Sustainable Power Generation for Mining Operations with Natural Ester Technology

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ABSTRACT

With the growing demand for iron, copper, aluminium and other rare earth elements due to aggressive plans worldwide to build solar panels, wind mills and other infrastructure related to the deployment of renewable energy resources, the mining industry has the potential to become a positive contributor to the move towards clean energy. At the same time, however, the industry is facing increasing pressure to mitigate its high negative environmental and social impact associated with its operations. To meet the intensive energy demand from their operations in a more sustainable way, mine operators themselves have been adopting the use of renewable energy resources to replace the conventional heavy fuel oil generators deployed particularly at remote mining sites. While such a move and other similar initiatives would help reduce greenhouse gas emissions and improve the overall sustainability of the industry, they also pose challenges to the reliability and continuity of the power supply that is critical to mining operations.

Introduced more than 20 years ago primarily to address the safety and environmental issues of liquid filled transformers, natural ester's unique dual drying actions on cellulose paper insulation has since been recognized as key to enhancing power grid performance, and is now the fastest growing dielectric insulating fluid in the market. Based on extensive studies and field experience on its inherent properties in reducing fire and environment hazards as well as improving the reliability and loading capabilities of power networks, this paper examines why the use of natural ester fluid would enable the mining industry to achieve social, environmental and business sustainability in the operation of its power network.