PLC controlled and equipped with touch screen colour graphics display for easy operator access to control screens and statistics, data storage and retrieval. Data management system is 21 CFR part II compliant.

Data screens feature set parameters and current process parameters. Set parameters are stored in the form of recipes which are password protected and can be uploaded to current status as and when new type of glass containers are being processed.

Diagnostic screens highlight alarm conditions of the tunnel to enable the operator to minimize production downtime.

**Technical Data**

<table>
<thead>
<tr>
<th>Model</th>
<th>DST-300</th>
<th>DST-400</th>
<th>DST-500</th>
<th>DST-600</th>
<th>DST-700</th>
<th>DST-1200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (mm)</td>
<td>2700</td>
<td>3315</td>
<td>2800</td>
<td>2800</td>
<td>3400</td>
<td>4200</td>
</tr>
<tr>
<td>Height (mm)</td>
<td>2400</td>
<td>2400</td>
<td>2400</td>
<td>2400</td>
<td>2400</td>
<td>2400</td>
</tr>
<tr>
<td>Width (mm)</td>
<td>1300</td>
<td>1400</td>
<td>1450</td>
<td>1550</td>
<td>1850</td>
<td>2150</td>
</tr>
<tr>
<td>Belt Width (mm)</td>
<td>300</td>
<td>400</td>
<td>450</td>
<td>600</td>
<td>900</td>
<td>1200</td>
</tr>
<tr>
<td>Exhaust Air m³/hr</td>
<td>1347</td>
<td>1845</td>
<td>1244</td>
<td>4448</td>
<td>6107</td>
<td>8227</td>
</tr>
<tr>
<td>Installed Power (kw)</td>
<td>38</td>
<td>45</td>
<td>29</td>
<td>55</td>
<td>77</td>
<td>95</td>
</tr>
</tbody>
</table>

**Sterilizing And Depyrogenating Tunnels**
Sterilizing And Depyrogenating Tunnels

Leading edge technology in compliance with cGMP design criteria. Perfect understanding of the needs of our customer, blossoms in to a product of high quality and performance from engineering and manufacturing to commissioning at customer plants.

**EFFECTIVE STERILIZATION & DEPYROGENATION PROCESS**

Depyrogenation tunnels designed to sterilize and depyrogenate glass containers with a continuous process maintaining an ISO 5 environment along the whole length and width of the conveyor belt complying with ISO 14664-1 requirements.

Designed to allow higher outputs in a more compact body and with better control of the process parameters.

**AIR HANDLING EQUIPMENT**

Specal low noise high static blowers take in air through 5 micron filters and delivers laminar air through HEPA filter of 99.97% efficiency at 0.3 microns.

Heating elements made of AISI 304 stainless steel are thyristor controlled and are located on the hot zone chamber door for easy maintenance. Air is heated before being blown on the HEPA filter to achieve even distribution and temperature uniformity.

**PROCESS CHAMBERS**

**THE DRYING ZONE**

Glass containers entering the drying zone from the up-line washer are treated with clean vertical laminar air, vaporizes the moisture, pre-heats the containers and protects hot air back-flow from the hot zone.

**THE HOT ZONE**

Glass containers then enter the hot zone and are subjected to a thermal cycle of sterilization and depyrogenation.

**THE COOLING ZONE**

Glass containers further enter the cooling zone, where they are subjected to cold laminar air to bring down the temperature before entering the aseptic area.

**CONVEYING MECHANISM**

The conveyor belt is made of AISI 316 stainless steel mesh with integrated side plates there by preventing friction between glass container and the belt. The return path of the belt is within a closed duct preventing contamination.

**STERILIZING AND DEPYROGENATION**

SNOWBELL tunnels are designed to ensure a reduction in pyrogens by 1000:1 (3 log) or up to 100,000:1 (6 log) in accordance with international pharmacopeias and using the following formula. \( W = \frac{10}{D \cdot Z \cdot 0.8} \) or \( 10^{W} = \frac{10}{D \cdot Z \cdot 0.8} \) or \( 10^{W} = \frac{1}{D \cdot Z \cdot 0.8} \).

The D of 4.96 min and a Z of 46.4° C are defined respectively as the time required to reduce an endotoxin count by one logarithm at the T ref of 25°C C. Therefore to achieve a 3 log endotoxin reduction, glass containers must be subjected to 15 minutes heat penetration at 25°C C or for 6 log reduction in 30 minutes.

The design and controls of the tunnel ensure that parameters once set and validated, the reproducibility and reliability of the cycle is maintained.

**SPECIAL FEATURES**

- Each independent filter preview is provided with filter integrity sample ports.
- The equipment’s conveyor belt is monitored and alarm status is activated if it operates outside the belt speed set points.
- Provision for ports to allow introduction of validation thermocouples in each zone.
- The tunnel is provided with fully integrated VFD flow control logic to allow automatic stops and restarts of the equipment.
- All filter modules have differential pressure gauges to monitor pressure. Pressure switches with high and low alarms.
- When the tunnel is not in use it can be operated in night-mode to save energy while preventing contamination.

SNOWBELL tunnels have identical design concept but with different output capacities, available in more than 8 models and a wide range of options.

- Cooling system for the cooling zone.
- Sterilizing of the cooling zone.
- Automatic air balancing between aseptic and non-aseptic area of the tunnel.
- Shutter positioning monitoring and automatic adjustment are some of the options available to meet specific customer requirements.