

Breakthrough technology for further CO₂ reduction: thyssenkrupp Polysius presents pioneering solution for the cement industry with polysius® meca-clay in Brussels

- New process for clinker reduction
- Activated clay without calcination

thyssenkrupp Polysius and SCHWENK Zement have jointly developed a new process and technology that enable the activation of any type of clay without thermal energy and fossil fuels. The two companies presented meca-clay at this year's FutureCem Conference and Exhibition in Brussels.

Dr Hendrik Möller, Member of the Management Board of SCHWENK Zement GmbH & Co. KG: "In order to achieve climate neutrality in cement production, completely new technological approaches for the mass production of binders must be scaled to an industrial level in the shortest possible time. The meca-clay project shows how fast and successful even technologically demanding projects can be implemented when cement manufacturers and plant manufacturers cooperate in real partnership. Instead of the usual supplier-to-customer relationship, SCHWENK and POLYSIUS have shared their knowledge and experience in an unbiased and open manner and cooperated for the benefit of both partners. I am convinced that the upcoming technological and economic challenges in the transformation of our industry will only succeed in an extremely trusting cooperation between cement manufacturers and equipment suppliers and engineering companies. This is what meca-clay stands for, as it proves what is possible when the risks and costs of new developments are shouldered together. With mechanochemical activation, we have an emerging and innovative technological approach to explore in a completely new way the chemical, mineralogical and physical knowledge of building materials and to open up a sustainable new business case."

Luc Rudowski, Head of Innovation at thyssenkrupp Polysius GmbH: "Thanks to meca-clay, our industry gets the chance for the first time in its history to produce hydraulic binders without thermal energy but with decarbonized electrical energy only. We have been pioneering the industrial development of activated clay. Thanks to the trustful and very efficient partnership with SCHWENK, with such a technology breakthrough, we are convinced that the industrial development of a greener activated clay will be boosted together with further reduction of cement and concrete carbon footprint".

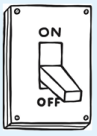
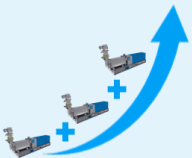
Based on SCHWENK's experience to produce their novel cement called Celitement through mechanico-chemical activation and Polysius' booster mill technology, semi-industrial tests were conducted that showed very promising results on cement and concrete quality using meca-clay. The potential of the new process and technology results in SCHWENK Zement investing in a demoscale plant to industrially produce meca-clay. It will be installed in Schwenk's Allmendingen cement plant and be commissioned in 2025.

Innovative solutions for key challenges

The newly developed meca-clay process enables the activation of all types of clay using only electrical energy, without the use of fossil fuels. With meca-clay, the potential of mechano-chemistry – that aims at making green chemistry beyond classical grinding – can be unlocked and developed to an industrial level. The polysius® charger enables the necessary increase of the internal free energy of natural clays to transform them into a reactive binder. It is scalable to sizes that cope with the cement industry requirements.

The technology not only sets new standards in terms of environmental friendliness, but also in terms of efficiency and product quality. With a planned complete electrification of the process, we aim at zero CO₂ emissions of industrial production of meca-clay.

Selected Advantages of meca-clay

any clay	all-in-one	green chemistry	scalable	product quality
works with any clay Kaolinite content not critical All 2:1 or 3:1 can be activated calcareous clay as well with not CO₂ emission 	simple process & plant No separate grinding Color control (patent pending) No gas cleaning No solid fuel / AFR storage 	fully electrified No fossil fuel Renewable energy can be stored 	staggered Capex Plant size following market demand Modular and flexible 	activity Less water demand Higher early strength Tuned reactivity through energy input 

About thyssenkrupp Polysius:

thyssenkrupp Polysius GmbH specialises in the planning and construction of cement plants. We support cement manufacturers around the world with our product and service portfolio, which is based on more than 160 years of expertise and experience. In addition, thyssenkrupp Polysius offers innovative and proven solutions for the lime, sugar, and energy industries, as well as for mining (India). Our plants and machines use state-of-the-art production processes, conserve resources, minimise environmental impact and meet the requirements for economic efficiency and plant productivity. We support our customers in their daily work as a sparring partner for new tasks and jointly develop individual solutions.

For more information, visit: www.thyssenkrupp-polysius.com

Press contact:

thyssenkrupp Polysius GmbH
Thomas Jungbluth
External & Internal Communications
Tel.: +49 2525 99 2769
Mobile: +49 173 281 7367
thomas.jungbluth@thyssenkrupp.com