

Ramboll inventors solve power grid instability with simple solution

The "universal shock absorber" revolutionizes power grid stability, providing a cost effective upgrade to current systems.

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With data center energy needs straining existing infrastructure and with the integration of various Inverter Based Renewable (IBR) sources, Ramboll engineers have introduced a new "universal shock absorber" for the power grid, the Universal Damping STATCOM, which addresses one of the greatest causes of grid instability: oscillations caused by too many different power sources added to aging energy infrastructure.



Ramboll inventors revolutionize power grid stability with "universal shock absorber"

It is a growing problem that likely contributed to the national level power outage of Portugal and Spain in April 2025, and that Ramboll, a global architecture, engineering, and consultancy company, has now found an answer to.

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*Cheryl Ginyard-Jones,
Managing Director - Americas,
Ramboll*

Installed at critical nodes in an existing power system, the patent-pending technology absorbs oscillation energy and converts it into usable power, offering an adaptable solution compared to today's model-specific damping controllers. This relatively inexpensive upgrade makes it easier and less risky for operators to add renewable energy sources such as solar plants, wind farms, and battery storage systems into existing grids; cutting costs of developing power systems and significantly increasing resilience around the world.

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utilities and private investors, we will also see fewer outages and less outage time. By bridging our innovative capacity with a leading role in power system solutions, Ramboll is helping pave the way towards more sustainable, resilient societies," says Cheryl Ginyard-Jones, Managing Director - Americas, at Ramboll.

"One of the biggest challenges in adopting renewable energy is the cost of maintaining grid reliability. It is difficult handing the ever-changing power generation and load patterns, especially when the grid is outdated. Upgrading the grid with our new technology is a relatively inexpensive step that unlocks enormous potential," says Mojtaba Mohaddes, senior technical manager at Ramboll's energy division and the inventor of this innovation.

"This invention is a game-changer for power systems, and opens up incredible opportunities for more renewables in our power mix around the world," says Joanne Hu, Chair of Study Committee B4 at [CIGRE](#). "Not only can developing countries now decarbonize their power grid, they can also have more reliable power for their people." CIGRE is the world's leading power systems knowledge organization, with the B4 subcommittee focused on energy transmission and distribution systems.

Ramboll is actively in talks with potential partners - OEMs, utilities, and investors - to bring this technology to market and help deploy this innovation worldwide.

About Ramboll

Ramboll is a global architecture, engineering, and consultancy company founded in Denmark in 1945. We create sustainable societies where people and nature flourish. With more than 50 years of experience in energy solutions, our Energy practice works across the full spectrum of technologies and project phases: from permitting to developing business cases, executing design engineering, long-term operation and maintenance, and lifetime extension.

Contact: Felicia Chou, PR and Media Outreach Manager for Ramboll - Americas,
fchou@ramboll.com

Felicia Chou
Ramboll - Americas
+1 703-516-2313
fchou@ramboll.com
Visit us on social media:
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