

FROM RESEARCH TO INDUSTRIAL DESIGN: FLASHPHOS MOVES CLOSER TO FULL-SCALE SUSTAINABLE PHOSPHORUS RECOVERY IN EUROPE

The FlashPhos project has reached an important milestone with the completion of its Front-End Engineering Design (FEED) study, marking a decisive step toward full-scale industrial implementation of sustainable phosphorus recovery.

The FEED study translates FlashPhos research from pilot scale into a fully defined industrial concept, addressing process efficiency, safety, environmental performance, and economic feasibility. It provides a solid basis for future investment and implementation decisions.

At the centre of the study is the design of the first full-scale FlashPhos plant, with a production capacity of 5,000 tonnes of white phosphorus (P_4) per year. The plant is integrated into a reference cement facility with a clinker capacity of 3,000 tonnes per day, demonstrating how phosphorus recovery can be embedded into existing industrial infrastructure.

The FEED study was led by A TEC Production and Services GmbH, with key contributions from VDZ Technology gGmbH, INERCO Ingeniería, Italmatch Chemicals S.p.A., Dyckerhoff GmbH, University of Stuttgart, and other partners. The interdisciplinary collaboration combined laboratory research, process simulations, pilot-plant development, and close exchange with industrial stakeholders.

A key outcome of the study is the confirmed synergy with cement production. Process simulations confirm that syngas generated during phosphorus recovery can replace a significant amount of conventional fuels and CO_2 . At the same time, the refiner slag produced in the FlashPhos process can be used as a CO_2 -neutral clinker substitute or supplementary cementitious material (SCM), supporting also to the decarbonisation of the cement industry.

The FEED study also assessed options for future adaptability, including modular plant concepts and decentralised sludge drying. While integrating a full-scale FlashPhos unit into existing cement plants presents challenges, the technology remains highly scalable and flexible, offering multiple pathways toward industrial deployment.

With the completion of the FEED study, FlashPhos has laid the foundation for the next steps, including detailed engineering, permitting, and preparation for the first commercial installations. By bridging the gap between innovation and industry, FlashPhos moves closer to delivering a European solution for sustainable phosphorus recovery and advancing circular-economy and decarbonisation goals.

For further information read [this article](#) or contact:

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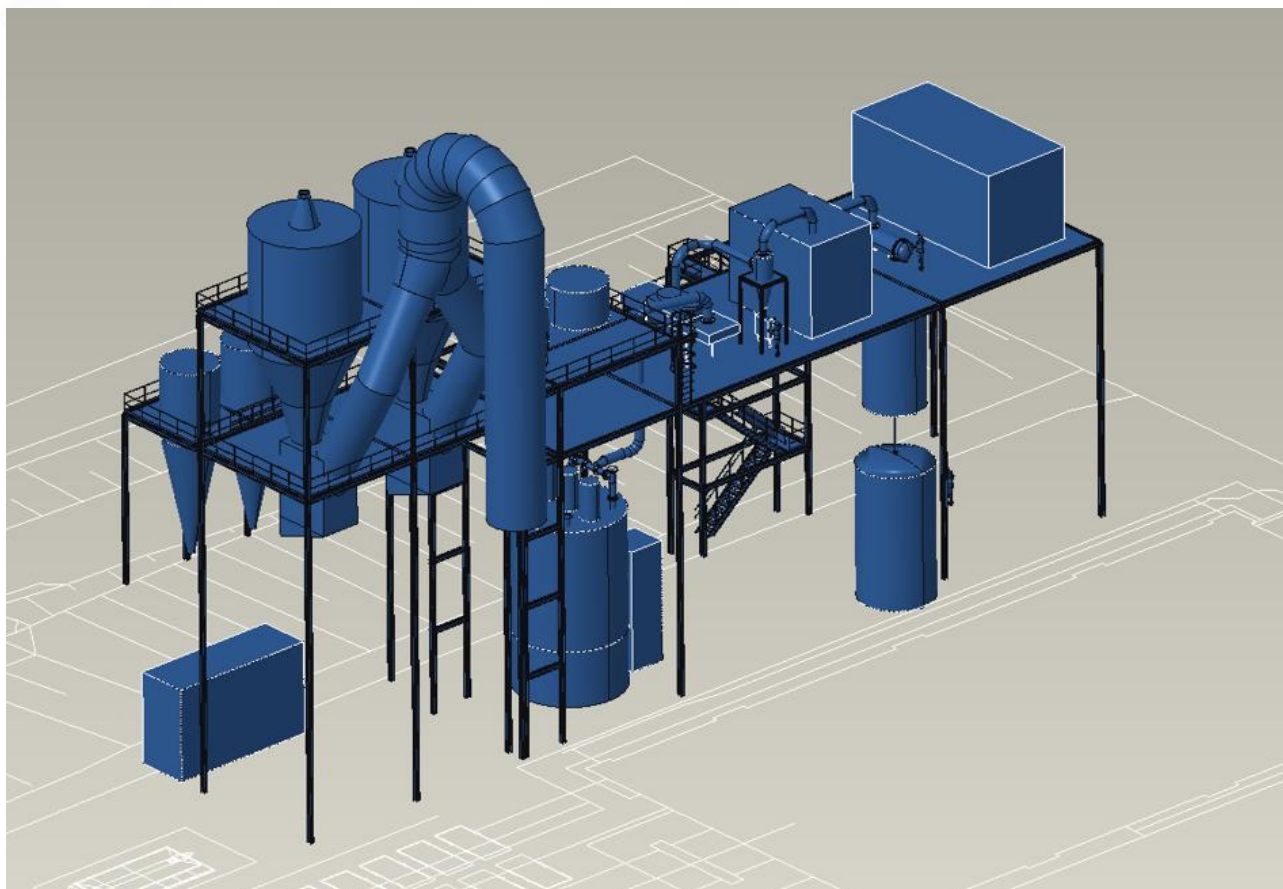


Figure: Integration of the core FlashPhos equipment into the host cement plant of the study

Project Partners:

1. University of Stuttgart, Germany
2. Italmatch Chemicals SPA, Italy
3. Aufbereitung Recycling und Prüftechnik GmbH, Austria
4. A TEC Production and Services GmbH, Austria
5. INERCO Ingeniería, Tecnología y Consultoría SA, Spain
6. Graz University of Technology, Austria
7. InsPyro NV, Belgium
8. VDZ Technology gGmbH, Germany
9. Dyckerhoff GmbH, Germany
10. Herp Giessereitechnik GmbH, Germany
11. Unitherm Cemcon Feuerungsanlagen GmbH, Austria
12. Buss-SMS-Canzler GmbH, Germany
13. Goriup Feuerfest GmbH, Austria
14. ResourceFull, Belgium
15. Edlinger Alfred/Metallurgy & Inorganic Technology, Austria
16. Bohler Abfall GmbH, Austria
17. Steinbeis Europa Zentrum der Steinbeis Innovation gGmbH, Germany

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