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ENERGINET RESPONSE TO ECHA'S CONSULTATION ON THE RESTRICTION ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF PER-AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Energinet would like to thank the European Chemicals Agency's (ECHA) for the opportunity to provide feedback on the draft per- and polyfluoroalkyl substances (PFAS) restriction proposal published by ECHA 22. March 2023.

Energinet is an independent public enterprise owned by the Danish Ministry of Climate, Energy and Utilities. We own, operate and develop the transmission systems for electricity, gas and hydrogen along with gas storage facilities in Denmark.

General remarks

Energinet commend ECHA for taking proactive measures to address the risks associated with PFAS, and we fully support the overall rationale and goal of the proposed restriction. At the same time, however, it is important to create awareness and transparency about the implications of the current design of the proposal and its suggested timelines.

In this document we address appliances containing PFAS that play a vital role in ensuring the efficient and secure transmission of electricity. In addition, we are aware of the use of PFAS-containing components in other parts of our business, including gas transmission and gas storage. These uses are not elaborated further in this consultation answer.

Specific remarks to the restriction proposal

In the following, you will find our assessments and recommendations for adjustments to the current proposal. This analysis concentrates on three distinct areas for which we see a need for adjustments to the original proposal namely:

1. Specific derogation periods and alignment with the new F-Gas regulation.
2. Facilitating the maintenance and operation of current assets until their end-of-life.
3. Establishing safeguards to address situations in which alternatives are unavailable in the market.

Derogations/exemption periods

PFAS Embedded in Solid Components:

PFAS is used in different aspects of electrical grid equipment, including insulated nozzles, sealings, plain bearings, and other vital components. Among these, the insulated nozzle holds particular significance as it plays a crucial role in providing electrical insulation inside the circuit breaker. The nozzle helps control the path of the arcs that occurs during the electrical interruption process. Additional applications and details can be found in the annex. As of now, we have no knowledge of alternative solutions to address the PFAS use cases outlined in the annex.

As the sector embarks on the early stages of research and development for alternatives, we recommend that ECHA introduces a 13.5-year exemption for solid components integrated into electrical transmission equipment.

High voltage equipment boasts a minimum operational lifespan of 40 years. Therefore, it is essential to guarantee the availability of spare parts throughout this period. Consequently, we urge ECHA to adjust the current proposal and explicitly state that the continued operation, maintenance, repair, and extension of existing equipment containing PFASs will remain possible beyond the derogation period, extending until the end of the equipment's lifetime.

PFAS in Fluids and Lubricants:

Similar to other industrial fields, PFAS substances employed in electrical installations and equipment impart exceptional performance characteristics, including longevity, resistance to high temperatures, chemical resilience, and robust mechanical strength. Attributes that ensure an effective operation of the grid while managing significant risks related to grid stability, the security of the power supply, and the safety of workers.

Given the limited availability of alternatives, we endorse a 13.5-year exemption for lubricants employed in harsh conditions. Additionally, we recommend extending this exemption to PFAS in liquids, particularly mineral oils with PFAS additives, until viable alternatives have been developed and proven to meet comparable quality standards in terms of long-term reliability and performance.

PFAS in Gases:

In recent years, TSOs have begun transitioning from using SF6 gas to climate friendly alternatives. This strategic shift is driven by the imperative to replace SF6, a potent greenhouse gas, and thus accelerate the decarbonization of our electrical equipment.

PFAS-containing gases used for insulating/interrupting medium in electrical switchgear are currently crucial in this transition.

As of today, there is uncertainty regarding the commercial availability of PFAS-free solutions above 145 kV and for specific applications at all voltage levels within the next 6.5 years. This uncertainty is among other driven by the lengthy development, qualification, and standardization processes involved.

We believe it should be carefully reconsidered if ECHA should include specific regulation regarding PFAS gasses in switchgear in the scope of a possible future delegated act, as this area to our best understanding will be comprehensively regulated by the upcoming adoption and implementation of the new revised F-Gas Regulation.

With the forthcoming F-Gas Regulation the EU already in its primary legislation anticipates restricting the use of PFAS gasses in switchgear as soon as PFAS-free alternatives become

viable. It is, therefore, prudent to avoid redundant regulation in secondary legislation and instead rely on – and enforce – the F-Gas regulation and in general avoid any further regulatory uncertainty in this field.

Ensuring an operational approach to market availability

It is crucial that the understanding of *market availability* is clarified as part of the ongoing legislative preparatory work. Generally, supply chains in the electricity infrastructure sector are facing significant strain. Even if we identify a company capable of producing an alternative component when the new regulation comes into effect or the exemptions expire, it will not suffice if we cannot procure the component and have it delivered within a timeframe that aligns reasonably with our packed project pipeline.

It is important to recognize that Transmission System Operators (TSOs) across the globe are confronted with a highly competitive landscape when it comes to acquiring essential high-voltage grid components.

Regrettably, it's not unlikely that the already stressed supply chains in the electricity infrastructure sector will not be able to supply PFAS-free alternative components at sufficiently large scale promptly after the proposed exemption periods expire. Additionally, there is uncertainty about whether these alternative components are technologically mature or if they have even undergone full development.

A derogation from the prohibition to purchase components containing PFAS could possibly be operationalised based on the principles applied in Article 50(e) of Directive 2014/25/EU[1] on the use of procurement without prior call for competition in cases where a change of components would require the contracting entity to acquire products which, because of a difference in technical characteristics, would result in technical incompatibility or disproportionate technical difficulties in operation and maintenance.

A similar principle is also found in Article 19(4) of the European Commission's proposal for Net Zero Industry Act, according to which the contracting entity is not obliged to take into account the contribution of net zero technologies to sustainability and resilience if their use would oblige the entities concerned to acquire equipment entailing disproportionate costs or technical characteristics different from existing equipment, resulting in incompatibility or technical difficulties in operation and maintenance.

A similar exemption could be designed and included in the upcoming PFAS regulation, according to which it would be possible to purchase PFAS-containing products if a PFAS-free alternative, due to its technical nature, would be incompatible with existing installations or cause disproportionate technical difficulties in operation or maintenance. In addition, a possible exemption to the prohibition should also address the situation where a PFAS-free alternative is not available due to disproportionately long delivery times that cannot be accommodated by proper procurement planning, as well as the situation where an alternative is not yet available on the market, contrary to expectations.

Socio-economic impacts

Across the European Union we are witnessing a record surge in electricity production from renewable energy sources as wind and solar, and similar transition take place on the consumption side, where three million heat pumps were sold in 2022 and sales of electric vehicles rose 28 percent with more than 1.1 million vehicles sold. These trends will accelerate in the coming years as policies and market dynamics push the shift to climate-neutrality by

[1] DIRECTIVE 2014/25/EU of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal se vices sectors

2050. Hence clean electricity shall be delivered within and between countries and the political and regulatory demand and expectations are, that the electricity infrastructure is established on matching timelines.

While we recognize the importance of transitioning to safer alternatives and reducing PFAS usage wherever possible, it is equally vital to ensure that stringent restrictions do not compromise the availability of high voltage equipment that can result in delays in electricity infrastructure projects.

Delays to electricity infrastructure projects has large socio-economic costs. While the overall system costs can be difficult to estimate, an example of the costs of delay of a single project is easier to estimate and can provide an illustrative example of the implications.

An example illustrating the dynamics and implications of electricity infrastructure project delays.

A substation, including all associated cables and infrastructure, experiences a one-year delay in its construction. This substation's primary purpose is to facilitate the integration of a 1000 MW offshore wind farm. As the wind farm is ready for operation, the depreciation of the production facility has already started. A rough estimate of the cost associated with this delay can be derived by calculating the value of the production from the wind farm. This value is determined by multiplying the production capacity (1000 MW) by the number of full load hours (approximately 4900 hours in the North Sea) and then further multiplying it by the wind-weighted price of electricity (let's assume 50 EUR per MWh). Therefore, the cost of this delay in our example amounts to approximately 245 million EUR.

Outro

In conclusion, we fully support the overarching goals of the proposed PFAS restriction. It is essential, however, to find a delicate balance between environmental protection and the ongoing accessibility of critical high voltage equipment for essential services, as well as to be transparent on the possible tradeoffs between environmental and climate protection in this specific case.

We firmly believe that by implementing the recommendations above, ECHA can ensure a seamless and sustainable transition away from PFAS in high voltage equipment that is both achievable and sustainable in the long-term

Annex

The following non-comprehensive overview of PFAS in components of TSO equipment has been created by the European Network of Transmission System Operators (ENTSO-E).

Disclaimer: As users, TSOs currently do not have a comprehensive overview of the use of PFASs in components of their electrical equipment. TSOs also lack the data to determine the amount of PFAS contained in their equipment, as well as the PFAS used to manufacture this equipment. The following overview shows typical use cases for PFAS for which information is available for the TSOs.

Material classification	**Asset / equipment**	**Usage**	**PFAS**
Solid	Gas insulated switchgear (GIS) Transformer / shunt reactor Circuit breaker Instrument transformer HV-Cable Converter Capacitor Bank Offshore Systems Interconnectors Reactive-power compensation systems Measurement sensors Grid protection Network control Communication Power electronics (HVDC Converters, STATCOM)	Electrical Insulation • Wires of coils • Contact systems Electronics • Printed Circuit Boards • Cable insulation • Electronic components Gaskets Thermally stable and insulating pipes Mechanical components • Drives • Actuators • Insulated nozzles	PTFE PVDF
Liquide	Transformer / shunt Reactor Instrument transformer Converter Capacitor bank Offshore systems Interconnectors Reactive-power compensation systems	Electrical insulation Lubricants Corrosion protection painting Thermally stable paintings Air conditioners	Additives (e.g. PFPE) Cooling agent • C2HF5 (R125) • R134 • R410a
Gaseous	Gas insulated switchgear (GIS) Circuit breaker Instrument Transformer Offshore systems Interconnectors Reactive-power compensation systems	Electrical insulation Fire protection systems	Fluorinated gas (C4-FN)