Technical Data:

Test room size within shrouds:
- Available inner room for test load: 600 w x 800 h x 800 d mm
- Clear internal diameter of shrouds approx. 1.0 m Ø
- Clear internal length of shrouds approx. 1.1 m
- Finish: - outside: electrolytic nickel-plated
  - inside: black painted with vacuum paint
- Support material: stainless steel and glass fibre for thermal insulation

Thermal table:
- Available inner room: 600 w x 800 h x 800 d mm
- Material: machined aluminum (20 mm thick)
- Fixation points: threads M 8 in 50 mm grid with inserts
- Max. test load weight: 250 kg

Evacuation time of empty chamber (mainly depending on outgassing rate):
- Pressure without LN2-baffle after 1 h: 5 x 10^-4 mbar
  after 4 h: 6 x 10^-5 mbar
- Pressure with LN2-baffle after 1 h: 3 x 10^-5 mbar
  after 4 h: 4 x 10^-6 mbar

Consumption data (depending on alternatives):
- Electric power (400 V, 50/60 Hz)
  - Alternative S1: approx. 33 kW
  - Alternative S2: approx. 32 kW
  - Alternative T1: approx. 4 kW
  - Alternative T2: approx. 20 kW
- Cooling water (15°C /30°C, 2 barg)
  - approx. 3 m³/h
  - approx. 1 m³/h
  - approx. 60 l/h (transient operation)
- LN2 (max. 1 barg)
  - approx. 120 l/h (transient operation)

Overall dimensions and weights:
- Installation area: 3 m x 3 m x 2.5 m high
- Weights:
  - Vacuum chamber approx. 1.800 kg
  - Thermal system approx. 1.100 kg
  - Vacuum pump set approx. 200 kg

Consumption data (depending on alternatives):

- Electric power (400 V, 50/60 Hz)
  - Alternative S1: approx. 33 kW
  - Alternative S2: approx. 32 kW
  - Alternative T1: approx. 4 kW
  - Alternative T2: approx. 20 kW
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  - approx. 60 l/h (transient operation)
- LN2 (max. 1 barg)
  - approx. 120 l/h (transient operation)
Main features of "ThermVAC" Standard VTC-chambers

- Complete horizontal thermal vacuum chamber with shrouds
- Withdrawable thermal table on trolley and with fixation threads
- Alt. 1: Shrouds with combined LN2-cooling/ elect. heating and closed loop thermal system
- Alt. 2: Shrouds with closed loop thermal system with inert liquid
- Automatic/manual VTC-thermal cycling
- Programming of VTC cycles at operating panel or external by means of PC
- Easy operation with LCD-operating panel and display of all functions
- PLC-control system with interface for data handling and recording
- Dry running high vacuum pumps
- Optional LN2-contamination baffle
- Optional 2nd turbo pump
- Standardized and proved system.

Performance Data for Shrouds

<table>
<thead>
<tr>
<th>Alternative 1 &quot;SS1&quot;</th>
<th>Alternative 2 &quot;SS2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range:</td>
<td>+150°C to -190°C</td>
</tr>
<tr>
<td>Cooled/heated by:</td>
<td>Closed loop - thermal system</td>
</tr>
<tr>
<td>Temperature distribution</td>
<td>±5 K, only at -190°C ±5 K</td>
</tr>
<tr>
<td>Heating/cooling speed</td>
<td>2 K/min average</td>
</tr>
</tbody>
</table>

Remarks: The temperature is an average value of 3 single Pt100.

Performance Data for Thermal Table

<table>
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<tr>
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<th>Alternative 2 &quot;TT2&quot;</th>
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<td>LN2 / elect. heating</td>
</tr>
<tr>
<td>Temperature distribution</td>
<td>±2 to ±5 K, ±2 to ±5 K</td>
</tr>
<tr>
<td>Heating/cooling speed</td>
<td>2 K/min average, 1 K/min average</td>
</tr>
</tbody>
</table>

Remarks: The temperature is an average value of 3 single Pt100.

Description of PLC-Control system, instrumentation and electrical equipment

- PLC-controlled system with LCD-operating panel
- Control of high-vacuum pumps and vacuum pressure of operating panel
- Control of thermal system (heating/cooling) at operating panel
- Full (semi-)automatic operation as well as manual operation of all system functions
- Indication of diagram for temperature and pressure at operating panel
- MPI-Interface for PC-data input/output
- External programming of thermal cycles by means of PC-EXCEL-program and with data transfer to PLC
- One of five different programmed cycles can be selected, each with 250 steps
- MPI-bus for data handling and data acquisition to customer's LabView® system