Altex Technologies Corporation

High Effectiveness and Los Cost (HELC) Recuperative Heat Exchanger

Purpose built for ScCO2 waste heat and utility power plant applications

- Stainless steel or high temperature alloy materials
- Nickel-based braze alloy
- Tested to 3,500 psi at low temperature
- Tests show expected high heat transfer rates
- Three 50 KWt units being manufactured for further testing
- 500 KWt HELC to be built and tested in 2016
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HELC Technology Comparison

- **400% higher heat transfer rates**
- **80% reduction in volume**
- **5,000 psi, and higher, pressure capability**
- **High effectiveness > 90%**
- **80% lower external heat loss**

Compared to PCHE

- **75% lower weight than target**
- **80% fewer parts and joints**
- **Potential for 60% lower cost**
- **High efficiency applications will benefit – waste heat and other heat source power systems and heat pump applications**

**Volumetric Heat Transfer For Oil-Water**

- **MCHEX Oil-Water**
- **Brazed plate Oil-Water**

**Hot Side Flow Rate (GPM)**

**Compared to Brazed Plate**

- **10000**
- **12000**
- **14000**
- **16000**

**Volumetric HTC (BTU/(hr-ft³-°F))**

**47 MWt Module**

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