

A black and white photograph of two construction workers, a man and a woman, wearing hard hats and safety vests, looking off to the side at a construction site. The background shows a building under construction with scaffolding.

POSITION PAPER

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CECE comments regarding the second consultation on a restriction for PFAS

CECE, the Committee for European Construction Equipment, represents the interests of 1,200 construction equipment manufacturers through national trade associations in Europe. CECE manufacturers generate € 40 billion in yearly revenue, export a sizeable part of the production, employ around 300.000 people overall.

CECE welcomes the opportunity to provide input to the second public consultation on a restriction for PFAs organised by the competent authorities for REACH of the Netherlands, Germany, Denmark, Sweden, and Norway. In December 2020, CECE submitted input to EXPONENT in charge of the Norwegian authorities work on F-gases.

From the information collected in previous consultations, the five Authorities have defined an overview of the different uses of PFAS grouped in various **summary reports**, to which we would like to raise the following concerns and points of improvement:

1. General comments

None of the existing summary reports explicitly consider PFAS uses in the **construction machinery industry**. However, a possible restriction would heavily impact our sector, and we are concerned by many of the ad-hoc reports such as those on F-gases, electronics, metal plating, textiles and lubricants.

Components and fluids used in the construction machinery rely on PFAS (e.g., high-performing fluoropolymers and fluoroelastomers) to meet customer quality, safety, and durability requirements. Those materials provide a combination of superior chemical and thermal resistance and low friction properties (e.g. PTFE). These properties are required to deal with the harsh environments in which our products are used and meet the design life (durability requirements) that our customers need for their operations. Construction equipment is typically designed to have a long life span; some machines operate multiple decades before they require replacement. The use of F-gases is also critical for our sector in compression refrigeration systems, to cool down the operator cabin, this is an important contribution to ergonomics.

Regarding **alternatives** to PFAs, in many applications no equally performing options to fluoropolymers/fluoroelastomers are available, our products would be at risk of failing prematurely, potentially resulting in, e.g., higher maintenance frequency, increased downtime and reduced design life.

Like other downstream sectors, construction machinery manufacturers *‘do not prescribe the use of individual substances to their suppliers but rather stipulate performance requirements to meet’* and *‘it could be assumed that fluorinated materials are used only where performance requirements leave no other option’*¹. Apart from that, the automotive and mobile machinery industry often rely on the same suppliers, providing identical materials and components. Developing alternative materials for non-automotive (low volume) sectors would significantly increase the cost of such components.

Finally, the summary reports do not differentiate between consumer and professional use and do not define **‘essential use’**. Thereby, the scope of the restriction is still not clear, this does not facilitate the task to provide adequate information for the restriction proposal for complex articles such as mobile machinery.

2. Uses and applications in construction machinery

CECE member companies have a global and complex supply chain; therefore, at this stage, our members rely on their suppliers to determine the extent to which PFAS chemicals are used in products, potential exposure, possible alternatives and likely economic impact. Articles used in the construction machinery utilizing PFAS are very diverse and it is challenging to identify their uses comprehensively. Below is a non-exhaustive list of uses and applications identified for our sector:

1. The impact of the restriction on **F-Gas** used as heat-exchange media in **HVAC systems** is one of the main concerns for our sector. Air conditioners in construction machinery use substances like R1234yf and R134a in compression refrigeration systems to cool down the operator cabin to meet health and safety requirements⁽²⁾, using approximatively between 0.5 to 1 kg refrigerant per machine. Currently, the most common use is R-134a which has a GWP of 1430, our industry is transitioning to R-1234yf, which has a dramatically reduced GWP of 4.

We want to highlight that today there are no viable alternatives to the use of R1234yf and R134a in our sector. Firstly, any alternative would need to be identified, incorporated into robust systems, then these systems proven to be sufficiently durable for our demanding applications. Our industry relies on the availability of such components and systems from the automotive supply chain as the sector is not sufficiently large to make it a viable alternative to develop its own systems for the vast number of varying applications. Switching to an alternative requires full redesign of the air conditioning system (e.g. volume adaptation) for each product family and associated changes in the manufacturing system.

Moreover, development and verification of a new air conditioning system needs to consider the strict safety requirements for mobile machinery and their harsh environmental conditions. These new systems may introduce new process conditions to the equipment such as higher pressure, flammable gasses and requirements for gas detection that would be more demanding in terms of safety obligations.

¹ Transport summary report – July 2021

² EN474-1 states under clause 5.3.2.1 that the cabin shall “...protect the operator against foreseeable adverse climatic conditions”. Clearly it could be considered that prevention of exposure of the operator to excessively high temperatures by the provision of an a/c system is a reasonable safety measure.

This would take multiple years to be developed and implemented, including extensive field testing. Therefore, a transition period is necessary, allowing the continued use of R1234yf and R134a.

We would also like to stress that alternative systems are very likely to have a higher volume requirement (e.g., CO₂-based systems, because of higher pressure and larger volume of refrigerant needed), therefore retrofitting machinery already placed on the market would require significant modifications to the machine which is not reasonably practical.

2. PFAs applications can be found in the body-hull and fuselage (chassis, frame, body and covers) of the machine. PFAs containing mixtures are used as surface tension modifiers and mist suppressants in some plating processes.

3. Fluoroelastomers are used in sealing applications, protecting from dust and aggressive chemicals and preventing leakage. We can find examples of its use on O-rings, valves and gaskets, shafts or piston seals, seals for electronic devices and seals for battery electrodes in Li-ion dry cell batteries.

4. Regarding coating and finishing of the machine and its components, fluoroelastomers are extensively used. They can be found in the coating of cables in the Selective Catalytic Reduction system for diesel engines; coating of diesel and gasoline particle filter hoses; turbocharger hoses and coolant lines, engine coolant lines and oil cooler lines; UV-stable coatings; coating of insulation materials; glass surface treatment for water and stain repellence (which improve visibility in bad weather conditions) and high abrasion resistance in windshield wipers or brake pads.

5. In the interiors of the machine, fluoroelastomers are used for coated trim materials. They are used in seats, carpets and roof linings fabrics.

6. PFAs are also necessary in the combustion engine and exhaust and treatment systems due to extreme heat and pressure conditions. In these components, resistance against corrosive materials such as fuels is also critical.

7. Lubricants – based on fluoroelastomers may also be used in construction machinery sector to reduce friction in a wide range of applications and temperatures. Further investigation is needed.

8. Hydraulic fluids are crucial for the functioning of construction machinery and they may contain PFAS. Further investigation is needed.

9. PFAS are also part of many semiconductors and can be found on computer-based systems and data transmission systems. Further investigation is needed.

10. Electrification is a growing trend in the construction machinery sector, and the use of battery-powered machines is rapidly expanding in the European market and globally. Moreover, alternative energy carriers such as hydrogen will also become more relevant in the path to decarbonization to achieve the Green Deal targets. We believe that the PFAS restriction should consider those needs and allow the development of green technologies. Fluoroelastomers are currently used in batteries and fuel cells.