Heat pump test center WPZ

Mick Eschmann  mick.eschmann@ntb.ch  www.wpz.ch  +41 81 755 34 02

- Measurement of domestic hot water heat pumps according to EN 16147
Standard

Design of test bench:
Measurement for DHW carries out according to EN 16147:

1: heating up period  
2: standby period  
3: determination of COP$_{DHW}$ 
4: determination of reference hot water temperature
1: heating up period
• Water will heat up from 10 °C until the first time compressor is switched off by the thermostat (around 55 °C)

2: standby period ($P_{sb}$)
• The standby power input is determined by measuring the electrical power input over an integral number of on-off cycles of the compressor. The test shall be performed over a period of minimum 48 h.

3: determination of COP (draw-offs)

<table>
<thead>
<tr>
<th>Profile</th>
<th>S</th>
<th>M</th>
<th>L</th>
<th>XL</th>
<th>XXL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual draw-off per day</td>
<td>2.10</td>
<td>5.85</td>
<td>11.66</td>
<td>19.07</td>
<td>24.53</td>
</tr>
</tbody>
</table>

4: determination of reference hot water temperature
• This test is started when the compressor switches off at the end of the last measurement period for the load profile. A continuous hot water draw-off is started and continues until the hot water temperature falls below 40 °C.
Determination of COP

COP values (measured by WPZ)

<table>
<thead>
<tr>
<th>Source temperature</th>
<th>+7 °C</th>
<th>+20 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>COP: DHW-HP</td>
<td>1.82 to 3.18</td>
<td>2.68 to 4.20</td>
</tr>
<tr>
<td>COP: HP with separated DHW tank</td>
<td>1.78 to 3.17</td>
<td>-</td>
</tr>
</tbody>
</table>

*Results are only considered between 2015 and 2018*
Standard

COP as a function of load profile:

Withdrawal quantity [kWh/d]

Gerät 1
Gerät 2
Gerät 3

S
M
L
XL

COP [-]
The efficiency reduces by approx. 2% if source temperature decreases by 1 Kelvin.

Water tank capacity between 250 and 300 liter.
Many thanks for attention

Wärmepumpen-Testzentrum WPZ

Mick Eschmann
E-Mail: mick.eschmann@ntb.ch
Tel: +41(0)81 755 34 02
www.wpz.ch