Metal Heat Exchanger Sizing

Process Technology offers three basic configurations in its standard coil product line:

- Grid Coil
- “U” Coil
- Serpentine Coil

In addition, we also offer custom designed coils including helical and inline configurations.

**1 FORMULA FOR STEAM HEATING MEDIA:**

![Formula](image)

**Calculation process:**

**Step 1:** Determine gallons in tank. Enter this amount at (A).

**Step 2:** Subtract the ambient temperature (°F) of the solution to be heated from the temperature to which it is to be heated (operating temperature). Enter this amount at (B).

**Step 3:** Locate the steam pressure available at the tank on the Steam Pressure Factor chart below (chart 1) and find the factor number. Enter the factor number at (C).

**Step 4:** Multiply (A) times (B) times (C) and divide by 1000. This is the square foot area required for a one-hour heat-up. If more time is available, coil surface area may be reduced by dividing the square foot area by the heat-up time available (up to 4 hours maximum).

**CHART 1**

<table>
<thead>
<tr>
<th>STEAM PRESSURE AVAILABLE/PSI</th>
<th>5#</th>
<th>10#</th>
<th>15#</th>
<th>20#</th>
<th>25#</th>
<th>50#</th>
<th>Above 50#</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEAM PRESSURE FACTOR</td>
<td>.55</td>
<td>.50</td>
<td>.42</td>
<td>.37</td>
<td>.30</td>
<td>.25</td>
<td>Consult factory</td>
</tr>
</tbody>
</table>

**2 FORMULA FOR HOT WATER HEATING MEDIA:**

![Formula](image)

**NOTE:** These calculations do not take into account surface heat losses. Consult factory for solution temperatures of 170°F or higher. Check heat exchanger solution guide for proper sheath material selection.
METAL COIL PRESSURE DROP (FOR WATER)

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