Process cooling and Air-conditioning (HVAC)

Low Grade Waste Heat
- Process waste heat
- Tri-Generation
- Solar heat

50°C to 100°C
5°C to 15°C

The Bry-Air Magic

Hot water in
50°C to 100°C

Cold water out
5°C to 15°C

Process cooling and Air-conditioning (HVAC)

Energysmart Cooling using Waste Heat

Bry-Air

Adsorption Chiller

Leaders in Dehumidification... Worldwide

www.bryair.com
Industrial operations represent a significant source of greenhouse gas emissions and most of the waste heat is simply rejected via cooling towers to the atmosphere. It can be thought of as “dumped” heat. Waste heat is the by-product of system inefficiencies found in industrial and commercial process and represents a waste of resources, opportunities, and money. Waste heat is commonly generated during:

- Power generation;
- Fuel fired furnaces;
- Process heating.

**Benefits**

- Prevent tonnes of CO\(_2\) emission from entering the atmosphere
- Chiller reduces electrical usage by 99%

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**Adsorption versus Absorption**

The principle of Adsorption works with the interaction of gases and solids. With adsorption chilling, the molecular interaction between the solid and the gas allow the gas to be adsorbed into the solid. The Adsorption chamber of the chiller is filled with solid material, silica gel, eliminating the need for moving parts and eliminating the noise associated with those moving parts. The silica gel creates an extremely low humidity condition that causes the water refrigerant to evaporate at a low temperature. As the water evaporates in the evaporator, it cools the chilled water. The Adsorption chiller has four chambers; an evaporator, a condenser and two Adsorption chambers. All four chambers are operated at nearly a full vacuum.

**Unbeatable Advantages**

- Long product life (>25 yrs)
- Low maintenance
- Regeneration temperature as low as 50°C (122°F)
- ‘Green’ refrigerant (water)
- Low electric consumption (one-tenth the conventional system)
- No noise and vibration

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**Why Adsorption is a Better Choice?**

**Adsorption versus Absorption Comparison**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Adsorption Chillers</th>
<th>Absorption Chillers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Expectancy</td>
<td>Greater than 25 Years</td>
<td>7 to 9 Years</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Negligible Maintenance</td>
<td>Require High Maintenance</td>
</tr>
<tr>
<td>Regeneration Temperature (Hot Water)</td>
<td>Down to 50°C (122°F)</td>
<td>Shuts down at 82°C (180°F), Needs Back-up Heater</td>
</tr>
<tr>
<td>Desiccant Used</td>
<td>Silica Gel (Inert)</td>
<td>Lithium Bromide (Highly Corrosive)</td>
</tr>
<tr>
<td>Replacement Requirements (Periodic Maintenance)</td>
<td>Not Required</td>
<td>Heat Exchangers, Boilers, Absorbent Replacement Required</td>
</tr>
</tbody>
</table>

**How does our Adsorption Chiller Works?**

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**Range**

70 - 1180 kw (20 - 335 tonnes)

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**Unbeatable Advantages**

- Long product life (>25 yrs)
- Low maintenance
- Regeneration temperature as low as 50°C
- ‘Green’ refrigerant (water)
- Low electric consumption (one-tenth the conventional system)
- No noise and vibration
Input sources

Process Waste Heat

Tri-generation (CHP)

Solar Heat

Solar Collectors

Applications

Process Cooling

Air-conditioning (HVAC)

Food & Beverage

Power Plant

Generators

Bry-Air®

Leaders in Dehumidification… Worldwide