

# microgroove™ Update

Attain High Energy Efficiency with Less Materials Using Smaller-Diameter, Inner-Grooved Copper Tubes

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## PRESENTATIONS

### WEBINAR

#### Manufacturing ACR Coils with MicroGroove Tubes

Tuesday, March 27, 2012 1:00 pm ET

Presented by *THE NEWS* and *Appliance Design*

**Moderator:** Kyle Gargaro, Editor-in-Chief of *THE NEWS*

**Speakers:** John Hipchen, President, Exel Consulting Group; Ned Haylett, VP Sales, Burr Oak Tool Inc.; and Randy Sible, R&D Manager, Burr Oak Tool Inc.

(More info on "Webinars" page)

### EXHIBITS

#### MicroGroove Booth EG321 China Refrigeration 2012

Beijing, April 11 to 13

(More info on "Events" page)

### TECHNICAL PAPERS

#### Papers on MicroGroove submitted for upcoming conferences:

2012 IIR Gustav Lorentzen Conference  
Delft, Netherlands, June 25 to 27

2012 Purdue Conferences  
West Lafayette, Indiana, July 16 to 19  
(More info on "Events" page)

## MICROGROOVE IS ONLINE

### WWW.MICROGROOVE.NET

Visit MicroGroove online for the latest information about webcasts, technical papers and exhibits.



## MAKING COILS WITH MICROGROOVE TUBES

Manufacturers are using familiar equipment to make coils with smaller-diameter round copper tubes.

Performance simulations and prototype designs of heat exchangers with smaller diameter copper tubes are indeed impressive. The savings in materials and reduction of refrigerant volume cannot be denied.

But practical high volume manufacturing is another matter.

Fortunately, Microgroove copper tube technology is compatible with production methods and equipment already familiar to the HVAC industry. Equipment makers have made the necessary adjustments for producing smaller-diameter tubes and assembling them into coils. Such manufacturing equipment has proven production-worthy at major companies such as Haier, Midea, Kelon, Chigo and Goodman who have mastered the manufacturing and now are marketing products globally.

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## Typical Processes

The principles of tube insertion and tube expansion have been utilized in the industry for decades. The equipment used today expands the tubes circumferentially, i.e., the circumference of the tube is increased without changing the length. This "non-shrinkage" expansion allows for better control of tube lengths in preparation for subsequent assembly operations.

Tubes are inserted, or laced, into the holes in a stack of precisely spaced fins. Specially designed expanders are inserted into the tubes and the tube diameters are increased slightly until mechanical contact is achieved between the tubes and fins. The high ductility of copper allows for this process to be performed accurately and precisely. Heat exchanger coils made in this manner have excellent durability and heat transfer properties.

## Modern Manufacturing

Modern designs of the tube expansion equipment allow for tight tolerances and exact specifications using smaller diameter copper tubes. Otherwise the equipment and production lines closely resemble the existing equipment lines that have a long and successful history.

"Manufacturing in general has become more precise and accurate and the equipment for working with smaller diameter tubes is no exception," says Nigel Cotton, MicroGroove Team Leader for the International Copper Association. "Manufacturers can quickly recoup the costs of equipment upgrades because the use of smaller diameter coils allows them to make higher value products with less material."

For more information about MicroGroove technology, visit [www.microgroove.net](http://www.microgroove.net).

## WEBINAR UPDATE

### Burr Oak Tool Inc. to Co-Present at MicroGroove Webinar

Representatives from Burr Oak Tool Inc. have agreed to copresent the next MicroGroove webinar. They will review typical processes used in the manufacture of coils and then describe the state-of-the-art manufacturing solutions for making coils with MicroGroove smaller diameter tubes.

The one-hour webinar takes place on Tuesday March 27, 2012 at 1 pm ET and will continue to be available for viewing free of charge.

Register today at [www.microgroove.net/webinars](http://www.microgroove.net/webinars) for this free webinar.

## IN THE SPOTLIGHT



### Mechanical Expander

The mechanical expander from Burr Oak Tool Inc. boasts short cycle times with expansion speeds over 50 fpm. That means a 36 inch coil can be expanded in 15 seconds, or a 120 inch coil can be expanded in 35 seconds. All tubes can be expanded in a single cycle. According to the company, the equipment can be customized for short- or long-run production environments.

The "overbuilt" structure ensures accuracy and longevity. It is designed for tube diameters from 5 mm to 1 inch; and coil widths up to 60 inches standard (and 72" special).

The precision of this mechanical expander allows for coil lengths repeatable to 1/16 inch. Many options are available to enhance production rate and operator ergonomics, including options to assist in coil handling, to control coil movement and to contain the coil during expansion.

#### For more information, contact

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