



## The evolving power scenario: Opportunities and challenges

**While the demand for energy and electricity continues to grow, so too does the urgency to address environmental issues. Climate change concerns are now on the global agenda and nations around the world are looking at ways to address the challenge.**

Energy efficiency is expected to be the largest contributor to emission mitigation. A significant amount of energy is lost in the value chain from primary source to ultimate consumption and ABB solutions based on existing technologies can reduce these losses by 20-30 percent.

Renewable energy will also play an increasing role in the effort to minimize climate impact and the electricity grids must be able to cope with these intermittent and more distributed power sources. At the same time, we need to ensure the reliability, efficiency and security of electricity supplies.

As the electricity system evolves, consumption will also need to be managed in order to create a balance. This will mean more control and active influencing of consumption patterns. In summary, the entire power value chain needs to become more flexible, interconnected and more intelligent to address these new challenges and opportunities.

ABB remains committed to developing and deploying leading-edge technologies to increase power capacity, enhance reliability, improve energy efficiency and lower environmental impact.

Some of ABB's new technologies that can be seen on display at the CIGRE exhibition include:

## Evolution of “smarter” grids

The use of information technology to improve the intelligence of power systems is increasing. From harnessing and integrating renewables to energy-efficiency solutions across the power value chain and from software solutions for energy forecasting, planning and management to enabling demand management and preparing the grid for electric vehicles, ABB has a vast portfolio of power and automation technologies to help customers to become more competitive.

### Amorphous transformers – efficiency and environmental responsibility

ABB's latest offering, the amorphous metal distribution transformer (AMDT), presents an ultra-low-loss design solution, delivering high energy efficiency. The transformers are designed using a unique metal alloy, which reduces transformer losses by up to 70 percent. The lower losses improve long-term profitability through lower total ownership costs, reduced carbon emissions and reduced power consumption. AMDTs provide a sustainable approach when capitalized losses and environmental impacts are considered.



## Innovative GIS systems

ABB's latest ENK series of GIS (gas-insulated switchgear) provides an ideal solution for a reliable and environmentally friendly energy supply for voltages up to 72.5 kV, a rated normal current up to 2500 A and a rated short circuit current up to 40 kA. Short installation times, plug-in busbar connections, which improve the safety of gas handling, environment friendly features and 50 percent less SF<sub>6</sub> than comparable products are just some of the features of this product range. The ENK series is designed for reduced power losses, increased compactness and easy access to operating mechanisms.

### Substation automation and protection

ABB's Relion® family covers a wide range of products for the protection, control, measurement and supervision of power systems for a range of transmission and distribution applications, ensuring security and reliability regardless of the operating environment. The comprehensive portfolio offers both ready-to-use solutions and customization possibilities, and is fully compliant with IEC 61850. The protection and control IED manager, PCM600, provides versatile functionality across the complete product range and entire life-cycle.

