Actual installation example

Example of solar heat utilization

MITSUBISHI PLASTICS

Zeolitic Water Vapor Adsorbent

AQSOA™ Adsorption Heat Pump

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Manufactured at MAYEKAWA MFG. CO., LTD

AQSOA™ Adsorption Heat Pump was a product developed by both MITSUBISHI PLASTICS, INC. and MAYEKAWA MFG. CO., LTD, and is sold by both companies.

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Main features of AQSOA Adsorption Heat Pump

- **Regenerates at Low Temperature (60°C−)**
- **COP 10.3**
- **Water coolant**
- **Adsorption type**

Operating Principle

- **Adsorption process**
- **Desorption process**

- Water (refrigerant) evaporates in the evaporator. Cold water is generated by the evaporation latent heat.
- The vapor is adsorbed by the adsorption heat exchanger. Adsorption heat is generated by the adsorption heat exchanger and removed by cooling water to improve adsorption process.
- The adsorbed vapor is removed from the other adsorption heat exchanger by hot water.

Comparison of cooling system (Mitsubishi Plastics data)

- A highly effective cooling is achieved by effective use of exhaust heat (COP 10.3)

<table>
<thead>
<tr>
<th>AQSOA™ Adsorption Heat Pump</th>
<th>Turbo refrigeration</th>
<th>Air cooling only</th>
<th>Steam absorption only</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Driving force source</strong></td>
<td>Gas (H2O)</td>
<td>Electric heater</td>
<td>Steam</td>
</tr>
<tr>
<td><strong>Cooling Capacity</strong></td>
<td>350 Kw (at 9°C)</td>
<td>387 Kw (at 7°C)</td>
<td>295 Kw (at 8°C)</td>
</tr>
<tr>
<td><strong>Device driving power</strong></td>
<td>4.8 Kw (at 9°C)</td>
<td>6.5 Kw (at 7°C)</td>
<td>5.0 Kw (at 8°C)</td>
</tr>
<tr>
<td><strong>Steam</strong></td>
<td>7.0 Kg/h</td>
<td>7.0 Kg/h</td>
<td>5.0 Kg/h</td>
</tr>
<tr>
<td><strong>CO₂ emissions (Kg/year)</strong></td>
<td>119.6</td>
<td>390.7</td>
<td>390.7</td>
</tr>
<tr>
<td><strong>COP</strong></td>
<td>10.3</td>
<td>4.2</td>
<td>4.4</td>
</tr>
</tbody>
</table>

The electric energy is only 1.1 Kw.

Improvements over conventional type

- **New type**
  - AQSOA™ (Coping type)
  - Monoblock

Standard Unit Specifications

- **Performance diagram**

HISHI COOLING TOWER™ cooling tower is recommended as cooling water source.

- **Term**
  - Model
  - Open type
    - Low temperature: H4−1000Kw-4H
    - Ultra-light type: H4−1000Kw-4H
  - Closed type
    - Low temperature: H4−1000Kw-4H
    - Ultra-light type: H4−1000Kw-4H

- **Conditions**
  - Supply air at 37°C, Inhalation water at 27°C
  - Please consult us for detailed information.