Combining Innovative Grid Technologies can reduce European grid congestion by 90%, says Consentec study

A study by leading German consultant Consentec states that using innovative – yet readily available – grid technologies can reduce levels of congestion redispatch and curtailment of renewables by as much as 90%.

The study, commissioned by CurrENT and released on 8 December 2021 was presented at the European Commission's EU Energy Infrastructure Forum on 25 November. It models the technical and economic potentials of dynamic line rating, modular power flow control and superconducting cable technology to reduce congestion and its associated costs in European transmission systems and covers four scenarios for an area including Germany, France, Benelux, Austria and Denmark. 2030 was used as the target year, based on ambitious renewables uptake and greenhouse gas reductions.

Christoph Maurer, Managing Director of Consentec, said:

'Our study showed that in the considered scenario, Dynamic Line Rating and modular power flow control each reduce the volume of redispatch and costs by roughly 40%-50%. An additional HVDC connection with Superconductor technology could reduce the redispatch costs by roughly 60% (or 30% compared to normal HVDC cable at same cost level). But the key result is that combining the three technologies results in volume and costs savings of roughly 90% compared to the reference case, proving the complementarity of approaches.'

Susanne Nies, Board Chair of currENT, states: 'the Consentec report adds further evidence to what is becoming more widely recognised – that the optimisation of the existing grid is a no regrets option for achieving the 2030 objectives. Massive network expansion is needed as soon as possible, yet using available tools that can cost-effectively and expeditiously make our networks fit for purpose have largely been disregarded. We urge policy makers and transmission system operators alike to take the results of this report to heart. A recent paper by ACER on efficient infrastructure also points in this direction[1]' she concludes.

currENT, the European industry association of leading providers of innovative grid technologies, is committed to playing its part in shaping the future of power grids, and supporting greater use of next-generation solutions to advance the transition toward a decentralised, distributed and active power network. (www.currenteurope.eu)

currENT commissioned Consentec to undertake a study to examine these technologies' technical and economic potential to reduce congestion and its associated costs in European transmission systems. In addition to a more qualitative analysis of the opportunities provided by such technologies, the study conducted a quantitative assessment based on energy system modelling for a 2030 scenario, including dispatch, load flow, and remedial action simulation.

[1] See the full paper: Infrastructure efficiency: the role of regulation in incentivising smart investments and enabling the energy transition | www.acer.europa.eu

Consentec an independent consultant for questions regarding system technology an economy in the field of network related energy supply, based in Germany. (www.consentec.de)