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Issouf Fofana

Canada Research Chair in Insulating Liquids and Mixes in Electrotechnology

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Tier 2 - September 1, 2005
Natural Sciences and Engineering

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Research Involves

Evaluating performance of insulating liquids and mixes required for electrical energy transportation and distribution systems.

Research Relevance

Upgrading reliability and security of electrical energy supply systems.

Reliable, Secure Electricity Systems

The numerous electricity blackouts in the U.S. and Europe in 2003 highlighted the importance of reliable electrical energy systems.

Professor Fofana plans to help make the systems more reliable by studying insulating liquids, which are used to reduce energy loss, slow down direct oxidization of insulating solids and protect live wires. They are thus vital components of electricity transportation infrastructures. Professor Fofana plans to demonstrate the benefits of using insulating liquids and mixes and developing devices for diagnosing, detecting and locating defects and signs of aging in equipment.

He will have to conduct a number of studies to complete the proposed program. For example, he will use high-tech diagnostic tools (mainly optical, electrical and physicochemical tools) to identify and analyse the mechanisms underlying the emergence and progression of partial discharges and electrical tree structures that cause deterioration of electrical equipment. Because water plays a major role in the deterioration of liquid-filled equipment, Professor Fofana will evaluate filtration and drying processes, combining a variety of techniques for monitoring electrical equipment with a view to upgrading their efficiency. He will also foster the development of new products, including biodegradable liquids with proven insulating properties.

By knowing more about the processes of aging and deterioration of equipment with insulating liquids and mixes, system operators will in a position to make appropriate decisions to avoid blackouts. Professor Fofana's research will result in innovative ways of upgrading the reliability of electricity supply and enhancing the security of transportation and distribution to users.