

POSITION PAPER

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T&D Europe position paper on SF₆ and SF₆ alternative technologies.

F-Gas Regulation, SF₆ Technology and Alternatives for Transmission and Distribution(T&D) Electrical Switchgear

The products and systems of the T&D industry are an enabler for a green power by connecting, transmitting and distributing CO₂-neutral, renewable energy sources to the power network. T&D Europe supports the European Union's climate and energy objectives, including controlling and reducing emissions from fluorinated greenhouse gases (F-gases) through the implementation of the F-gas Regulation¹ and the directive on mobile air conditioning (MAC Directive)².

T&D EUROPE POSITION

T&D Europe fully supports the EC target of climate-neutral Europe by 2050 and the European ambition to cut the EU's F-gas emissions by two-thirds by 2030 compared with the 2014 baseline. T&D Europe continues to contribute to this target by further reducing SF₆ gas emissions in a fair and cost-effective way over the lifecycle, while ensuring the continued reliable functioning of Europe's public electrical networks.

T&D Europe supports a clear regulatory framework at European level enabling a reliable long term planning basis for all stakeholders.

An appropriate regulatory framework to achieve this shall consider the following levers:

- Favouring SF₆-free solutions for new installations whenever it offers an overall benefit for climate protection while maintaining at least the same level of safety and protection of human health;
- Continue reducing emissions during operation in the installed base by prioritizing the replacement of equipment with high leakage rates;
- Further improving SF₆ processes and handling;
- Ensuring proper end of life management.

¹ [Regulation \(EU\) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases and repealing Regulation \(EC\) No 842/2006](#)

² [Directive 2006/40/EC of the European Parliament and of the Council of 17 May 2006 relating to emissions from air conditioning systems in motor vehicles and amending Council Directive 70/156/EEC](#)

Background

Thanks to the provisions in the current F-gas Regulation 517/2014, which applies since 1st January 2015 - strengthening previous existing measures and introducing a number of far-reaching changes - by 2030 it expects to cut the EU's F-gas emissions by two-thirds compared with 2014 levels. This represents a fair and cost-efficient contribution by the F-gas sector to the EU's objective of striving towards climate neutrality by 2050, thus cutting its overall greenhouse gas emissions by 80-95% of 1990 levels by 2050.

One of the F-gases regulated is sulphur hexafluoride (SF₆), which in Europe is mainly applied as an insulating and switching gas in high- and medium-voltage equipment. The SF₆ technology has been developed and permanently advanced and enhanced over decades and has been technically matured to highest operational reliability and highest personnel safety. Such SF₆ technology is important for the reliability of power transmission and distribution networks in Europe, which constitutes the backbone of the infrastructure necessary to deliver the energy transition.

The SF₆ emissions from the 2.G³ sector contributed with a very modest 0.158% to all GHG emissions from EU-28 plus Iceland in 2016. The situation can be further improved by implementing the best existing practice of countries where Voluntary Agreements for SF₆ emission reduction are in force (e.g. Germany, Spain, Switzerland) along all European countries

Nevertheless, the members of T&D Europe intensely work on further reducing SF₆-emissions for all applications of electrical power transmission and distribution. These efforts include research, development and installation of alternative technologies for all electrical equipment above 1kV. In recent years, this has also led to the emerging of SF₆-free alternatives.

Against this background, the Members and Associates of T&D Europe would like to highlight the importance of the following points:

- The Life Cycle Assessment (LCA) method according to ISO 14040/44 is the state-of-the-art tool to evaluate the impact of products and systems on the environment, e.g. by the global warming impact when assessing alternatives. However it is important to note, that the overall carbon footprint strongly depends on the boundary conditions, related to electrical equipment those are e.g. electricity mix or load conditions, used in the LCA evaluation.

³ Based on the classification given by EU CRF (Common Reporting Format): 2.G: Other product manufacture and use where SF₆ emissions from electrical equipment among other products are reported. Ref. table 4.49 EEA report 2018 Annual European Union greenhouse gas inventory 1990-2016 and inventory report 2018.

F-gases: HFCs, PFCs, N₂O, CH₄, CO₂, NF₃ and SF₆ are reported separately under 2.G

- Any alternative will need to achieve industry required characteristics especially concerning required electrical, physical, environmental, health and safety criteria. The new alternatives must meet the conditions laid out in the F-gas Regulation i.e. be cost-effective, technically feasible, energy efficient and reliable. The total environmental footprint of any alternatives need to be evaluated considering the entire lifecycle.
- T&D Europe also notes that appropriate measures for emission reduction are to some extent quite different for high voltage switchgear and medium-voltage distribution switchgear.

ABOUT T&D EUROPE

T&D Europe is the European Association of the Electricity Transmission & Distribution Equipment and Services Industry, which members are the European National Associations representing the interests of the electricity transmission and distribution equipment manufacturing and derived solutions. The companies represented by T&D Europe account for a production worth over € 25 billion EUR, and employ over 200,000 people in Europe. Further information on T&D Europe can be found here: <http://www.tdeurope.org>

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