Sinusoidal Fluid Control
Wavy Channel Heat Exchanger

CLAIM:
High efficiency heat exchanger method and design that is capable of increasing fluidic throughput without added increased energy input performance.

OVERVIEW:
The technology utilizes a longitudinal-split wavy channel to negate (1) parasitic heat loss, (2) insufficient flow length, and (3) frictional pressure drop. This results in a design with improved heat transfer rates in the “same” form factor without causing an increase in the pressure requirements.

NOVELTIES:
- Uses sinusoidal channels to enhance heat transfer without negatively increasing the size or mechanical/electrical pumping power requirements.
- Ease of manufacturing compared to many other heat transfer enhancement technologies.

FEATURES:
- High efficiency (low energy)
- Design allows for a reduction in size without compromising output or efficiency
- Operates and design can be integrated into existing systems.

<table>
<thead>
<tr>
<th>Features</th>
<th>Split Wavy Channel</th>
<th>Traditional Heat Exchangers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>Smaller</td>
<td>Larger</td>
</tr>
<tr>
<td>Weight</td>
<td>Lighter</td>
<td>Heavier</td>
</tr>
<tr>
<td>Efficiency</td>
<td>Greater</td>
<td>Smaller</td>
</tr>
<tr>
<td>Energy</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

POTENTIAL APPLICATIONS:
- Energy and Power generation
- Thermal management
- Flow Control
- Transportation
- Power generation
- Refrigeration and air-conditioning
- Cryopreservation
- HVAC

\[
\lambda = \frac{k \cdot A}{m \cdot c_p \cdot L}
\]

Heat Exchanger (HEX)

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