



## GE's g<sup>3</sup> technology accelerates Denmark's decarbonization efforts

- GE has been awarded a contract from Energinet for two F35g 145 kV SF<sub>6</sub>-free g<sup>3</sup> gas-insulated substations (GIS)
- g<sup>3</sup> substations will be installed at the Amagerværket (AMV) and Vigerslev Koblingsstation (VIK) substations, both in Copenhagen
- Upon completion, AMV will have 22 bays making it the largest gas-insulated substation installation using GE's g<sup>3</sup> gas at the 145 kV level worldwide

**Paris, FRANCE - July 12, 2022** – GE Renewable Energy's Grid Solutions business (NYSE-GE) has been awarded a contract from Energinet, owner, operator, and developer of transmission systems for electricity and natural gas in Denmark, for 31 SF<sub>6</sub>-free gas-insulated substation (GIS) bays. These bays, to be installed at the Amagerværket (AMV) and Vigerslev Koblingsstation (VIK) substations in Copenhagen, will reinforce this city's electrical grid to support its steadily increasing population growth and electrification agenda.

Based on its mission to ensure that the Danish energy system and grids are "prepared for a future with 100% renewable energy", Energinet selected GE's industry-leading g<sup>3</sup> (pronounced "g"- cubed) gas as a game-changing alternative to SF<sub>6</sub>—a potent greenhouse gas. GE's g<sup>3</sup> gas has a global warming potential (GWP) of about 99% less compared to SF<sub>6</sub>. Moreover, g<sup>3</sup> products have a significantly improved [life cycle assessment \(LCA\)](#) compared with SF<sub>6</sub> products and other alternatives.

The project scope includes the delivery of two ready-to-operate 145 kV F35g double busbar gas-insulated substations using GE's g<sup>3</sup> alternative insulating and switching gas. With 22 bays, AMV will be the largest substation installation using g<sup>3</sup> GIS at the 145 kV level to date. The VIK substation will consist of 9 bays.

To date, a total of three Danish utilities - Energinet, Cerius, and Radius Elnet - have installed GE's g<sup>3</sup> products on their electrical grids. It's a further step forward in Denmark's plans to reduce its greenhouse gas emissions by 70% in 2030<sup>1</sup> and become a resource-efficient economy entirely independent of fossil fuels by 2050<sup>2</sup>. To support its greenhouse gas policy, Denmark has imposed a high tax of €577 per kg on SF<sub>6</sub><sup>3</sup>, making GE's g<sup>3</sup> products even more attractive to its transmission and distribution system operators (TSOs).

"Utility operators in Denmark are very aware of their environmental footprint and the impact it has on their communities and the world around them," said Eric Chaussin, Senior Executive High Voltage Products Division Leader at GE's Grid Solutions. "And they aren't alone. Today, more than 30 leading electrical utilities from 13 European countries and South Korea have already adopted GE's g<sup>3</sup> products for their high voltage networks, avoiding the addition of more than a million tons of CO<sub>2</sub> equivalent to the grid. That's the equivalent of removing about half a million petrol cars from the road for one year."



A [report from the EU Commission](#) concluded that fluoronitrile-based gas mixtures—such as  $g^3$  gas may be the only insulating and switching gas alternative to  $SF_6$  when space is a constraint, such as in urban areas. That’s because fluoronitrile-based gas products feature the same compactness and performance as traditional  $SF_6$  equipment, unlike other  $SF_6$ -free solutions.

GE’s  $g^3$  gas-insulated products are currently available for [live-tank circuit-breakers](#) and [GIS](#) up to 145 kV, as well as [dual gas-insulated lines](#) (GIL) up to 420 kV. Additionally, in March 2022, GE unveiled the [world’s first 420 kV, 63 kA  \$g^3\$  GIS circuit-breaker prototype](#). For more information on GE’s high-voltage  $g^3$  substation equipment and product roadmap, [visit our website](#).

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### Notes to the Editor:

1. <https://stateofgreen.com/en/partners/state-of-green/news/during-cop25-denmark-passes-climate-act-with-a-70-per-cent-reduction-target/>
2. <https://denmark.dk/innovation-and-design/clean-energy>
3. <https://www.retsinformation.dk/Forms/R0710.aspx?id=184796>

### About GE’s Grid Solutions

Grid Solutions, a GE Renewable Energy business, serves customers globally with over 12,000 employees. Grid Solutions provides power utilities and industries worldwide with equipment, systems and services to bring power reliably and efficiently from the point of generation to end power consumers. Grid Solutions is focused on addressing the challenges of the energy transition by enabling the safe and reliable connection of renewable and distributed energy resources to the grid. We electrify the world with advanced grid technologies and accelerate the energy transition. For more about GE’s Grid Solutions, visit <https://www.gegridsolutions.com>.

### About GE’s $g^3$ gas

$SF_6$  is estimated to contribute 23,500 times more emissions than  $CO_2$  when leaked and can remain in the atmosphere for up to 3,200 years.

GE’s alternative to  $SF_6$  is  $g^3$  insulating and switching gas representing the culmination of a decade of research and development by its teams in France, Germany and Switzerland in collaboration with 3M Company. The  $g^3$  gas mixture is based on carbon dioxide, oxygen, and 3M™ Novec™ 4710 Dielectric Fluid from the 3M fluoronitrile family. Fluoronitrile was identified by R&D experts as the most suitable additive to  $CO_2$  and  $O_2$  to reach the targeted environmental benefit of an alternative to  $SF_6$ , without compromising the equipment’s technical performance and footprint. As a result, the global warming potential (GWP) of GE’s  $g^3$  gas is some 99% lower as compared to  $SF_6$ . In terms of technical performance,  $g^3$  high-voltage equipment offers not only the same performance as  $SF_6$  products, but it also features the same dimensional footprint as compared to  $SF_6$  equipment and operates in the same ambient conditions (down to  $-30^\circ C$ ).



GE VERNOVA

More about [g<sup>3</sup>-SF<sub>6</sub> Free Solutions \(gegridsolutions.com\)](https://www.gegridsolutions.com/)

More about g<sup>3</sup> development, GE's fluoronitrile based gas mixture: [In search of an SF<sub>6</sub> replacement | Think Grid \(think-grid.org\)](https://www.think-grid.org/)

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