Kaltra Confirms Superior Frosting Performance of Reversible Microchannel Coils Through Extensive Testing

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Kaltra has completed a comprehensive testing program validating the performance and operational robustness of its reversible microchannel heat exchanger coils across a wide range of operating conditions. The results confirm the technology's suitability for demanding heat pump applications and reinforce its position as the most innovative solution within Kaltra's microchannel heat exchanger (MCHE) portfolio.

The testing campaign evaluated reversible coils under varying air temperatures and humidity levels, multiple evaporation temperatures, and a broad set of performance parameters relevant to reversible heating and cooling operation. Additional tests were conducted at different installation inclination angles and with multiple surface treatments, including hydrophilic and hydrophobic coatings, e-coating, and advanced nanoscale coatings.

Kaltra's reversible microchannel coils are specifically engineered to operate efficiently in both condenser and evaporator modes. Their design incorporates optimized refrigerant distribution, multi-pass flow arrangements, and innovative louvered plate fins tailored for effective condensate drainage and controlled frost formation. This enables stable performance under repeated frosting and defrost cycles - conditions that are especially critical in heat pump operation.

Test results showed that, across optimum configurations, the reversible microchannel coils delivered performance equal to or exceeding that of comparable finned-tube coils. Frosting time was found to be equivalent, while operating time between defrost cycles was consistently longer, supporting improved system uptime and energy efficiency.

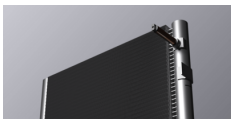
For heat pump manufacturers, these results deliver clear competitive advantages:

- Longer heating operation between defrost cycles, increasing seasonal efficiency and end-user comfort
- Reliable and predictable defrost behavior, even under challenging ambient temperature and humidity conditions
- Sustained performance over repeated frosting and defrost cycles, minimizing efficiency losses over time
- Reduced refrigerant charge, supporting low-GWP and flammable refrigerants while easing regulatory compliance

These findings further establish Kaltra's reversible microchannel coils as a next-generation heat exchanger solution, delivering measurable advantages over traditional finned tube designs and setting a new benchmark within the MCHE product range.

In parallel with the testing program, Kaltra has expanded its MCHEdesign simulation software to fully support reversible microchannel coils. Engineers and OEM partners can now model reversible coil operation directly within MCHEdesign, including performance simulations for both condenser and evaporator modes. This enables faster design iteration, accurate performance prediction under frosting and defrost conditions, and seamless integration of reversible coils into heat pump system development workflows.

Media:



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MCHE :: Microchannel Heat Exchanger :: Heat Pump :: Reversible Coil :: HVAC ::

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