ABB contribution to the ECHA consultation on PFAS

ABB Electrification Distribution Solutions (ELDS)

ABB ELDS is a part of the ABB group covering the segment of electrical distribution systems in medium voltage (MV) up to 52 kV. ABB ELDS is market leader in power distribution solutions. ABB ELDS serves the EU, as well as the global market, with products produced in both within and outside of the EU. For a wide range of products, the lead development centres and the lead factories are located in Europe. ABB ELDS factories in the EU are located in Germany, Finland, Poland, Czech Republic and Italy with a total of several thousand employees. In addition to direct jobs, we are connected to a wide supplier base in the EU, serving ABB with components and material.

The product portfolio of ABB ELDS covers a wide range of products required for the distribution of electricity. These products are important for the EU electrification by upgrading and extending the electrical networks. Due to the growing distributed energy generation in the medium voltage level by wind and solar power, we expect a significant growth of the segment in the coming years.

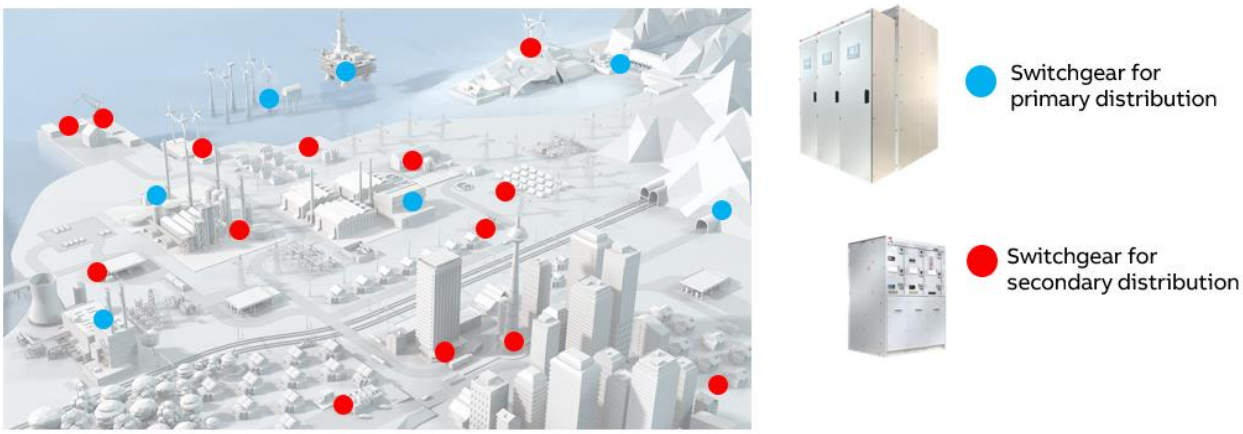

Figure 1: Location of products of ELDS in a typical electrical MV network

Medium voltage switchgear are the top product level in the distribution network. They are either air insulated (AIS) or gas insulated (GIS). Many of the components are designed and manufactured by ABB, such as circuit breakers, cable bushings, instrument transformers and control- and protection relays.
These components are used to build ABB switchgear, but are also manufactured for other companies to be used and sold in their own products. In some markets, outdoor circuit breaker are used in the network without a switchgear. Special applications as railway use e.g. a circuit breaker on the train.

The main requirement for the complete product range is the high quality and reliability level, as the lifetime expectation from the market is extremely high (>40 years) and the maintenance effort for the customer has to be kept low. Failure rates of the products are expected to be extremely low. This requires the use of top quality materials with outstanding performance, reliability for a wide temperature range. All these requirements are supported by PFAS materials or PFAS additives in materials. A part of the complex ABB ELDS product portfolio and how they are linked together is shown in figure 2. The red arrows are pointing to the next level product of ABB, but these components are also sold to 3rd parties for their own products.

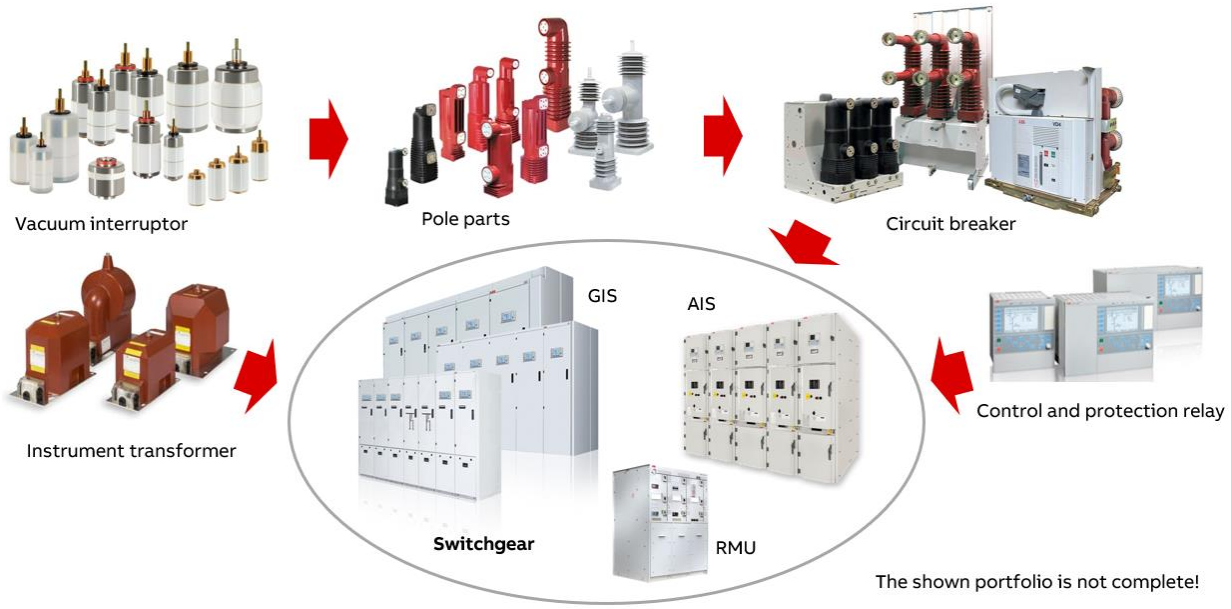

Figure 2: ELDS products and their use in ABB and non-ABB products

ABB Process Control Platform

ABB Process Control Platform, an organization part of ABB's Process Automation Business Area, provides the divisions with future-oriented world-leading process control products and systems. ABB's distributed control system (DCS) is the main offering that the PCP organization provides. The DCS is at the heart of plant-level digitalization and is used for multi-faceted, 24/7 process operations. Distributed Control Systems are found across a wide range of applications including mining extraction, transportation and processing, chemical manufacturing plants, water and wastewater treatment, electric power generation plants, and pharmaceutical processing facilities. The ABB Process Control Platform organization has three core areas: Portfolio & Product Management, R&D and Technology, as well as Operations.

Why is ABB contributing to the ECHA consultation on PFAS?

As PFAS are widely used in electrical equipment, ABB ELDS, together with other manufacturers, will be strongly affected by the proposed restrictions, including the very broad ban at very low concentration levels.

ABB is committed to finding an alternative to replace PFAS in a realistic time frame, where it is technically possible, where it is advantageous for the environment and the society. For this we have prepared and uploaded specific contributions on the issue. We ask the ECHA technical experts to review these contributions carefully and consider them in the preparation of the final restriction, taking into account requested exemptions.

In case of additional questions, required background information or direct request for discussion, please feel free to contact us, using the contact details at the end of this document.

Contribution 4:
Topic: Threshold level
Target: Re-definition of threshold level to higher value

In the restriction proposal the permitted threshold level for single PFAS has been set to 25 ppb. This level is more a contamination level than an intended quantity with functional impact. At SVHC, which are substances where the negative impact has been proven, the information level is at >0,1%wt.

The main problem at these extremely low concentration is the possibility of supplier and sub-supplier to give a statement that their product does not contain PFAS. The only way is to perform a chemical analysis of a material sample in a specified lab.

Such kind of analysis can only be performed in the way that it is searching for a known substance, indicated for example as a peak in a GC-MS spectrogram. Then it needs to be quantified, which requires reference measurements with the same chemical substances (in this case the PFAS). Since the PFAS component, that needs to be quantified, is unknown (as only a fragment of the chemical structure is given), the quantification with a reference material will be impossible. The result of this analysis will not be able to guarantee that no other PFAS is above the 25 ppb level. The alternative would be to analyse and quantify the total Fluorine content, but this will not give any information which PFAs is contained or if the Fluorine is originated from chemistry containing Fluorine but not falling under the PFAS definition.
This request of extremely sensitive and expensive analytics will create a high burden, as the total quantity and the total invest for the analysis of millions of articles would be extremely high.

In our industry PFAS is added intentionally in materials or in production processes because of specific material parameters defined by ABB or by the manufacturer of the material. The amount of PFAS added in material recipes is >0,01%wt (100 ppm) and it is known by the material manufacturer which specific PFAS has been added to the material. These levels representing intentionally added PFAS to a production process or a material recipe will lead to the possibility to review documents like recipes and/or bill of material for stating if PFAS is contained or not. The need for costly analysis will disappear. The process is much faster and does not require external resources.

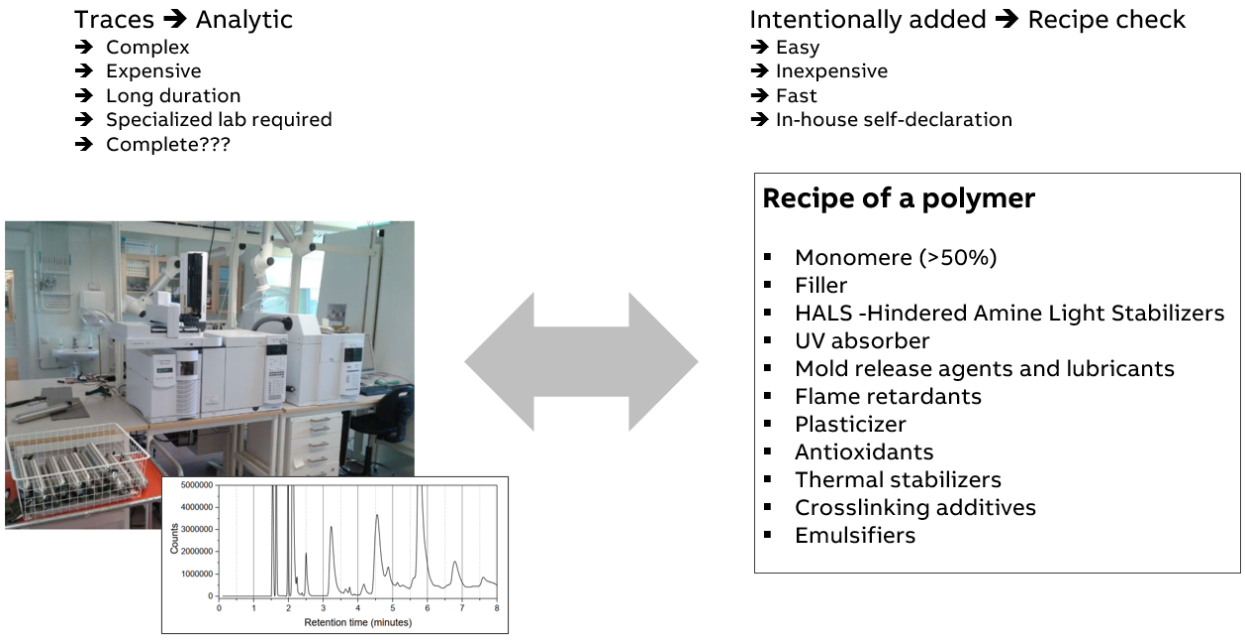

Figure 3: Recipe check on intentionally added PFAs instead material analysis on traces

It is recommended to define the permitted threshold level, for example 0,1%wt (1000 ppm) or 0,01%wt (100 ppm), for single PFAS in a way, that it is only covering intended use, e.g. in a mixture of components of a material.

The contamination of the environment is not based on products and articles containing extremely low levels of PFAS with slightly above 25 ppb, but on substances containing high percentage of PFAS or are even pure PFAS. For this reason, a threshold level of 0,01%wt for example will not lead to a high contribution of PFAS in the environment.

Especially articles with very low, not intentionally added PFAS or even contaminations with PFAS are widely unknown and hard to be specified. As these low concentrations will not have functional impact, it is most

likely nothing where a substitute needs to be searched for, it is more about an elimination of a contaminant from the manufacturing process if the root cause is known. Higher threshold levels would give clearer and easier controllable rules, as the PFAS content is intentional and therefore can be easier identified. In this case replacements can and must be investigated, as the added PFAS has a technical function.

Also, recycling companies will not be able to analyse material received in the given limits of the extremely low threshold levels. 25 ppb would mean adding 25 kg of a PFAS in the waste of 1 million tons. This would block a huge amount of material for recycling. Calculating this down to 1 ton of recycling material, the contamination would be 0,025 g of PFAS per ton. It is doubtful that any recycling of material will be possible, until absolutely no waste containing PFAS will exist, means the complete installed base needs to be PFAS free. The impact on the circular economy would be negative.
In addition, the analytics of waste material is even more complex, as it is not homogenous. In liquids and gases it could be manged to homogenize them, but with polymers it is impossible. A mixture of materials needs to be qualified by a probe and the result is heavily impacted where the probe has been taken.

For this ABB asks to replace the threshold level of 25 ppb per PFAS by a level of <0,01%wt and the possibility to prove this by checking material recipes and production bill of materials and a certificate provided by the manufacturer of the material or the article (as it is state-of-the-art e.g. for SVHC).