

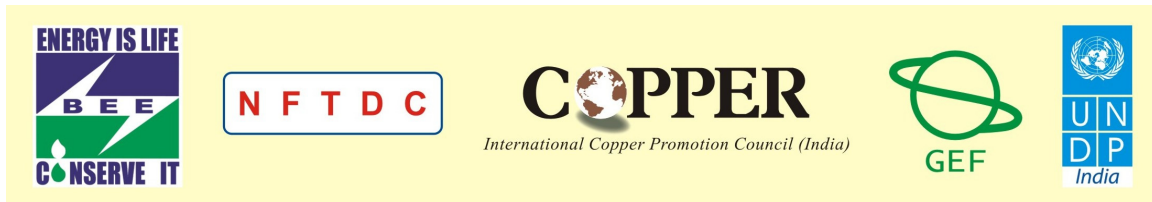
## Copper Motor Rotor Technology

**27<sup>th</sup> April 2011, Hyderabad:** A dissemination workshop on the Copper Motor Rotor technology knowhow was held by International Copper Promotion Council, India (ICPCI) at Non-Ferrous Material Technology Development Centre (NFTDC). The discussion broached on the benefits of using Copper Die Cast Rotor technology applied in high efficiency motors. The workshop dealt in disseminating the feasibility and profitability of adopting copper die cast functionalities in motor manufacturing to practicably increase motor efficiency.

**Mr. Ajit Advani, Director - Sustainable Energy Global, International Copper Association** said “In India about 70-80% of the electrical power is consumed by industries is through electrical motors. Thus a small increase in efficiency can lead to significant economical and environmental benefits. Copper Motor Rotors technology (CMR) aims to facilitate penetration of high and premium efficiency motors using copper die-cast rotors which would result in better performance with the incremental efficiency gain leading to reduced electricity consumption in almost all the sectors of end use”.

Energy Performance of Electric motors are rated according to their electric power conversion efficiency and classified by industry protocols as standard, high, premium, or super premium. One approach to producing high and premium efficiency motors is to use cast copper rotors in place of cast aluminium. The improved conductivity reduces electrical losses and allows a smaller motor design for equivalent horsepower. With most manufacturing processes being energy intensive, copper rotors would lead to substantial electrical savings. The Enabling Technology Centre (ETC) at Hyderabad has been established with international funding from Common Fund for Commodities (CFC), United Nations Development Program- Global Environment Facility (UNDP-GEF) and implemented jointly by International Copper Promotion Council, India (ICPCI) and Non-Ferrous Technology Development in order to facilitate transfer and adoption of high pressure copper die casting technology (CMR Technology) to manufacturers of rotors, motors pumps and motor systems (including small and medium scale manufacturers).

**Mr. Hal Stillman, Director Technology, International Copper Association** said, “The main objective in using Copper Motor Rotor (CMR) technology is to minimise the copper die-cast technology migration. The strategy essentially, adopted for establishing a self-financing Enabling Technology Center (ETC) involves adapting copper die-casting technology to create low cost local facility, developing motor re-design capability with testing and validation facilities, transferring technology (total solution) to small and medium scale motor manufacturers.”



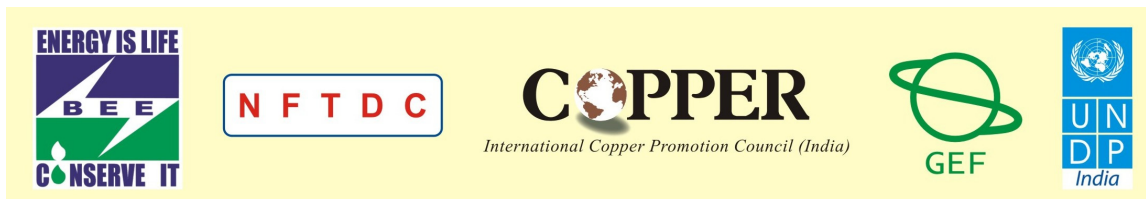
**Dr. Bala Subramanian, Director, NonFerrous Materials Technology Development Centre said,** “This technology will enable manufacturers in India to achieve a quantum jump in efficiency levels of motors of almost up to 5%. The incremental efficiency gain would lead to saving electricity consumption of 40 TWh/year in almost all the sectors.” The ETC will be a one stop solution to the motor manufacturers in copper rotor die casting process and motor re design optimization with copper rotors

In long running processes and in heavy-duty cycle applications, end users will have advantages with economic benefits due to reduced electrical energy consumption year after year through significantly lower losses. The attractive payback and return on capital investment, economic benefit of motor life and proper maintenance, makes its life potentially extended by several years due to cooler operation and fewer repairs and rewindings. Image enhancement as end-use companies can credibly project labels such as “green”, “responsible corporation”, “environmentally friendly” because they have consciously reduced energy consumption or improved energy efficiency within their processes contributing to reductions in greenhouse gas emissions and to the sustainable development of the countries and societies in which they operate.”

As regards market development for CMR motors, it comprises improving of energy efficiency standards along with opting for CMR technology for niche application. The medium of copper plays a beneficial role play in the assimilation of the Copper Motor Rotor (CMR) technology. It entails the below mentioned advantages:

- High energy efficiency
- Low temperature rise
- Small size and less weight
- Reduced active material cost

Substituting copper for aluminium in electric motor rotors can simultaneously lead to increased electrical efficiency when motors are held at the same size. In addition to, reduced size when horsepower and/or efficiency are held constant, Copper Motor Rotor (CMR) technology also helps the motor designers to efficiently trade off efficiency, size and power against each other, in order to optimize motors for the given applications.



### **About International Copper Promotion Council (India):**

The International Copper Promotion Council (India), (ICPCI) is the Indian centre of the International Copper Association, Limited, the leading organization for the promotion of copper worldwide. ICPCI is driven by the same objective as its parent organization, which is to promote the beneficial usage of copper for safety, health, environment and energy savings. ICPCI's activities focus helping end-users to exploit the positive attributes of Copper better. ICPCI actively promotes Copper through seminars, workshops and training programs all over India, in collaboration with other organizations, institutions and trade bodies. It also works with policy makers & regulators to frame regulations that are helpful to the society utilizing the positive attributes of copper.

[www.copperindia.org](http://www.copperindia.org) or write to [info\\_copper@icpci.org](mailto:info_copper@icpci.org)

### **About Nonferrous Materials Technology Development Centre**

Nonferrous Materials Technology Development Centre is an autonomous R &D institution dedicated to the development of (i) specialty materials, (ii) advanced & innovative processes, (iii) value added products and (iv) comprehensive technologies in the nonferrous materials arena. Set up with only a one time contribution from the premier nonferrous metal industries, the centre is designed to be small in size, flat in structure, scientist and engineer based and technology oriented. The objectives of the centre may be stated succinctly as technology development for selected nonferrous materials and transfer for large scale production. This aim involves (i) R&D in the laboratory scale (scientific know-why), (ii) scaled up experimentation of processes with selected product development and process optimization (technical know-how), (iii) establishment of technology demonstrator and techno economics feasibility, (iv) sensitization of the market, and finally, (v) technology transfer. Inbuilt in these objectives is the development of comprehensive technology packages (i.e., material + process + product development + equipment engineering) suitable not just for technology transfer, but also technology "transplantation" from NFTDC to the prospective industry.

[www.nftdc.res.in](http://www.nftdc.res.in)

~ X X X ~