The Siphon Zero Bulk Storage System is engineered for the efficient storage of argon or oxygen liquid with zero losses at fill plants. The key design feature is a heat exchanger located in the inner vessel gas space. Liquid nitrogen is passed through the heat exchanger to control the tank pressure, preventing any gas losses, regardless of the Siphon Zero usage patterns. Because the heat exchanger can accommodate liquid nitrogen at any time, the operator can easily control the tank pressure – and, ultimately, the saturation pressure of the liquid as desired. Lower saturation pressure in a fill plant tank has many advantages, from a more efficient HP fill pump operation to reducing liquid cylinder filling losses.

Built on the Siphon 100® Bulk Storage Tank platform, the Zero model offers all the same features as our standard Siphon 100 model. These key features are: Composite Super Insulation™ for ultra-low heat leak, thermal-siphoning internal piping and a vacuum insulated pod for quick pump operation and reduced heat transfer to the Siphon tank. With the Siphon Zero model in your fill plant operation, you can save expensive gas molecules and improve your filling operation, every day.

**PRODUCT ADVANTAGES**

- Replace expensive argon and oxygen gas losses with low cost sacrificial nitrogen
- Control tank pressure and liquid condition as desired
- Control tank sub-cool as desired for HP pump prime uptime
- Reduce HP pump lifetime cold-end costs and pump down time
- Reduce HP cylinder fill time labor by pumping lower saturated (denser) liquid per stroke
- Reduce liquid cylinder and other liquid transfer losses from highly saturated liquid
- Increase storage tank liquid capacity with colder liquid
- Improve gas storage inventory accuracy
- Inner vessel designed and built to ASME Section VIII Division 1 code
- Includes all the benefits of the Siphon 100 design, see spec sheet P/N 14399405

**IDEAL APPLICATIONS**

- Argon Fill Plant Storage
- Oxygen UHP Fill Plant Storage
SIPHON ZERO
BULK FILL PLANT SYSTEM WITH ZERO STORAGE LOSS

<table>
<thead>
<tr>
<th>Model</th>
<th>Gross Capacity Gal</th>
<th>Liters</th>
<th>Net Capacity Gal</th>
<th>Liters</th>
<th>MAWP* psig</th>
<th>bar</th>
<th>Diameter in mm</th>
<th>Height in mm</th>
<th>Weight** lbs</th>
<th>Kg</th>
<th>NER % /day in O₂ / Ar</th>
</tr>
</thead>
<tbody>
<tr>
<td>VS 1500SC</td>
<td>1,640</td>
<td>6,208</td>
<td>1,580</td>
<td>5,981</td>
<td>250</td>
<td>17.2</td>
<td>66</td>
<td>1,676</td>
<td>6,096</td>
<td>6,200</td>
<td>2,818</td>
</tr>
</tbody>
</table>

*M AWP - Maximum Allowable Working Pressure. **Weights are for ASME design. (NER) = Normal Evaporation Rate

** Nomenclature **

- C-1 CONNECTION, AUX LIQUID
- C-2 CONNECTION, AUX VAPOR
- C-3 CONNECTION, SECONDARY AUX LIQUID
- C-4 CONNECTION, SECONDARY AUX VAPOR
- C-7 CONNECTION, DEW HICKEY FILL
- C-8 CONNECTION, CONDENSER FILL
- CV-1 FILL LINE CHECK VALVE
- CV-5 CONDENSER FULL TRYCOCK CHECK VALVE
- FC-1 FILL CONNECTION
- HCV-1 BOTTOM FILL VALVE
- HCV-2 TOP FILL VALVE
- HCV-4 FULL TRYCOCK VALVE
- HCV-5 VACUUM GAUGE TUBE VALVE
- HCV-7 FILL LINE DRAIN VALVE
- HCV-9 LI-1 LIQUID PHASE VALVE
- HCV-10 LI-1 LIQUID PHASE VALVE
- HCV-12 VAPOR VENT VALVE
- HCV-15 SAFETY RELIEF SELECTOR VALVE
- HCV-19 AUX VAPOR VALVE
- HCV-25A SIPHON RETURN VALVE
- HCV-25B SIPHON RETURN VALVE
- HCV-26A SIPHON FEED VALVE
- HCV-26B SIPHON FEED VALVE
- HCV-30 DEW HICKEY FILL VALVE
- HCV-31 CONDENSER VENT VALVE
- PCV-4 REGULATOR CONDENSER FILL
- PSE-1A PRESSURE SAFETY ELEMENT, INNER
- PSE-1B PRESSURE SAFETY VALVE, INNER
- PSE-1A PRESSURE VALVE, INNER
- PSE-1B PRESSURE SAFETY VALVE, INNER
- S-2 FILL STRAINER
- SOL-101 CONDENSER FILL AUTO VALVE
- TSV-2 FILL LINE THERMAL RELIEF
- TSV-6 DEW HICKEY THERMAL RELIEF
- TSV-7 CONDENSER FILL THERMAL RELIEF
- TSV-8 CONDENSER VENT THERMAL RELIEF
- TT-101 RTD CONDENSER
- VP-1 VACUUM PORT
- VR-1 VACUUM READOUT

** OPTIONAL VALVES (Dashed Lines) **

- HCV-3 PB INLET VALVE
- HCV-11 PB OUTLET VALVE
- HCV-16A RELIEF LINE PURGE VALVE
- PBC-1 PRESSURE BUILD COIL
- S-1 STRAINER, PRESSURE BUILDING
- TSV-3 PB CIRCUIT THERMAL RELIEF VALVE
- TSV-4 PB CIRCUIT THERMAL RELIEF VALVE
- HCV-21 SEC AUX LIQ. VALVE
- HCV-22 SEC AUX VAP. VALVE
- SOL-102 PB FEED CONTROL VALVE
- SOL-103 PB FEED CONTROL VALVE
- SOL-104 SIPHON RETURN CONTROL VALVE
- SOL-104 SIPHON RETURN CONTROL VALVE
- TSV-9 SIPHON RETURN THERMAL RELIEF
- TSV-10 SIPHON RETURN THERMAL RELIEF