

MicroGroove is the Eco-Friendly Choice for Heat Exchangers

MicroGroove smaller-diameter copper tubes already have enabled manufacturers of residential air conditioners to increase their SEER ratings while decreasing materials usage even as high-GWP refrigerants are being phased out.

The inexorable migration to smaller-diameter tubes in air-conditioning markets continues. For example, Friedrich and Optimized Thermal Systems recently used CoilDesigner® software to simulate the performance of 5 mm diameter copper-tube coils. For information on CoilDesigner, visit the CoilDesigner webpages of CEE at www.ceee.umd.edu/consortia/isoc/coil-designer; and OTS at www.optimizedthermalsystems.com.

Friedrich's objective was to optimize the design of drop-in replacements for its air-conditioner heat exchangers. The results of this joint study are summarized in the May 2017 issue of the *MicroGroove Update* newsletter available online at microgroove.net.

Optimized Thermal Systems and the International Copper Association launched an Educational Outreach Program (ICA-OTS EOP) in the spring of 2017, to assist OEMs in the design of eco-friendly heat exchanger. Already three technical webinars have been presented in 2017. More about this program as well as links to the recorded webinars can be found online at microgroove.net. ICA-OTS webinar recordings have also been uploaded to the MicroGrooveTech YouTube channel and can be viewed free of charge.

Eco-friendly Heat Pumps

Meanwhile, MicroGroove is the first choice for heat pumps. Of course, heat pumps are already recognized as an eco-friendly method of heating because of the high coefficients of performance that are possible using a heat pump.

MicroGroove makes heat pumps even more eco-friendly.



This grocery store reach in cooler uses MicroGroove Technology with R290. (Courtesy of MTL Cool.)

Regardless of tube diameter, round-tube, plate fin (RTPF) coil designs are especially efficient for shedding condensation in the evaporator mode. An overview presentation by Yoram Shabtay (Paper #263) on MicroGroove in heat pumps was warmly received in May 2017 at the triennial Heat Pump Conference organized by the International Energy Association. The slideshow for Paper #263 is currently available on the "Events" page at microgroove.net.

Natural Refrigerants

Yet the eco-friendly applications of MicroGroove are just getting started. In applications of natural refrigerants, MicroGroove is proving its worth both for R290 (propane) and R744 (CO₂) applications.

First, CO₂ gas coolers and evaporators for transcritical R744 applications are currently benefitting from the use of RTPF heat exchangers. Smaller-diameter tubes made with copper and high-strength copper alloys are becoming the benchmark for a wide range of large commercial-sized CO₂ applications for supermarkets, both for transcritical and subcritical refrigeration systems, including evaporators and gas coolers with or without a booster system.

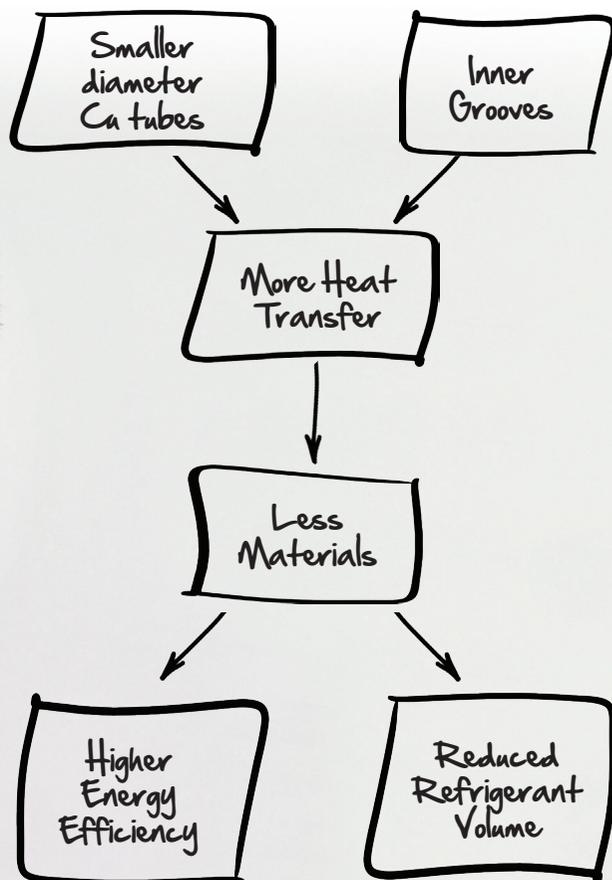
Secondly, R290 is now being widely used as a refrigerant for reach-in cooler applications. For example, MTL Cool is rapidly expanding to meet the demand for its propane-based MicroGroove cooling systems. A new factory under construction in Chambly, Quebec, outside of Montreal, is slated to go into production in the summer of 2017.

An oral presentation delivered in June 2017 at the ATMOsphere America Conference in San Diego provides an overview of MicroGroove Technology as applied to natural refrigerants. This topic is also summarized in the June 2017 issue of the *MicroGroove Update* newsletter available online at microgroove.net.

The Eco-Friendly Game Changer

"Advances in heat exchanger technology are vital to the development of eco-friendly air conditioning and refrigeration systems," says Nigel Cotton, MicroGroove Team Leader for the International Copper Association. ICA predicted several years ago that MicroGroove smaller diameter, inner-grooved copper tube would be a game changer. Coils made with tubes are at the leading edge of eco-friendly ACR designs."

the microgroove™ advantage



IT'S A GAME CHANGER

MicroGroove™ technology is changing the game of air conditioning and refrigeration (ACR) OEM product design.

OEMs are going back to their drawing boards. They are designing ACR products with high energy-efficiency, while minimizing materials usage and reducing refrigerant volume.

The resulting ACR products are smaller and lighter yet can be produced using familiar manufacturing methods.

It's a whole new game!

For more information, or to join a free webinar, visit

www.microgroove.net.

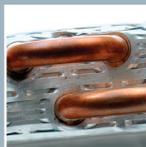


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