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Impact of the restriction of per- and polyfluoroalkyl substances (PFAS) on HAWE Hydraulik solutions and business

Dear Sir or Madam,

HAWE Hydraulik SE is focused on the power density of hydraulics with our efficient and compact drive and control solutions. HAWE is a leading player in the hydraulics industry which has used its experience in hydraulics gained over 70 years to develop a varied range of technically advanced products and to address a high number of different variant solutions for its customers' wide range of needs.

In its six business sectors – Energy, Health, Infrastructure, Manufacturing Efficiency, Nutrition and Nature, and Transport and Logistics – the use of all types of thermoplastics, in particular fluoropolymers, play a key role in the efficiency and performance of its products. With its products, HAWE seeks to provide sustainable solutions which meet the high customer quality standards.

The selection of materials plays a crucial role in designing and manufacturing each component of our products. Therefore, the rigorous implementation of the PFAS ban would significantly impact a wide range of HAWE product families (over 270 product families). Essential components such as O-rings, cables & wires, coatings, and electronic components contain fluoropolymers (PTFE, TEFLON, FKM, FFKM, FPM) which appear on the list of 10,000 substances to be prohibited under the PFAS proposal.

Due to the physical and chemical properties of fluoropolymers, they allow HAWE's products to withstand high thermal and mechanical loads and to operate in harsh conditions without affecting their performance and ensuring their efficiency. The combination of these and more properties makes fluoropolymers unique and indispensable for most industry sectors.

HAWE Hydraulik SE is a socially responsible company and strongly supports projects aimed at restricting the use of substances that endanger humans and the environment. However, the initiative to restrict PFAS would have consequences for the company, and also in our supply chain.

Therefore, throughout this document we will discuss the unfeasibility of the PFAS restriction project as well as the company's position on this proposal.

Socio-economic impact

Replacing fluoropolymers in most industries is a huge challenge due to the economic impact on each company. HAWE Hydraulik's products are used by many European companies in order to bring new solutions to the market and increase the efficiency of products. The inability to substitute most PFAS applications once this restriction is implemented will have serious impacts on the performance of our products as well as economic consequences. We predict the following:

1. Our process for introducing a new sealing material to our products takes more than 1.5 years per part. This means that once there is a new alternative to FKM, FFKM, PTFE, Teflon and FPM (materials that concern us), the process to research, develop, test, approve and implement the material will take place for each alternative. This must be carried out separately for each alternative and for each supplier. If the development of a new alternative takes more than 5 years, our implementation time will be around 6 years more.
2. Now, the integration of affected electronic parts with sealing components makes the phase-in process for new PFAS-free components about 3.5 years. This is because according to the regulation, electronic components and cable sleeving have PFAS and many HAWE product families include electronic components and/or cable sleeves. Certainly, the price of these products will be influenced by rising prices; however, HAWE is unable to make a precise estimate of the economic impact at this moment.
3. Due to HAWE's products being involved in different business sectors, the testing phase for its sealing parts is one of the most important steps in the HAWE new part introduction process. During this stage, HAWE invests around 10,000 euros per new material change. Considering this, the impact of a new alternative (PFAS-free) could be estimated between 200,000 – 400,000 euros per year just for all sealing parts in our supply chain. Purchasing components (also with a new material alternative), product price increases and other costs are not considered within the testing phase.
4. Inventory is the next issue that HAWE must face after the implementation of the ban. As with all other manufactures, inventory is committed with our suppliers for a specific period, and this is taken into consideration in each year's budget. The cost of the ban will affect our stock of main components, such as seals and rubber parts, which is valued at around 500,000 euros per year. Moreover, without an alternative raw material before the regulation is enforced, it will also have unforeseen consequences on finished product stock due to reworking and replacement of the affected components with some new alternative.
5. The company's revenue may be compromised in the event that our supply chain increases raw material prices, resulting in losses.
6. Furthermore, the impact of a possible PFAS ban will directly affect the performance of our products. Each of our products has been developed and designed to meet all of customers' stringent requirements. As a result of the rigorous implementation of the ban, we will struggle to meet the demands of our customers and industry applications, as we might not be able to offer competitive products.
7. In many products and solutions, the key function is achieved through the interaction of drawing parts and standard parts. Sealing elements in particular often play a key role in the core function. Omitting certain materials may therefore have a significant negative impact on the performance of our products and ruin several years of development work.

8. Safety values such as Mttf values are often based on fault-free use of products over many years and tried-and-tested performance. Due to changes to the materials of core components (such as seals), the products lose this track record and may have to have their safety verified anew, including at high cost for different purposes.

Hazard and exposure

Taking into consideration declarations from various fluoropolymer suppliers, in which they demonstrate that the manufacturing process and materials planning do not include elements which compromise the environment and humans, HAWE considers that the imposition of this ban does not have sufficient evidence supporting avoidance of the use of fluoropolymers, especially those mentioned above.

While it is evident that the wide HAWE range uses components made from FKM, FFKM, PTFE, Teflon, and FPM, which are affected by this new regulation, our products do not cause any harm to humans or the environment.

Most of our products are part of the supply chain for finished products necessary in different sectors such as energy, health care, infrastructure, manufacturing and others. In many cases, HAWE products play an important role in the mechanical and hydraulic operation of products such as wind turbines, construction machines, municipal vehicles, plastic machines, hydraulic tools, operating tables and dental chairs, among many others. However, when analysing the use of our products in such sectors, in most cases they are located inside of some other component, isolated and/or encapsulated, covered by some liquid or housing. This implies that during the use of a HAWE product, both the operator/user and the environment are not compromised.

For example, in an operating table (see image 1 below) you can find at least two products which have some component made from PTFE: O-ring and support ring. However, all these elements are completely covered, avoiding contact with the user and meaning that they are in a protected environment.

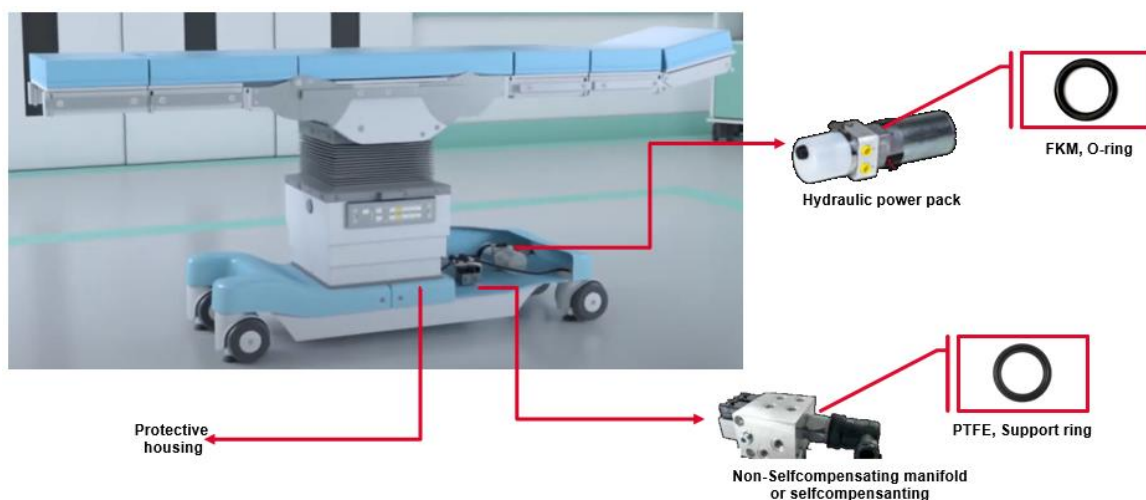


Image 1: Operating table (HAWE Hydraulik SE, 2023)

Hydraulic control systems perform important tasks in the operation of wind turbines, both onshore and offshore, and make an important contribution to increasing turbine availability with intelligent and durable system solutions. In the case of wind turbines, the hydraulic components used enable efficient and uninterrupted operation of the individual turbine systems. That is why the materials and parts used in these systems are carefully selected to meet our customers' expectations. Therefore, materials such as PTFE, FFKM, FPM, Teflon, FKM and TFE are found in various parts of our hydraulic systems used in the operation of wind turbines and other power generation systems. However, as we have repeatedly mentioned before, the components that contain these materials are not a risk to the environment or the end user due to low emissions and minor exposure.

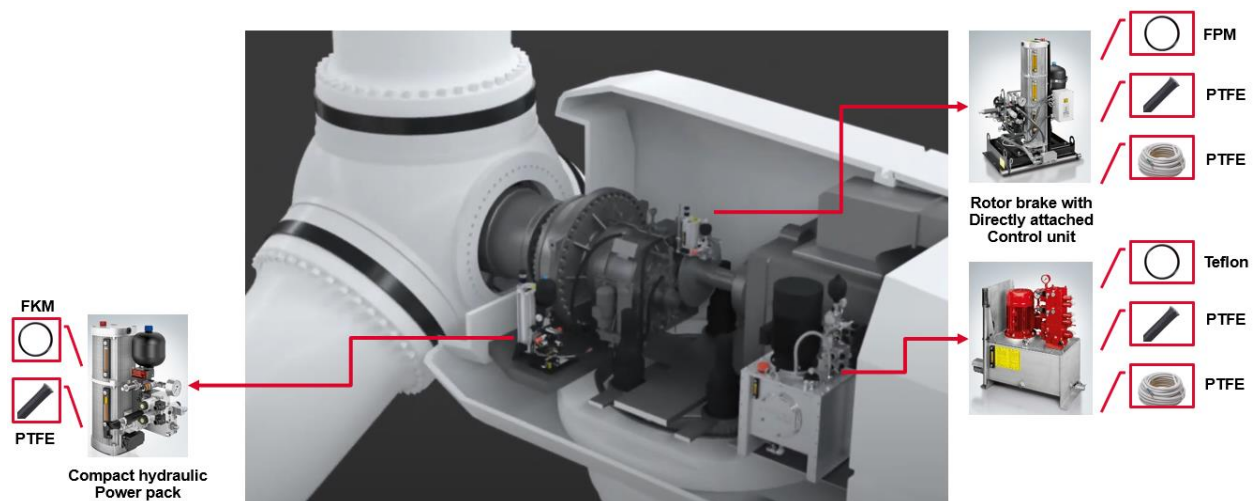


Image 2-: Hydraulic control system in wind turbine (HAWE Hydraulik SE, 2023)

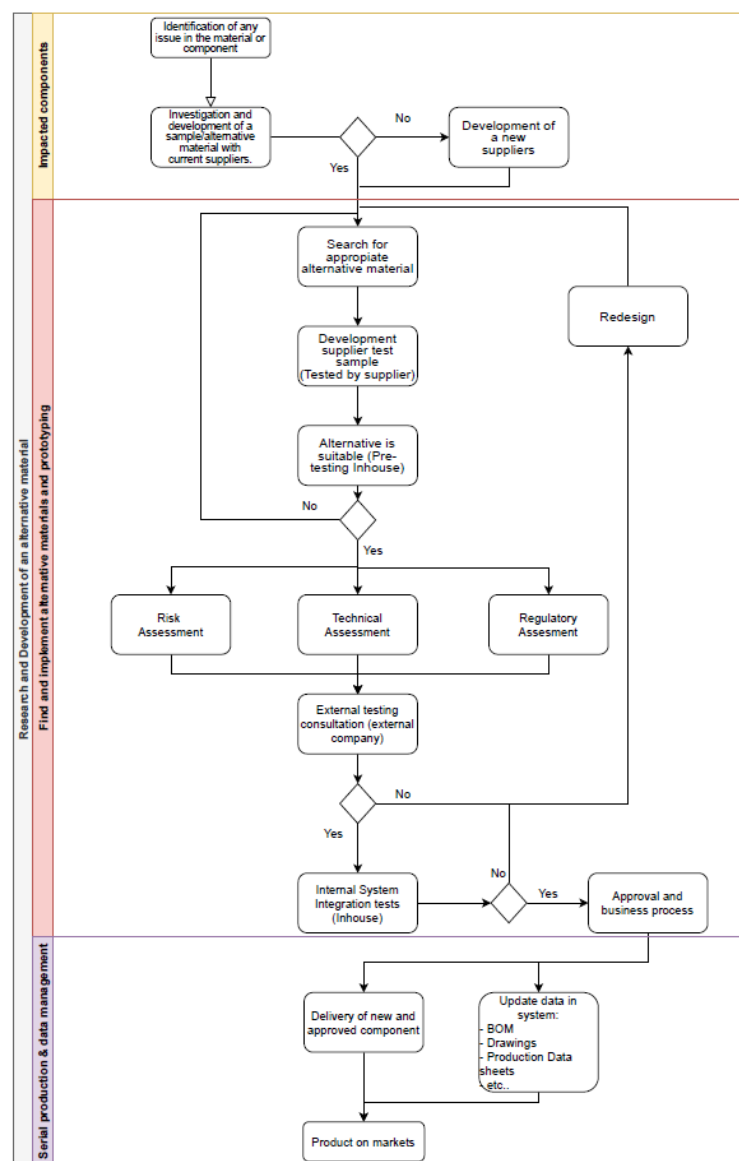
Information on alternatives

Due to the properties of fluoroplastics such as PTFE, FKM, TFE and Teflon, the development of new alternatives is currently unfeasible for a large-scale substitution in various products. Moreover, they meet OECD criteria, which are defined as non-toxic, non-bioavailable, insoluble in water, non-mobile molecules, and have no significant effects on the environment and humans.

The fluoropolymers used in our products allow them to be used in any environment, since they exhibit excellent thermal, chemical and mechanical stability as well as low flammability, excellent dielectric properties and resistance to degradation. Therefore, by integrating these properties into components used in our products, we achieve higher performance, better efficiency and resistance against temperature changes which each of our products may be exposed to. Thus, we are able to satisfy our customers' needs as well as provide new and sustainable solutions to different industry sectors.

We are a company that does not manufacture fluoropolymers or components with any fluoropolymers, but we depend on them for ensuring proper performance of our products. For this reason, the development of one or more alternatives does not depend entirely upon us, but rather on our suppliers. According to them, they estimate that it would take more than 5 years to develop new materials, making the regulation impractical for the next 2 years.

To use any alternative material in any of our products would take us about 2 years due to the processes we have to follow. The following flowchart illustrates the steps we have to follow to implement a new component.



Emissions

Based on the information gathered from our suppliers of components with some fluoropolymers or PFAS, the emissions generated by any of these are made during the manufacturing process for these components. According to this information, the emissions emitted are low – between 0.03 and 0.3 nanograms of PFAS per sq. meter per hour.

Therefore, on the basis of the above information, the emissions emitted by our products which contain PFAS or fluoropolymers can be considered low or negligible compared to the initial manufacturing process of PFAS and/or fluoropolymers. However, HAWE cannot provide evidence on the exact amount of PFAS emissions emitted by our products. In addition, PFAS polymers and fluoropolymers used in our components are thermally very stable and are not exposed to extreme temperatures above 800°C which reduce their durability. Moreover, fluoropolymers have a high molecular weight, no water solubility and volatility, meaning they are therefore not expected to degrade to lower molecular weight PFAS. In addition, they are not expected to lead to the formation of long-chain PFAS as a result of degradation¹.

HAWE's position and outlook

As mentioned before, HAWE is committed to abide by every standard and regulation and to offer products that are totally free of hazardous substances which damage the environment and harm consumers. What's more, HAWE is also dedicated to the mission and objective of regulating the use of certain PFAS; however, the conditions which are currently being proposed make the initiative a threat to most industrial sectors.

We therefore require a better analysis of the derogations, which should include actions such as the following:

1. Considering fluoropolymers are polymers of low concern, they should be exempted from this PFAS ban and any other regulatory action.
2. The regulation is very strict in establishing the use of alternatives; however, due to the lack of a more extensive analysis on fluoropolymers, ECHA does not show clear evidence of what kind of alternatives can be used to substitute them. Therefore, ECHA should work together with the manufacturers of fluoropolymer components in order to establish the specific timing of a new alternative as well as the materials.
3. The European Commission shall review and classify each substance listed in PFAS into high risk, moderate risk and no risk groups and subsequently consider the timeframe required to implement the regulation, thereby allowing all parties affected to define solutions for the future.
4. Hydraulic products as well as many of the applications in which they could be found, such as wind turbines, medical devices, electronics and semiconductors, among others, should be excluded from the legislation. Our products do not compromise the integrity and health of the user and do not affect the environment.

With kind regards
Axel Schwerdtfeger
CTO HAWE Hydraulik SE

References

¹ Sales et al., Fluoropolymers: The Safe Science That Society Needs, International Chemical Regulatory and Law Review (ICRL) 5(1), 2022, 13-23
(https://icrl.lexxion.eu/data/article/18600/pdf/icrl_2022_01_2022-11-02-12.39.059.pdf)