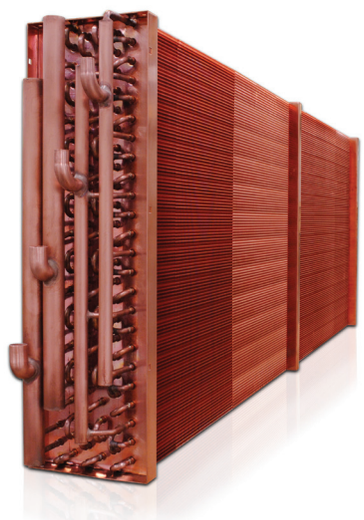
New Applications for Smaller-Diameter Copper Tubes

OEMs, coil makers and researchers continue to develop new applications for smaller-diameter copper tubes. MicroGroove™ is already found in many window air-conditioners and split systems. Since the smaller tubes and inner grooves increase the heat transfer coefficients, the materials savings and performance gains cannot be ignored in volume production. Fin design, tube spacing and tube circuitry have all been carefully optimized in these products to increase coefficients of performance. Now the same advantages are also being realized in other applications as well.



This "all copper" heat exchanger was constructed from smaller-diameter copper tubes and copper fins. (Courtesy of Super Radiator Coils, Richmond, Virginia.)

Commercial Heat Exchangers

The story behind the uptake in commercial and refrigeration applications was unveiled at the MicroGroove Seminar held at the 2013 AHR Expo. A hundred or more people were in attendance for the two-hour event. "The seminar was a watershed event," says Nigel Cotton, MicroGroove Team Leader for the International Copper Association. "The industry understands the message that MicroGroove benefits extend well beyond residential air-conditioners."

The presentation by Matt Holland of Super Radiator Coils especially piqued the interest of attendees. "Super Radiator Coils is a US company that is leading the way in the development of large heat exchangers for commercial applications using MicroGroove tubes," says Nigel Cotton. Due to the strong audience response, MicroGroove sponsored a one-hour webinar in partnership with Super Radiator Coils in June. The recorded webinar can now be viewed via the webinar page on microgroove.net.

R290 Ready for America

Recently, the US Environmental Protection Agency's Significant New Alternatives Policy (SNAP) program has authorized R290 as one of the available hydrocarbon refrigerants for use in household and small commercial refrigerators and freezers.

MicroGroove smaller diameter copper tubes are an effective way to reduce refrigerant charge and meet performance requirements. Significant development work has already been accomplished in China on the use of propane (R290) as a refrigerant in evaporator and condenser coils made from MicroGroove Copper tubes. R290 is not the only natural refrigerant that can be used with MicroGroove tubes. Smaller diameter copper tubes are also well suited for use with carbon dioxide (R744) as a refrigerant.

Copper in the Cold Chain

The cold chain is a modern miracle that allows hundreds of millions of people to enjoy a wide variety of convenient, safe and affordable food products. Copper tubes are widely used in evaporators and condensers in the cold chain. The Copper Alliance and its member companies are conducting technical research and market research on the advantages of copper tubing in the cold chain, and how MicroGroove technology can be used to increase these advantages. "The industry is beginning to understand the advantages MicroGroove could bring to the cold chain," says Nigel Cotton. "There are many applications for which MicroGroove, along with new refrigerants, can increase efficiencies while allowing for more compact designs."

Antimicrobial Coils

Copper is inherently antimicrobial. There is no need to coat copper tubes to benefit from the antimicrobial properties of copper. All that is necessary is to use copper fins and copper tubes.

Bacteria can thrive on materials such as aluminum or stainless steel, which have no measured antimicrobial properties. Evidently the bacteria can form layers on these materials and become a substrate for further growth of microorganisms. However, on copper surfaces, the growth of bacteria, mold and mildew is quickly suppressed as a result of the antimicrobial properties of copper; so the surface is cleaner and easier to maintain.

The increased thermal conductivity of the MicroGroove tubes pairs well with the high thermal conductivity of copper fins, allowing for more compact antimicrobial coil designs and reducing the weight of the coils.

Keys to Success: The Next Big Thing

Who knows what will be the next big thing for MicroGroove smaller-diameter tubes? It is a good time to be in product development in the ACR industry. The next big thing in ACR might be made from small tubes. And it may come from your laboratory work bench. Will MicroGroove tubes be the key to your success? Join our discussion group on LinkedIn and let us know what you think.

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.

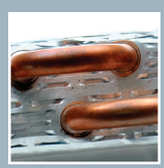
It's a whole new game!

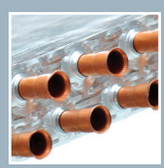
For more information, or to join a free webinar, visit **www.microgroove.net.**

Join us on LinkedIn via microgroove.net

Cu International Copper Association
Copper Alliance





Available from a range of suppliers.
For more information visit:
www.microgroove.net