TECHNOLOGY

Hybrid Plate Heat Exchanger

OVERVIEW

Plate heat exchangers exhibit high performance as liquid to liquid heat exchangers. Their performance, however, is poor when fluid flow on different sides of the plates is much different than evaporators, for example. In that instance, the flow of evaporating fluid is significantly lower compared to a single phase fluid flow.

Researchers at the University of Maryland have discovered a technology where first decoupling of the refrigerant and water flow components in plate heat exchangers occurs, and second, a chevron based geometry of plate heat exchangers utilizes a roll-bonding manufacturing technique. Self-pressure contained roll-bonded plates will decrease stress on the frame of the unit, thereby reducing material consumption, weight, and cost. Roll-bonding technology removes size and shape limitation for the plates and makes plate heat exchangers competitive in the large heat exchanger market, with performance several times higher compared to conventional shell-and-tube heat units. This technology can also be used in Ocean Thermal Energy Conversion (OTEC) power plants, reducing system costs dramatically due to their dependence on the cost of the heat exchangers.

Applications:
· Air conditioning and refrigeration systems
· Ocean Thermal Energy Conversion systems

Advantages:
· Lower costs due to reduction in size, weight, and materials in plate heat exchangers
· Significant increase of performance over traditional plate heat exchangers
· New hybrid heat exchanger will disrupt air conditioning market and roll bonded OTEC heat exchangers

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Industrial Processing

EXTERNAL RESOURCES

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