Door Heat Exchanger: Specification for Open Rack V3

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Objectives & Scope

• Define a solution specific to the capability and feature set of Open Rack V3 (ORv3)

• Compliant with (or accommodate) concurrent ACS efforts
  – Blind-mate manifolds
  – RPUs & CDUs
  – Large, interchangeable QCs (manual)
  – Other related areas

• Support on-going efforts such as DC efficiency, heat reuse, sustainability/circularity, etc.
Sizing for ORv3

• Standardized mounting features (adapter frame)

• Weight restrictions (and other considerations)

• Defining overall Door HX solution dimensions to function with other Open Rack v3 features
  - Pipe routing
  - Power delivery (from rack busbar)
Performance Requirements

- **Example:** Support 33kW of rack power (and W27 FWS setpoint)

<table>
<thead>
<tr>
<th>Use case: Traditional Door HX</th>
<th>No need for CDU</th>
<th>Air-side load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack (kW)</td>
<td>Ambient (°C)</td>
<td>Airside dT</td>
</tr>
<tr>
<td>33.0</td>
<td>35.0</td>
<td>12</td>
</tr>
<tr>
<td>33.0</td>
<td>35.0</td>
<td>15</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Use case: Hybrid Solution - assuming at least 40% liquid cooled</th>
<th>CDU accounts for 3°C approach</th>
<th>Air-side load</th>
</tr>
</thead>
<tbody>
<tr>
<td>%LC</td>
<td>Rack (kW)</td>
<td>Ambient (°C)</td>
</tr>
<tr>
<td>40%</td>
<td>33.0</td>
<td>35.0</td>
</tr>
<tr>
<td>40%</td>
<td>33.0</td>
<td>35.0</td>
</tr>
<tr>
<td>70%</td>
<td>33.0</td>
<td>35.0</td>
</tr>
<tr>
<td>70%</td>
<td>33.0</td>
<td>35.0</td>
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</tbody>
</table>
Physical Interfaces

- Comply with ACS Door HX requirements document

**LC Connections**
- Top and bottom

**Power Connection**
- 48VDC from rack busbar

**Communication**
- Rack manager
- TOR switch
Benefits to ORv3 and Beyond

• Open Rack v3 = Fully architected and flexible solution (from power and cooling standpoints)

• Potential for multi-generational use
  - Manufacturers usually support Door HX products for 10~15 years

• Enable/support existing OCP efforts such as
  - Sustainability/circularity/TCO
  - Heat reuse
  - Energy-efficient operation (both rack and facility)
Next Steps

• Call-to-action: Encourage participation and feedback (how can this work for you?)

• Open to review this effort with fellow OCP tracks/groups

• Join the mailing lists
  – ACS Door HX Stream: https://ocp-all.groups.io/g/OCP-ACS-Door-Heat-Exchanger

• Project wiki
  – Cooling Environments Wiki
  – ACS Door HX Wiki

• Biweekly calls on Thursdays at 9 AM PST