrawal (up to 3 hrs) at tank pressure 10 barg and 10 °C ambient temperature

For N₂ and Ar stated withdrawal rates to be multiplied by:

\( N_2 = 0.88 / Ar = 1.01 \)
Individual Design - Flow Diagram

**Line Description**

A1 - Trycock line-95%
A2 - Trycock line-80%
B - Top fill line
C - Safety relief line
D - Product vaporizer feed line
E - Gas phase to PI & DP gauge (-)
F - Liquid phase to DP (+)
G - Bottom fill line
H - PBU feed line
I - PBU outlet line
J - Economizer circle line
K1,2 - Pump siphon feed line
L1,2 - Pump siphon return line
M - Evacuation port
N - Vacuum gauge port
R - Liquid withdrawal
S1,2 - Gas return/Gas withdrawal
T - Vacuum insulated liquid withdrawal

**Line Description**

- Trycock line-95%
- Trycock line-80%
- Top fill line
- Safety relief line
- Product vaporizer feed line
- Gas phase to PI & DP gauge (-)
- Liquid phase to DP (+)
- Bottom fill line
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- Evacuation port
- Vacuum gauge port
- Liquid withdrawal
- Gas return/Gas withdrawal
- Vacuum insulated liquid withdrawal

**Line Description**

VT 25 | VT 20 | VT 26 | VT 31 | VT 37 | VT 43 | VT 32 | VT 41 | VT 50 | VT 60 | VT 70 | VT 80
---|---|---|---|---|---|---|---|---|---|---|---
24 970 | 20 130 | 26 110 | 32 080 | 44 030 | 32 290 | 41 630 | 50 960 | 60 300 | 69 990 | 79 390 |
23 720 | 19 120 | 24 800 | 30 480 | 36 160 | 41 830 | 55 290 | 65 420 | 75 940 | 86 140 |
19 170 | 15 460 | 20 050 | 24 630 | 29 220 | 33 800 | 48 410 | 58 290 | 68 050 | 78 320 | 88 600 |
27 090 | 21 140 | 27 420 | 33 690 | 39 970 | 47 770 | 55 290 | 65 420 | 75 940 | 86 140 |
33 350 | 26 880 | 34 870 | 42 840 | 50 820 | 58 790 | 68 050 | 78 320 | 88 600 | 98 870 | 109 140 |
25 050 | 20 200 | 26 200 | 32 190 | 38 190 | 44 180 | 53 520 | 63 330 | 73 500 | 83 370 |
26 230 | 21 140 | 27 420 | 33 690 | 39 970 | 46 240 | 53 520 | 63 330 | 73 500 | 83 370 |
0.17 | 0.15 | 0.14 | 0.13 | 0.13 | 0.13 | 0.12 | 0.12 | 0.11 | 0.11 | 0.11 |
0.17 | 0.15 | 0.14 | 0.13 | 0.13 | 0.13 | 0.12 | 0.11 | 0.11 | 0.11 |
0.18 | 0.16 | 0.15 | 0.14 | 0.14 | 0.14 | 0.12 | 0.11 | 0.11 | 0.11 |

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**Line Description**

4) Stated withdrawal rates are for short term withdrawal (up to 3 hrs) at tank pressure 15 barg and 10 °C ambient temperature
5) Withdrawal rate with 4 kW el. vaporiser
Optional: electric vaporizer ( up to 50 kW ) for higher CO₂ withdrawal
6) Tanks VT70 and VT80 with MAWP 9.5 bar
7) Tanks VT70 and VT80 with MAWP 17 bar
8) Tanks with thermosiphon are app. 790 mm higher ( extended legs ) and app. 600 kg heavier
Your cryogenic partner

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