A high efficiency energy saving dry type hot water heating system by applying E.P.P and nanomaterials

E.P.P (Expanded Polypropylene) is a high-tech material developed by Hanwha Advanced Materials Corporation
Product Specifications and Performance

radiate heat (Bottom insulation, upper radiate heat)
Galvalume steel sheet 1.2 T and Aluminum sheet 0.7T coat
with heat radiating NANO material⇒ Energy savings of up
to 55% can be achieved by radiating heat an of 4.9℃
degrees or more on average compared to existing Galvalume
steel sheet, Aluminum sheet, galvanized steel.
(Compared to conventional wet floor heating system)

- E.P.P panel module for floor
  Thickness (Except finish material) : 20mm
  radiate heat (Bottom insulation, upper radiate heat)
  Construction Time : Heating possible, Construction
  is possible on that day,
  (Expanded Polypro Pylene), eco-friendly glue
  * America Plastics Industry Association, Germany According to
  the recycling law.
- NANO Coating Ceiling heat sink (AL)
  Thickness (Except finish material)
  - 600x600x0.7T ⇒ radiate heat

Excellent Insulation Performance
Excellent Corrosion Resistance
Excellt Assemblability
Recyclable

Excellent Degree of Freedom in Design
Minimum Pollutants
Excellent Repetitive Impact
### Dry floor heating system vs Wet floor heating system

<table>
<thead>
<tr>
<th>Dry floor heating system</th>
<th>classify</th>
<th>Wet floor heating system</th>
</tr>
</thead>
<tbody>
<tr>
<td>The floor heating layer is thin, (22–25mm)</td>
<td>Thickness</td>
<td>The floor heating layer is thick, (60–80mm)</td>
</tr>
<tr>
<td>Load reduction of structure (20–30kg/ per square foot)</td>
<td>Load</td>
<td>Increase of load of structure (400–700kg/ per square foot)</td>
</tr>
<tr>
<td>Construction is possible on that day</td>
<td>Construction Time</td>
<td>7days–14days</td>
</tr>
<tr>
<td>Can be constructed with the same quality</td>
<td>Climate dependence</td>
<td>Quality gap is big according to climate</td>
</tr>
<tr>
<td>Simple</td>
<td>construction</td>
<td>It is difficult to construct</td>
</tr>
<tr>
<td>Reduced by more than 30% compared to wet heating systems</td>
<td>noise</td>
<td>Slab thickened to reduce interlayer noise</td>
</tr>
<tr>
<td>Floor preheating time is short (About 15 minutes)</td>
<td>Thermal efficiency</td>
<td>Floor preheating time is long (About 1 hour)</td>
</tr>
<tr>
<td>Simple (None Piping damage)</td>
<td>maintenance procedures</td>
<td>Difficult (Piping damage)</td>
</tr>
<tr>
<td>100% Eco-friendly material</td>
<td>harmful substance</td>
<td>Formaldehyde, Volatile organic compounds emission</td>
</tr>
<tr>
<td>Long</td>
<td>Product Life</td>
<td>Short</td>
</tr>
</tbody>
</table>

**[GAON SYSTEM]**

A high efficiency energy saving dry type hot water heating system by applying nanomaterials.

This system is ideal for cold climates everywhere in the world.

- restaurant
- religious facility
- semidetached cottage
- weekender
- accommodation
Dry floor heating system

Galvalume steel sheet (1.2T) coat with heat radiating
NANO material 1200mm x 800mm x (1.2T)

12mm PE-RT Pipe

E.P.P panel module for floor
1040mm x 1040mm x (20T)

Pipe pitch spacing: 130mm

a load-bearing insert

NANO Coating Ceiling heat sink (AL)

E.P.P panel module for floor diagram
PERT PIPE
Latching solenoid valve
a load-bearing insert

E.P.P panel
Hot water system distributor
Hot water system distributor diagram

Galvalume steel sheet (1.2T) coat with heat radiating
NANO material

Constant-valve control (wireless)
Climate control (cable)

Constant-valve control (cable)
Climate control (cable)
A high efficiency energy saving dry type hot water heating system diagram