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Copper is Playing a Critical Role in Expanding the \$140 billion HVAC(R) Market

NEW YORK (September 14, 2017) – Copper’s high conductivity, durability and workability give it a dominant role in the fast-growing and rapidly changing Heating, Ventilation, Air Conditioning and Refrigeration (HVAC(R)) market. Design change is a key feature of this industry, as the use of more environmentally friendly refrigerants and more efficient products are required, at a reasonable cost. Market drivers, growth opportunities and sector developments are outlined in a new industry study commissioned by the International Copper Association (ICA). The study, completed by Metals Research & Consulting, reveals the key role copper plays in the design, efficiency and refrigerant improvements that are driving the industry.

The HVAC(R) market comprises a variety of product types used in both residential and commercial applications, from room air conditioners and large commercial systems to commercial and industrial refrigeration. Altogether, these systems make up a \$140 billion market that has grown by 55.5% over the last 12 years, according to the study. Room air conditioners make up the majority of the units sold, and they also form the largest sector for copper. The market for room air conditioners requires annually about 1.04 million tonnes of copper, compared with 430,000 tonnes for refrigeration products and 220,000 tonnes in chillers.

“Copper has played a key role in market drivers like climate change mitigation, product efficiency and design improvements that have expanded the HVAC(R) market and present an opportunity for continued growth,” said Colin Bennett, Market Analysis and Outreach, ICA. “Meanwhile, emerging markets present further opportunities for market expansion.”

Countries like India, Indonesia and the Philippines have high populations as well as a high number of cooling degree days, which measure potential demand for air conditioning. The research also shows that these countries have the lowest density of room air conditioners in place. These market factors represent a significant demand opportunity for additional units.

While emerging markets are forecast to drive HVAC(R) demand, copper’s unique properties have allowed the metal to help improve the efficiency and design of HVAC(R) products without a significant increase in costs.

“Growing climate change concerns and an increase in minimum efficiency performance standards (MEPS) and labelling of room air conditioners worldwide have created a greater demand for product efficiency,” said Paul Dewison of MetalsPlus Research. “Copper’s inherent properties are helping to meet this demand through improved designs.”

For example, smaller diameter, thinner copper tubes and the inner grooving of copper tubes have been used to optimize product designs and increase efficiency in heat exchangers. These modern MicroGroove® heat exchangers have dropped to 5 millimeters in diameter down from 9.52 mm over the

past 20 years. They are more efficient, use less refrigerant and can work with high-pressure refrigerants. Similarly, motor-driven systems have been improved to deliver better and more efficient design. High-efficiency motors are more likely to use copper stator windings. In this way, copper's efficiency and its ability to be worked into smaller and more complex designs help to deliver better, more eco-friendly products for the same cost.

The HVAC(R) market will continue to adapt to climate change mitigation and efficiency demands. At the same time, growing populations in emerging markets will likely demand more air conditioning units. These trends are expected to have a significant impact on the market and, as we've seen, copper will continue to have a big role to play.

For more information on copper's role in HVAC(R), visit the trends and innovations section of copperalliance.org or contact ICA.

Additional new research on key areas of copper demand will be presented at the 2017 ICA and International Wrought Copper Council (IWCC) *Workshop on Trends in Copper Demand*. This event will take place on Friday, October 27 prior to LME Week in London. Visit copperalliance.org/events to learn more.