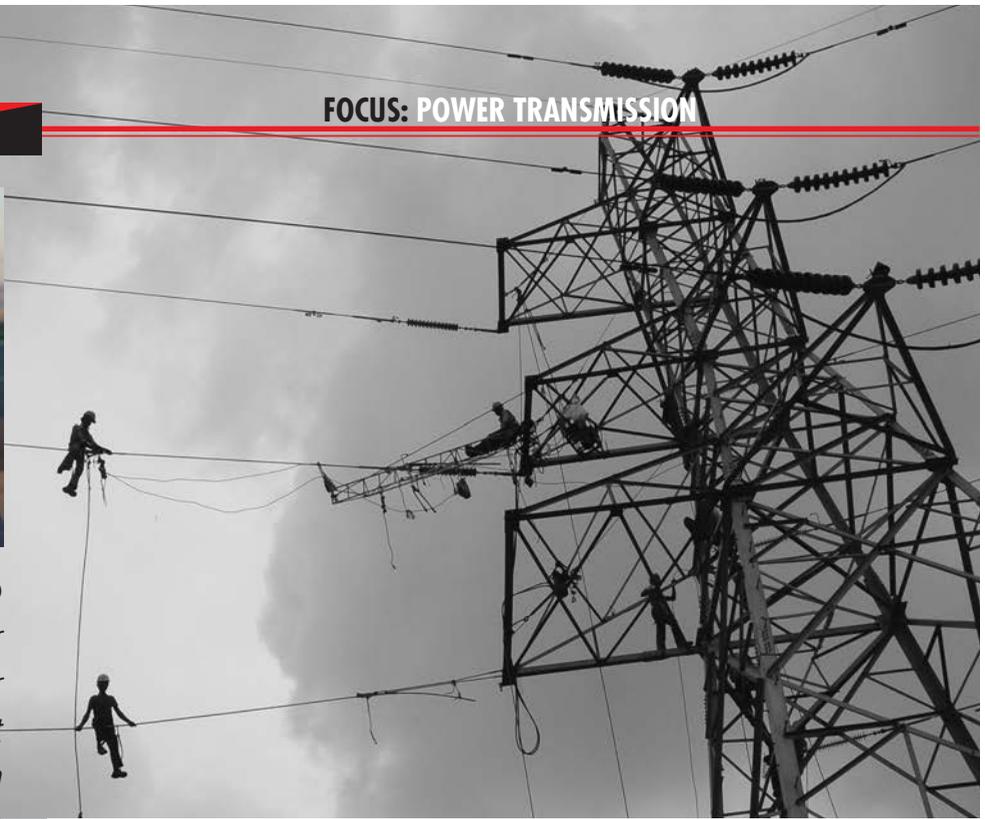




CTC Global ACCC® (aluminium conductor composite core) conductor recently became the first electric transmission conductor in history to earn SCS certification for CO2 emission reductions resulting from improved energy efficiency. SCS Global Services (SCS) verified that ACCC conductor reduces CO2 emissions associated with transmission line losses by 27 to 31 per cent under certain design conditions compared to conventional steel reinforced ACSR conductors, the 100-year old technology currently used in most electric transmission and distribution power lines.

*We have **Dave Bryant**, Director – Technology, CTC Global Corporation, explaining what this distinction means to his company and to the power transmission sector at large. An interaction by **Venugopal Pillai**.*



The SCS certification can drive better adoption of ACCC conductors

SCS has assessed that ACCC conductors developed by CTC Global can reduce CO2 emissions by 27-31 per cent vis-à-vis ACSR conductors. Tell us more about how the underlying tests were performed. How long did the entire process take?

Testing of the ACCC® conductor began back in 2003 and continues to this day to satisfy the requirements of a growing number of international customers. While members of the power generation and T&D community are close in many ways and collaborate on many levels through organizations such as IEEE, Cigre, EEI and others, on another level the community is quite fragmented. In other words, individual utilities often have very different viewpoints on asset management, technology adoption and operating parameters which is the primary reason why testing continues after nearly fifteen years.

While SCS Global Services studied all available data, they also performed numerous calculations using the IEEE 738 Standard for calculating

the current-temperature relationship of bare overhead conductors to assess line losses using an array of operating assumptions and conditions through a range of voltages, line lengths, etc., which are described in their assessment report. SCS Global also used CTC Global's CCP™ software which is an excel-based program CTC Global's customers use to assess the efficiency, capacity, economics and sag of any conductor type. As part of the six month process, SCS also certified the validity of the CCP program which anyone can request a free copy of at www.ctcglobal.com

Tell us more about the global acceptance of the SCS certificate and the positive impact that it will have on ACCC conductors.

ACCC conductor is the first conductor among its competitors to receive certification under the ISO 14044:2006 Standard established for Life Cycle Assessment (LCA). The Standard, created by the International Organization for Standardization (the same organization responsible for the ISO 9001 standard) is

used globally as the basis of LCA studies and claims. As a natural consequence, the certification can be used in any part of the world to make the claims mentioned in the certificate. Because ACCC was the first high performance conductor to receive such a certification, it establishes CTC Global's leadership position in contributing to global climate change mitigation efforts. This will not only drive greater adoption of ACCC conductors owing to its inherent advantages but will also bring about the much needed realization that efficient transmission is an important method for achieving carbon reduction objectives.

Of the various countries that CTC Global caters to, which countries would be most "sensitive" and "responsive" to this newly-acquired distinction?

We believe that all countries, whether developed or developing, will find it in their best interest to consider the ACCC conductor in light of the newly-acquired distinction. In the case of developed countries, there is a strong case for installing ACCC not only to relieve congested lines but also provide a cutting-edge solution for smart grid and other grid expansion initiatives where reliability is the key differentiator. As for emerging economies, the case could not be stronger. With rapid expansion in both population and attendant infrastructure, the reliable and efficient supply of electricity will be crucial to economic development goals at any level. We see Asia, Africa and Latin America as key for us among emerging markets as well as the US and Western Europe among other developed markets.

How do you see the impact, especially in India and China, where reduction in CO₂ emissions is a strong national priority?

India and China are key markets for CTC Global. India is among the fastest growing emerging economies and is the 4th largest GHG emitter



globally -- the result of a fossil-fuel intensive grid mix. Furthermore, the government has ambitious plans of providing electricity to an additional 25 per cent of the population by 2022, as per the World Bank. Given these circumstances, there is going to be a massive requirement for power infrastructure which will require high performance transmission conductors. India is also a signatory nation to the Copenhagen and Paris Climate Accords with ambitious goals for carbon reduction all the while maintaining exceptionally strong economic growth. This will not be possible without significant upgrade and expansion to the power infrastructure. The ACCC conductor, despite being a minor element within the grander scheme, can play a major role at least in the transmission and distribution space. The fact that ACCC conductors provide enhanced capacity and efficiency relative to competing conductors, will and is producing significant interest within the Indian market. Aggressive targets for renewable energy development further add to this impetus.

The Chinese story is very similar. China, the largest GHG emitter is also signatory to the Paris Agreement and has set a goal to reduce carbon intensity 60-65 per cent below 2005 levels by 2030. We believe that efficient energy transmission within the grid can be a further tool to meet China's ambitious carbon mitigation targets.

Lastly, while it is very easy to imagine CO₂ emissions during power generation, can you explain how CO₂ emissions are actually caused during power transmission?

CO₂ emissions are not caused by the transmission or distribution of electricity. However, line losses or other system inefficiencies consume a significant portion of all electricity generated. A reduction in line losses serves to reduce the amount of electricity required to be generated under any given load condition. A reduction in generation serves to reduce fuel consumption and associated emissions. For instance, for every megawatt hour (MWh) of electricity generated using coal, nearly one tonne of CO₂ is generated. The ACCC conductor's ability to reduce line losses by approximately 30 per cent compared to ACSR conductors is making a significant impact.

One year ago when approximately 30,500 km of ACCC had been in service over a twelve month period, it was estimated that the ACCC conductor reduced CO₂ emissions by over 12.2 million tonnes that year, based on an average emission output of 0.626 tonnes per MWh (considering all combined sources of generation). This was the equivalent of removing over 2.6 million cars from the road during that time frame. With nearly 40,000 km of ACCC in service today in 40 countries at nearly 450 project sites, that number will surely grow. ■