

IT'S NEVER BEEN DONE BEFORE

Emerson Heat Pump Technology Is Helping China Reduce Coal Use

Conventional heat pumps do not effectively handle the residential heating requirements in China's northern provinces, where more than 500 million people live. Emerson solved this challenge by developing an innovative technology for its Copeland Scroll compressor, enabling energy-efficient heat pumps to work effectively and efficiently even in cold temperatures. Millions of homeowners in China now have the opportunity to reduce their reliance on coal-fired heating plants and prevent millions of tons of CO₂ emissions.

China faces a big challenge in reducing the release of carbon emissions that contribute to climate change. Coal is the country's only domestically available fossil fuel for power and heat generation. China uses so much coal that it recently surpassed the United States as the world's No. 1 emitter of carbon dioxide from the burning of fossil fuels.

Thanks to Emerson innovation, millions of homeowners and homebuilders in China's northern provinces now have the opportunity to adopt more energy-efficient heating and cooling systems using heat pumps that can greatly reduce their reliance on coal-fired heating plants – and prevent millions of tons of CO₂ emissions.

Heat pumps account for 80 percent of residential air conditioning systems sold in China. A heat pump is an electric-powered air conditioner that can also operate in reverse during the winter – absorbing heat from the outdoor air (or ground) and circulating it to heat indoor spaces.

However, conventional heat pumps do not effectively or efficiently handle the heating requirements in China's northern provinces, where more than 500 million people live. In this region, winter temperatures are rarely above 30°F from January through March. Consequently, many homes and buildings in this region require a separate heating system which usually comes from a coal-fired heating plant providing steam to a district of homes.

It's Never Been Done Before. Emerson engineers solved the cold-weather weakness of conventional heat pumps by developing an innovative heating technology for its Copeland Scroll compressor, the “engine” that pumps refrigerant through outdoor and indoor coils to enable the heating or cooling cycle.

Emerson's Copeland Scroll Heating technology has ushered in the first-ever heat pump systems that can operate efficiently and effectively at low outdoor temperatures. Emerson's heating technology can be used in dedicated heat pump heating systems (matching closely with today's style of heating) or used in a whole-home central heating/cooling system. In larger homes with individual heating/cooling systems, Emerson's Copeland Digital Scroll Heating technology can be used for both heating and cooling.

Heat pump systems with Emerson's Copeland Scroll Heating technology are 20 percent more energy efficient than a traditional hot-water system heated using a coal-fired boiler. If the northern China market completely switched to heat pumps using this new technology, more than 60 million tons of carbon dioxide emissions could be prevented annually.

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The benefits of this technology caught the eye of the Chinese government and heat pump manufacturers. In 2005, China's Ministry of Construction awarded the first heat pump system using Copeland Scroll Heating technology with its highest endorsement – designating it as a “world leading” technology.

Emerson's scroll compressor heating technology is now being used by major heat pump manufacturers in Asia, including Samsung and Gree, to provide homeowners and businesses with a more energy-efficient alternative for central heating and cooling. These new heat pump systems are being used in residential apartment buildings, villas, and other residential community developments, as well as light commercial installations. Each installation helps reduce China's carbon footprint while providing modern indoor comfort for its residents.