HITACHI
line up: YUTAKI S 80
Very high water temperature Heat Pump
YUTAKI S80

- Introduction: Why a very High temperature heat pump
  - 1) Yutaki S80
    - 1.1) System
    - 1.2) New indoor unit and tank unit
    - 1.3) Range and performances

- 2) Smart Cascade concept

- 3) Performances: Capacity and COP

- 4) Features and Benefits
  - 4.1) Inverter technology
  - 4.2) Premium system controller
  - 4.3) Room unit for end user
  - 4.4) Versatile system with large variety of control
Most of conventional heating installations in Europe use boiler and radiators. Existing radiators are designed to work with water between 60°C and 80°C. If working with lower water temperature, the capacity of the radiator will drop. Then it is necessary to increase number of radiators or the oversize the radiators.

Example with a radiator of 1kW capacity for 80°C water inlet:

<table>
<thead>
<tr>
<th>Water temperature</th>
<th>Radiator capacity</th>
<th>Oversize ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>80°C</td>
<td>1000W</td>
<td>-</td>
</tr>
<tr>
<td>71°C</td>
<td>833W</td>
<td>120%</td>
</tr>
<tr>
<td>65°C</td>
<td>698W</td>
<td>143%</td>
</tr>
<tr>
<td>55°C</td>
<td>528W</td>
<td>189%</td>
</tr>
</tbody>
</table>

If using 55°C water temperature, it will be necessary to almost double the size of radiators.

For the refurbishment market, in case of boiler substitution, very high water supply might be necessary.
In complement of Yutaki M, Yutaki S, and Yutampo, HITACHI introduce a new Air To Water heat Pump:

YUTAKI S 80

- Supply 80°C water temperature!
- For refurbishment market.
- For easy boiler substitution with any radiators installation.
- Combi type For Heating and Sanitary Hot Water.
YUTAKI S80 is a split type AIR to WATER heat pump.
1.2) New indoor and tank units
1.2) New indoor and tank units

2 SHW Tank units:

- DHWS260S-2.0H1E: 270 liters.
  Height: 1940mm (total if integrated with IU: 2270mm)

- DHWS195S-2.0H1E: 195 liters
  Height: 1272mm (total if integrated with IU: 1950mm)

6 Different indoor units:

- RWH-4.0~6.0FSVNFE: Single phase
- RWH-4.0~6.0FSNFE: Tri phase

SPACE SAVING!
Width: 595mm X depth: 695mm
Only!
1.2) New indoor and tank units

- Various installation possibilities
1.3) The range

6 model
- 4, 5 and 6 HP single phase
- 4, 5 and 6 HP tri phase

heating capacity range:
- 4.5 to 18 kW (7°C / 65°C)
1.3) Working Range: outlet water temperature

- Yutaki S80 can provide same water temperature range than a oil or gas boiler.

![Graph showing the working range of water outlet temperature for Yutaki S80]
2) Smart Cascade concept

- With Yutaki S80 a cascade of 2 refrigerant cycle (R410a + R134a) is used to reach high water temperature.
  - R410a refrigerant cycle is low temperature.
  - R134a refrigerant cycle is high temperature.
2) Smart Cascade concept

- In order to get high seasonal efficiency, smart cascade system will use 2 cycle (2 compressor) only when high or very high water temperature is necessary.

  By moderate ambient temperature (Ex: 7°C) heat load is low and water is low temperature: Only R410a compressor is used. COP is very high.

  By cold ambient temperature (Ex: -7°C) heat load is high. Second compressor start: capacity and water temperature is very high (80°C by -20°C)
Smart Cascade allow to have high COP:

- 4,36: RWH-4.0FS(V)NVFE + RAS-4.0H(V)RNME-AF
- 4,27: RWH-4.0FS(V)NVFE + RAS-4.0H(V)RNME-AF
- 4,05: RWH-4.0FS(V)NVFE + RAS-4.0H(V)RNME-AF

Conditions: Further EN14511, including defrost and water pump consumption. A7°/W35°
3) Performance: Capacity

- Capacity by low temperature is stable, even for high water temperature -> Less use of back up heater or boiler

![Diagram showing heating capacity at 65°C water outlet]
3) main point of performance

<table>
<thead>
<tr>
<th>Conditions further EN14511</th>
<th>RAS-4H(V)RNME-AF</th>
<th>RAS-5H(V)RNME-AF</th>
<th>RAS-6H(V)RNME-AF</th>
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</thead>
<tbody>
<tr>
<td>A7/W35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating capacity (Nom/Max)</td>
<td>10.0/13.5</td>
<td>12.0/16.0</td>
<td>14.0/17.8</td>
</tr>
<tr>
<td>COP (Nom)</td>
<td>4.36</td>
<td>4.27</td>
<td>4.05</td>
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<tr>
<td>A7/W45</td>
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<td></td>
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</tr>
<tr>
<td>Heating capacity (Nom/Max)</td>
<td>10.0/13.5</td>
<td>12.0/16.0</td>
<td>14.0/18.0</td>
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<tr>
<td>COP (Nom)</td>
<td>3.65</td>
<td>3.45</td>
<td>3.32</td>
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<tr>
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<tr>
<td>Heating capacity (Nom/Max)</td>
<td>10.0/13.5</td>
<td>12.0/16.0</td>
<td>14.0/18.0</td>
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<tr>
<td>COP (Nom)</td>
<td>3.16</td>
<td>3.06</td>
<td>3.01</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Heating capacity (Nom/Max)</td>
<td>10.0/13.5</td>
<td>12.0/16.0</td>
<td>14.0/18.0</td>
</tr>
<tr>
<td>COP (Nom)</td>
<td>2.5</td>
<td>2.56</td>
<td>2.51</td>
</tr>
<tr>
<td>A-7/W35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heating capacity (Nom/Max)</td>
<td>10.0/11.0</td>
<td>12.0/14.0</td>
<td>14.0/16.0</td>
</tr>
<tr>
<td>COP (Nom)</td>
<td>2.42</td>
<td>2.4</td>
<td>2.35</td>
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<tr>
<td>A-7/W45</td>
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<tr>
<td>Heating capacity (Nom/Max)</td>
<td>10.0/11.0</td>
<td>12.0/14.0</td>
<td>14.0/16.0</td>
</tr>
<tr>
<td>COP (Nom)</td>
<td>2.3</td>
<td>2.3</td>
<td>2.25</td>
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<tr>
<td>Heating capacity (Nom/Max)</td>
<td>10.0/11.0</td>
<td>12.0/14.0</td>
<td>14.0/16.0</td>
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<tr>
<td>COP (Nom)</td>
<td>2.15</td>
<td>2.15</td>
<td>2.10</td>
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<tr>
<td>A-7/W65</td>
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<td></td>
</tr>
<tr>
<td>Heating capacity (Nom/Max)</td>
<td>10.0/11.0</td>
<td>12.0/14.0</td>
<td>14.0/16.0</td>
</tr>
<tr>
<td>COP (Nom)</td>
<td>2.0</td>
<td>2.0</td>
<td>1.91</td>
</tr>
</tbody>
</table>
4) Additional Features and Benefits

- 4.1) Inverter technology
- 4.2) Premium system controller
- 4.3) Room unit for end user
- 4.4) Versatile system with large variety of control
The standard FIX SPEED compressor will lead to ON/OFF cycling during most of the operation.
4.1) INVERTER technology

- INVERTER Control of the 2 compressors improves energy efficiency and comfort by adjusting capacity of the heat pump to the real need of the building.
4.2) Premium system controller

- LCD matrix screen
- Intuitive use
- Ease setting and commissioning
- 10 languages
- Installer dedicated menu with password
- Default code historic
4.3) Room unit for end user

- Several operation modes
- Weekly schedule timer
- Dynamic text display on the LCD gives enhanced feedback to user and installer
- Backlight LCD for easier viewing in low light conditions
- Reliable RF communication by using 868 MHz band
- Include a sensor in order to have intelligent room compensation of set temperature.
4.4) Large variety of control

- All function and features includes in controller as a standards
- No need for additional PCB!

- Heating/SHW/Solar panel/Swimming pool
- Tariff input signal
- History of alarm code for maintenance
- Step control of Back up heater (3 step)
- Anti legionella setting
- Emergency mode
- Screed drying function
- Boiler combination
- Energy saving mode for water pump
- Weekly timer for heating and Sanitary hot water

Exclusivity!
YUTAKI S80

- Very High water temperature (80°C)
- 80°C down to -20°C
- Smart cascade for High seasonnal efficiency
- Inverter technology for both compressor
- Highest COP of the market
- Easy installation and maintenance
- Largest range of the market
- Premium control

COP 4,36