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OPENING UP THE BLACK BOX: ELECTRICITY DISTRIBUTION MADE EASY

Distribution system operators (DSOs) are in an extremely technical business and are usually perceived as a "black box" in terms of nature, functionality and purpose. It is vital to open up the black box and understand what lies behind power distribution systems. EURELECTRIC has published a new brochure which gives a clear overview of DSOs, how they operate electricity networks, and how they will evolve in the future.

Distribution networks consist of electrical lines delivering electricity to its final point of consumption: households and business. Around 260 million European consumers are connected to electricity distribution grids. More than 2,400 electricity distribution companies, employing 240,000 people across the EU, provide power with a high level of reliability and quality of supply to their customers.

Decentralised electricity from renewables is prompting a rethink of how best to run Europe's distribution networks. This change, together with the fact that customers are moving closer to the centre of the new value chain, has put DSOs centre stage as key facilitators of the new power industry paradigm. But how does the world see them? Do stakeholders understand that DSOs are on their way to becoming more flexible, efficient and customer-centric? And if so, why?

DSOs are increasingly responsible for controlling imbalance variations within the distribution system, linking wholesale and retail markets, as well as enabling self-generation and consumption. The increase in distribution generation across Europe (mainly from renewable sources) connected to the distribution grid strengthens the need for DSOs to act as active system operators and to be prepared for new challenges.

Networks are becoming smarter to accommodate renewable generation capacity and, in so doing, they will require increased monitoring tools through communication technologies. Smart grid operators manage data and information flows through digital communication processes. DSOs manage millions of daily real-time signals through satellite, powerline communication systems, radio, fibre-optic lines, and other communication technologies. Data management will continue being one of the key features of smart grid design, together with infrastructure digitalisation and automation. Current DSO capabilities - combined with big data, the 'internet of things' and the advent of a fully digital era more widely - will allow DSOs to better play their role in the new economy.

The features of electricity distribution networks across Europe are very diverse, mostly depending on the amount and nature of users connected to the distribution grid and on the level of ownership unbundling in each country. Due to differences in grid structure, DSO tasks differ both within and across Member States. Distribution System Operation is an extremely technical business and, for this reason, it is crucial to understand how DSOs function and what purpose they serve as they strive to become more efficient and customer-orientated.

EURELECTRIC's DSO brochure is an excellent source of information which explains in simple terms what distribution lines are, why the distribution activity is regulated, how DSOs communicate with customers and what the challenges and opportunities of tomorrow's distribution systems are. This initiative paves the way for a better understanding of DSOs and pinpoints the specific challenges, priorities, and opportunities the DSO sector is currently facing.