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The EU contributes to the development of SF6-free 420 kV switchgear

EU's Life Program funding recognizes g3 Green Gas as a sustainable alternative to SF6 in high voltage equipment

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 CLIMATE CHANGE  G3  G³

 SF6-FREE SOLUTIONS

On September 26th, 2019, GE announced its Green Gas for Grid (g³) deployment roadmap. A major milestone in this roadmap is the development of a 420 kV gas-insulated switchgear planned to be completed in 2022. GE submitted this development program to the EU's LIFE Program, the EU's funding instrument for the environment and climate action, and has received approval for a two-year funding grant. This program, which GE has named "LifeGRID", recognizes g³ as a valuable and sustainable alternative gas to using SF₆ in high voltage equipment.



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The **LIFE Program** was created by the EU in 1992. It is divided in two sub-programs, one for the environment and one for the climate change (representing 25% of the envelope).

The program's 2018 call for tender encourages applications for demonstration, pilot or best practice projects showing the use of low Global Warming Potential (GWP) alternatives to SF₆, which is exactly what GE's g³-LifeGRID project will demonstrate.



GE's LifeGRID project has received funding from the LIFE Program of the European Union

EU's LIFE Program's funding accelerates GE's development of world's first SF₆-free 420 kV circuit-breaker

The ambition of GE's **LifeGRID program** is to help reduce greenhouse gas emissions from high-voltage substations via the development of a greener switchgear. The area of focus for LifeGRID is for climate change mitigation through the use of GE's g³ as an SF₆-alternative gas in circuit breakers.

"Because 420 kV is the highest voltage level used in most European countries, a proven g³-insulated 420 kV circuit breaker will demonstrate that g³ technology can be applied to all other standard high-voltage levels and deployed throughout the other gas-insulated substation components," explained Yannick Kieffel, GE's Materials and Eco-Design Team Leader, and LifeGRID Project Leader.



Yannick Kieffel, LifeGRID project Leader and the LifeGRID team

GE's LifeGRID project perfectly matches with the regulatory targets and ambitions at the EU level and beyond:

- Carbon Neutrality ambition of the EU by 2050
- Paris Agreement: keeping a global temperature rise this century below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase further to 1.5 degrees Celsius
- LIFE Program is the only EU funding program which specifically targets fluorinated greenhouse gases (F-gases)
- LifeGRID falls directly under the fluorinated-gases regulation (EU) No 517/2014, which aims at cutting the EU's F-gas emission by two-thirds by 2030 compared with 2014 levels

As part of the LifeGRID project, a transnational cooperation with the University of Brno in the Czech Republic and the Leibniz Institute for Plasma Science and Technology, INP- Greifswald in Germany has been developed. The aim of this collaborative work is the creation of a g³ gas

properties database that will allow GE's R&D experts to speed up the development of this 420 kV GIS and accelerate the deployment of g3 technology throughout all the other products at this voltage level and underneath. CEA, a leading French company, will also take part in the circuit breaker development and European Transmission System Operators (TSOs) will help test and implement the final product.

Finally, GE's LifeGRID could also help assess the use of g³ as alternative gas to SF₆ in other industries such as the particle accelerator industry, the nuclear fusion industry, the magnesium industry and the electrostatic loudspeaker industry.

GE Renewable Energy's Grid Solutions' R&D experts have already begun their investigations to define the best 420 kV g³-insulated switchgear concept. This is the beginning of a fascinating journey toward a greener 420 kV transmission network, the backbone of Europe's electrical grid.

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