

Leclanché ready for PFAS restrictions in Europe thanks to its water-based cell production

- Europe plans to restrict the usage of PFAS (per- and polyfluoroalkyl substances) for its persistence in the environment and potential adverse effects on human health.
- Battery industry will be impacted as PFAS are a widely used element in the electrode production process.
- Thanks to the unique water-based binder process used in its cell production, Leclanché is one of the unique European battery manufacturers with well-proven and scalable PFAS-free alternatives for Li-Ion batteries.

YVERDON-LES-BAINS, Switzerland, October 19, 2023 – Amid growing concerns surrounding the impacts of PFAS, a chemical widely used in the production of lithium-ion batteries, Europe is setting out plans to restrict its usage. With many suppliers in the battery industry set to be heavily affected by the plans, Leclanché, which has been using a water-based binder process in its cell production for over 13 years, is prepared for these new restrictions (picture available [here](#)).

PFAS, which stands for per- and polyfluoroalkyl substances, comprises a combination of man-made chemicals that have been extensively incorporated into a wide variety of industrial and consumer products since the 1950s. However, concerns surrounding PFAS have gained significant traction since the early 2000s due to their prolonged persistence in the environment and the potential adverse impacts on human health. Exposure to PFAS has been associated with a range of health issues including cancer, immune system dysfunction, reproductive health and developmental disorders. Consequently, a substantial shift is underway to eliminate their usage.

Water-Based Manufacturing Process Without PFAS or Toxic Solvents

For more than 13 years, Leclanché has been a global pioneer in utilising low-cost, green manufacturing methodology for lithium-ion battery electrodes using different water-based binder solutions in the mixing and coating processes. The water-based binder process technology helps to eliminate the use of PFAS binders and avoids any reliance on highly toxic organic solvents. This technology enables the company to no longer use organic solvents such as NMP and replace them entirely with water. This choice not only eliminates the environmental risks, but also ensures the safety of employees involved in the production process by drastically reducing health hazards. There is also no solvent recovery system required, and the emissions are limited to steam that can be released into the atmosphere without further treatment.

Moreover, the water-based method allows Leclanché to reduce or respectively eliminate energy costs in energy-intensive steps like high temperature electrode drying and solvent recovery. This not only streamlines the process but also leads to an up to 30 percent reduction in energy consumption during the electrode drying step, thereby significantly reducing the carbon footprint of its battery cell production. Therefore, Leclanché's process ensures both ecological benefits as well as economic advantages. Currently Leclanché has validated and manufactured PFAS-free electrodes in production and has the technology to manufacture PFAS free cells with some minor process step adaptations. PFAS free cells using standard electrode stacking process can be manufactured with Leclanché electrodes today. Leclanché has already developed and manufactured various PFAS free electrodes: Anodes (Graphite-, Si-based graphite, LTO, Nb-based oxide anode) and cathodes (LCO-, LFP-, -, LMFP, LMO-, NCA-, NMC (111, 532, 622)-, NMC811, NMCA with over 90% Ni content, HV-LNMO, HV-LMA). All of these electrodes show similar performance in power and cycle life to electrodes manufactured using conventional PFAS containing binders.

Leclanché has submitted a response to the public consultation conducted by European Chemicals Agency (ECHA) regarding the restriction of PFAS to inform the European Commission that a viable alternative has been in operation within Europe for over 13 years at an industrial scale.

Restrictions Expected in European Regulations

The ECHA is actively evaluating the potential restriction of over 10,000 types of PFAS. The proposed measure aims to mitigate PFAS emissions into the environment, enhancing both the safety of consumer products and industrial processes. Expected to be enacted through the REACH regulation, this restriction is scheduled to take effect in 2025. This development is of particular significance for the European battery industry, as it coincides with a critical phase requiring substantial investment to establish a comprehensive European battery value chain.

PFAS in the Battery Industry

Today, PFAS are used prominently in the majority of lithium-ion battery cell production, particularly as a binder in the electrode manufacturing process, combined with toxic solvents such as NMP. Notably, PFAS utilised in batteries can be released back into the environment during the recycling process of production scraps or batteries at the end of their lifespan.

A Unique Opportunity to Scale-up Leclanché Technology in Europe

“Leclanché has proven over the last years that the cell technology can meet the PFAS restrictions in Europe,” emphasises Pierre Blanc, CEO of Leclanché. “Proven at an industrial scale in Leclanché’s manufacturing facility (Willstätt, Germany) for over 13 years, this technology meets the growing demand for batteries with reduced environmental impact in Europe”.

About Leclanché

Leclanché is a world leading provider of low-carbon footprint energy storage solutions based on lithium-ion cell technology. Established in 1909 in Yverdon-les-Bains, Switzerland, Leclanché’s history and heritage is rooted in battery and energy storage innovation. The company’s Swiss culture for precision and quality, together with its production facilities in Germany, make Leclanché the partner of choice for companies seeking the very best in battery performance and who are pioneering positive changes in how energy is produced, distributed and consumed around the world. Leclanché is organised into three business units: energy storage solutions, e-Mobility solutions and specialty battery systems. The company currently employs over 350 people with representative offices in eight countries around the world. Leclanché is listed on the Swiss Stock Exchange (SIX: LECN).

Disclaimer

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