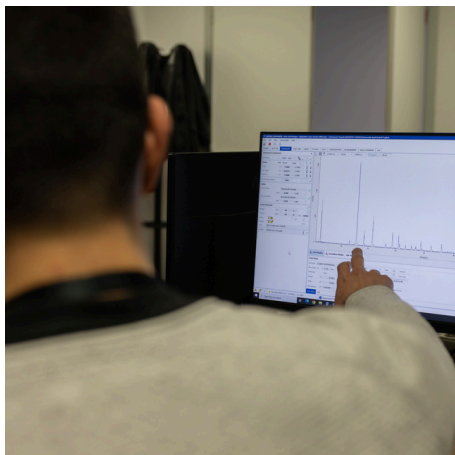


LIFE SYNFLUOR



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After ten years of tireless research, the team of Research and Development is ready to turn a dream into reality. A revolutionary project: LIFE-SYNFLUOR.

A journey that began with a clear ambition and vision, which required perseverance, ingenuity and an unwavering determination, will culminate in a memorable achievement for FLUORSID.

The first of September 2024 will mark the beginning of a new chapter, the result of work and collaboration with prestigious academic and industrial institutions. After participating in a LIFE call, dedicated to the circular economy and promoted by the European Union, FLUORSID was selected to access fundings offered for the construction of a pilot plant that will see an innovative technology applied.

The LIFE-SYNFLUOR project aims to address one of the most critical global shortages. Fluorspar, an essential raw material defined as a “critical raw material” by Europe, can finally be made available through a process that is as technologically innovative as it is innovative in terms of sustainability.

The FLUORSID team has developed a technology that aims to transform hexafluorosilicic acid, a byproduct of phosphoric acid, into high-purity synthetic calcium fluoride and precipitated silica.

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Phosphoric acid, the main constituent of phosphate fertilizers and produced worldwide, is a chemical compound that is obtained from the transformation of phosphorite. This mineral has high concentrations not only of apatite, the main element for the production of phosphoric acid, but also of fluorapatite and silica. The presence of these elements results in the formation of hexafluorosilicic acid, which only in a small part is reused by the fluoroderivatives industry while, in most cases, it is mixed with phosphogypsum and discharged into the sea, thus causing a serious environmental problem as it is classified as a toxic and polluting substance.

LIFE-SYNFLUOR technology, aims therefore to obtain two different products from hexafluorosilicic acid. The high-purity synthetic calcium fluoride could be directed to the fluoroderivates products market as a replacement for natural fluorspar. Precipitated silica, thanks to the synergy between FLUORSID, the Bicocca University of Milano and Pirelli, a leading multinational automotive company, may be used in the tire industry. This will help improve tires formulation, giving them better performance and enhancing vehicle safety and efficiency.



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INNOVATION REQUIRES EVIDENCE AND CONFIRMATION

Through LIFE call fundings, it will be possible to finally move into practice, building a pilot plant to test the validity and sustainability of the technology on a pre-industrial scale. Several laboratory tests have already produced promising results, showing that the high-purity synthetic calcium fluoride and precipitated silica obtained can be perfectly compatible with the products they are intended to replace.

Numerous laboratory-scale testing activities will be conducted to understand the chemistry of the process, including thermodynamics and kinetics, related to the use of high-purity synthetic calcium fluoride instead of natural fluorspar. These tests are necessary and preliminary to the industrial test because they will allow the right process parameters (reagent oven temperature, vacuum level in the piping, flow rate of raw materials and their ratio) to be set for the industrial test based on expectations of reactivity performance.

It will be an exciting journey full of challenges. With the certainty of having worked with passion and precision, FLUORSID is about to bring to life this new project, which for the next few years will guide all growth strategies and will become the symbol of a production approach based on the circular economy.

LIFE is one of the European Commission's historic programs, operating since 1992, and is the European Union's main financial instrument dedicated to the environment and climate action. The LIFE program plays a key role in supporting the development, implementation and updating of European Union policies and legislation on environment and climate action. It finances projects aimed at demonstrating the technical and economic viability of effective solutions (techniques, methods and approaches) to complex environmental problems and climate change, as well as ensuring the conservation and protection of nature and biodiversity. For the period 2021-2027, the LIFE program has a budget of 5,432 million euros, divided among its four subprograms, "Nature and Biodiversity," "Circular Economy and Quality of Life," "Climate Change Mitigation and Adaptation," and "Clean Energy Transition."

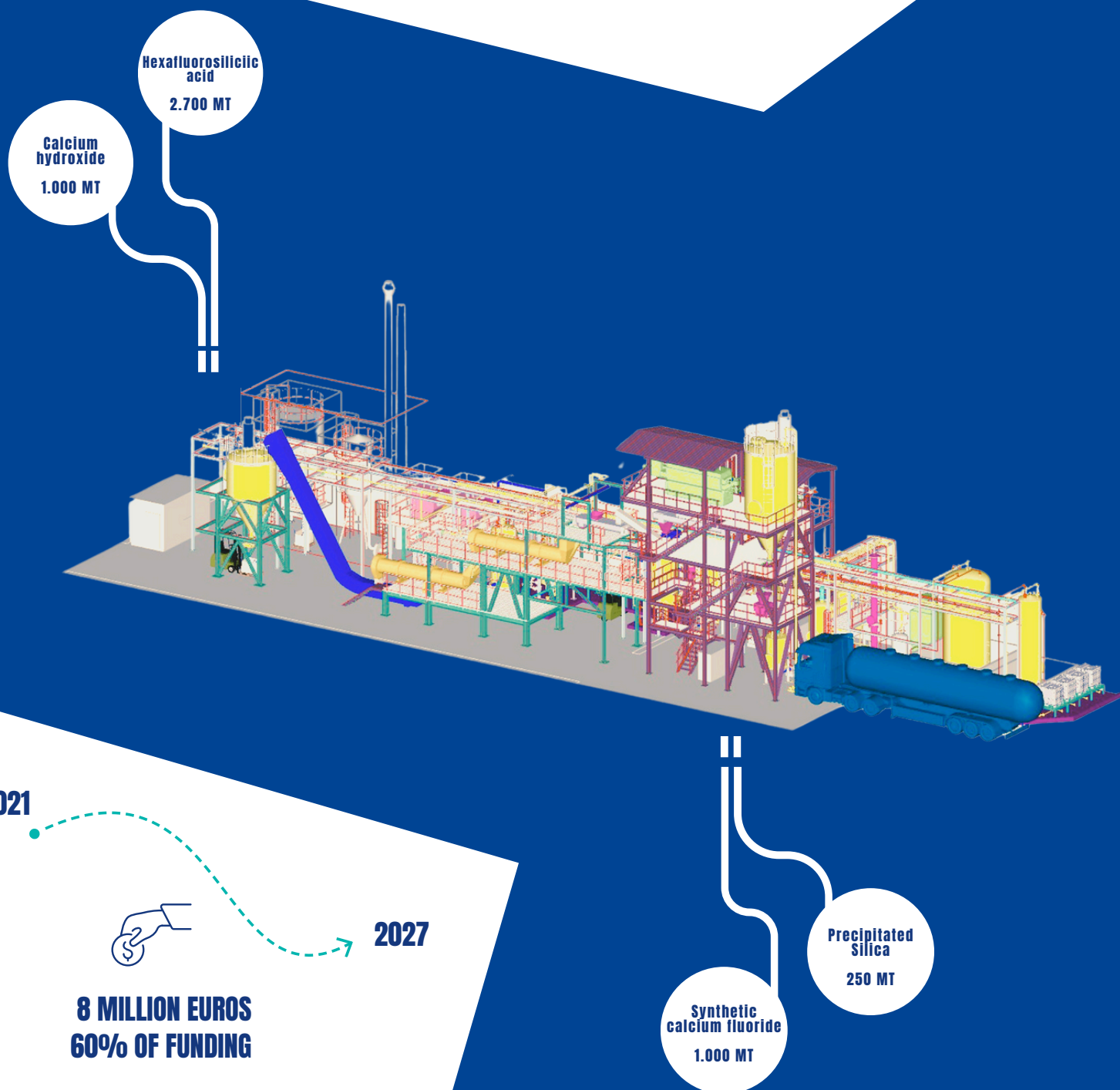


Image: first pilot plant layout study.