

press release ZG-0903, Wenden, June 15, 2009

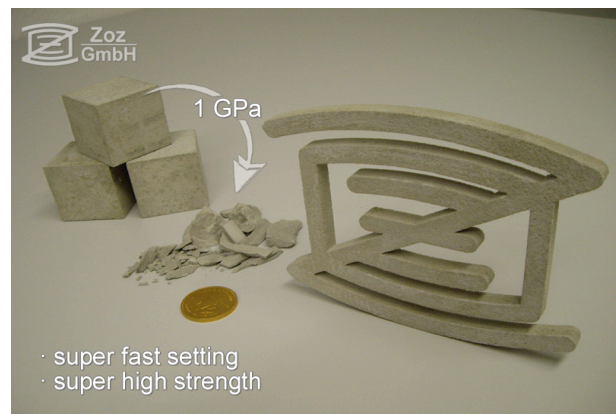
Starting for High Performance Cement Technology from Germany

Future-Cement

BMBF project-no. 03X0068A

Nanoscale activation of steel-mill sand and Portland cement with an innovative grinding process for the manufacturing of high performance and super high performance concrete with advanced properties

- Zoz GmbH
- University of Siegen
- Dyckerhoff AG
- Fuchs Lubritech GmbH
- Runkel Fertigteilbau GmbH

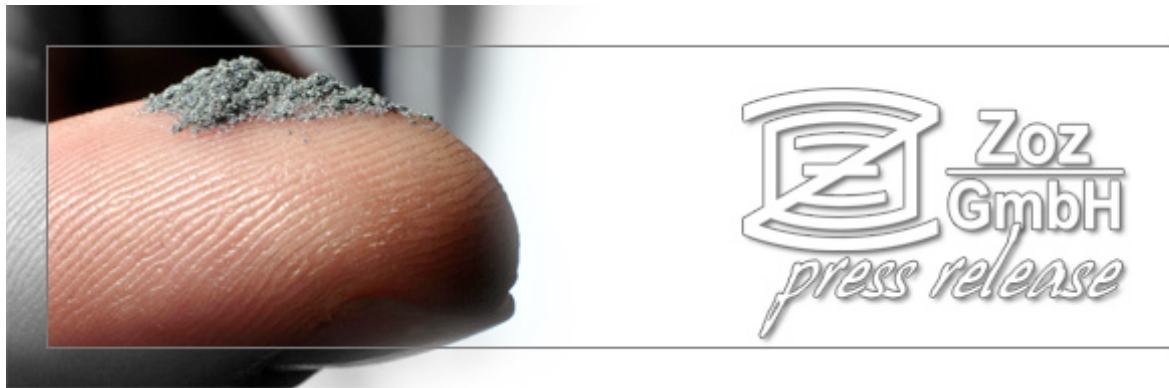


Zoz GmbH with headquarter in Wenden, Germany since 10 years also works on high performance cements. Compared to ordinary Portland cement (OPC), those allow multiple times higher compressive strength of concretes at setting times that can be reduced down to the minute range.

Already almost 6 years ago, the first industrial customer for the manufacturing of activated and nanostructured OPC was found in Mexico (GCC/CEMEX) where the president of Zoz Group, Dr. Henning Zoz is an invited professor and also finished his Ph.D. And once we today see concrete transportation trucks in the streets of Germany, we can see quite often the national colors of Mexico since this customer in autumn 2004 bought the corporate group RMC of the in these days largest German ready-concrete manufacturer Readymix.

Conventional concretes are classified with respect to their compressive strength and insofar supply characteristic values in the range of 50 mega-Pascal (highest class C60 = 60 MPa) after a setting and curing time of 28 days. In December 2007, for the first time samples that could exceed the magic value of 1 giga-Pascal were manufactured at Zoz and verified by an Indian customer in Hyderabad. Next to this and in the same city at the Zoz-ARCI Center in Hyderabad, cements with setting times in the range of seconds could have been produced during the last year.

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At least in Germany, one has not been able to bring this development of exorbitantly improved cement properties by nanostructure (grains) and superfine particle size to the right addressee at first.

In 2006, chance did help when a sales agent from Dyckerhoff AG (Dyckerhoff Cement) traveled in the local area and heard about this company in Wenden working on high performance cements. Just a few days later, Dr. Josef Strunge, the director of the Wilhelm Dyckerhoff Institute for building-materials-technology at Wiesbaden/Germany together with his colleague Dipl.-Ing. Wilhelm Nolte visited Zoz at Wenden. Thus it became quite clear very quickly, that both sides are working in very similar areas of interest and that Dyckerhoff already is manufacturing so called ultra-fine cements (Mikrodur®).

Another coincidence has been the call for Prof. Dr. Reinhard Trettin to the University of Siegen which is located almost next door to Zoz. He there holds the Professorship at the Institute for Construction- and Materials Chemistry, is an acknowledged expert for binder-materials and cement-systems and already during the first German-Japanese Symposium on Nanostructures (OZ-08) reported about corresponding work at his institute. Among other, he pointed out the very clear comparison, that the worldwide annual concrete production would be good for building a 4-lane street from Earth to Moon.



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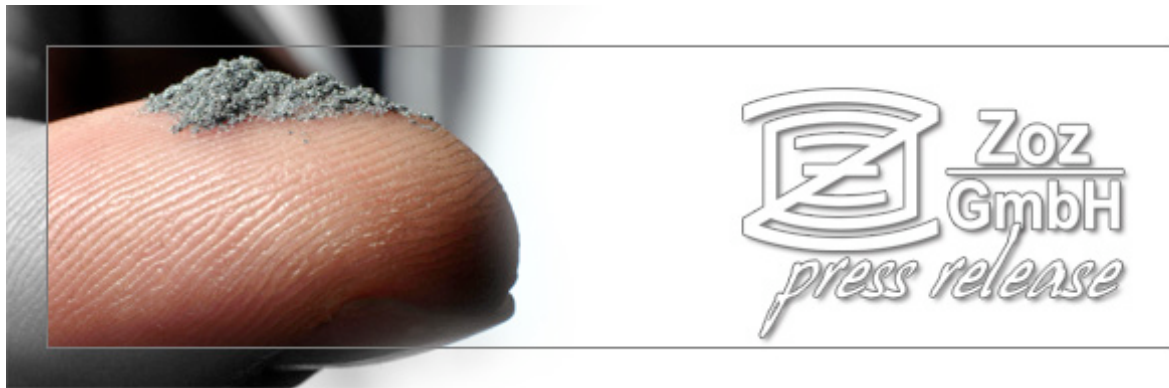
Dr. Josef Strunge (Dyckerhoff AG), Prof. Dr. H. F. Reinhard Trettin (University of Siegen) and Dr. Hongming Ren (Zoz GmbH)

Prof. Trettin in particular is interested and working in cements that include a substantial fraction of fine ground steel-mill slag, so called steel-mill-sand-cements.

There a special charm is represented by the potential of saving large amounts of clinker and thereby the heat treatment of this clinker so that a drastic saving of CO₂-emission could contribute an important competitive edge.

If the entire world-cement-production would be replaced by steel-mill-sand-cements, and such steel-mill-sand is available in superlarge volume as a waste product (e. g. 25 % at steel-production), one could save 5 % CO₂ every year mind you 5 % of the entire current global emission !

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Finally a consortium was founded in order to in this case propose for a joint public funded project at the German Federal Ministry of Research and Education. This of course is about nanostructured high performance and ultra high performance cements based on Portland cement utilizing steel-mill-sand affiliated with the goal to next to the manufacturing of a new material also to contribute to global CO₂-emission saving.

Fuchs Lubritech GmbH with headquarter in Weilerbach/Germany operates processing technology from Wenden for their large graphite production and insofar permanent contact is given. Next to this Fuchs Lubritech is one of the leading manufacturers of parting lubricants for cement industry. These are chemicals needed for the out-forming of concrete structures that also influence the finished concrete surface significantly. And new cements will result into new concretes and these will require new parting lubricants and exactly for this reason Fuchs Lubritech joined the consortium.

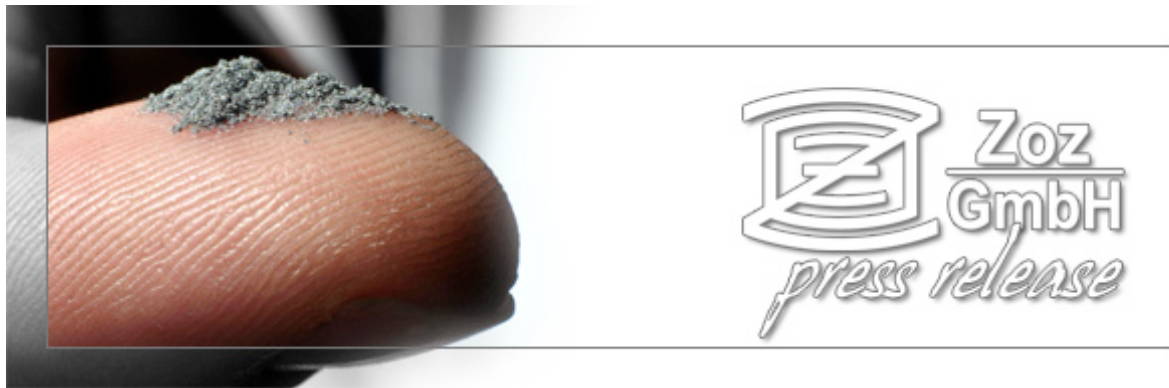


The goals of the project are better cements at lower CO₂-emission and in consequence better concretes for better structures. With stronger materials one can build lighter and insofar e. g. can top-out higher skyscrapers.

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In the front Dipl.-Chem. Birgit Weitzel and M. Sc. Zhen Zhang (University of Siegen), Prof. Dr. Henning Zoz (Zoz Group), Dr. Albert Herrmann and Birgit Mohrhardt (Fuchs Lubritech GmbH), Dipl.-Ing. Hans-Ulrich Benz (Zoz GmbH) and Dipl.-Ing. Wilhelm Nolte (Dyckerhoff AG)

And since Runkel Fertigteilbau GmbH is the concrete prefabricator that built the production facilities of Zoz at Wenden, it has been near at hand to invite the company from Siegen to join the project-consortium as the end-user. As an encouraging aim to that, a pedestrian bridge for the city of Siegen is under discussion.



The project proposal under the leadership of Zoz GmbH with Dr. Hongming Ren as the project manager after tough contending with delays first because of budget-difficulties and later because of the priority of larger lithium-ion battery projects was finally and fully confirmed by the official notification received around mid of May for a start-date at May 01, 2009. The project "Future Cement" (project-no. BMBF 03X0068A) has a total volume of 1.1 Mio Euro shared to 3 years.

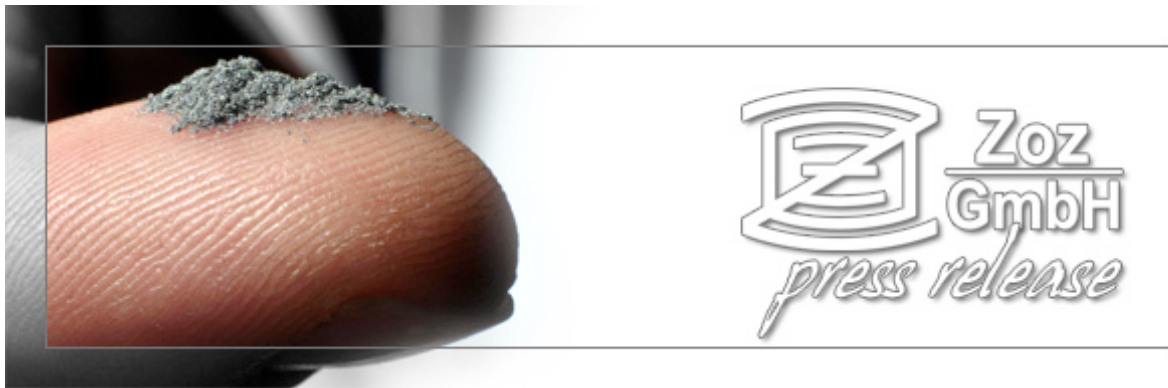


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Dipl.-Chem. Birgit Weitzel and M. Sc. Zhen Zhang (University of Siegen), Dr. Hans-Jörg Clar (project operator Jülich, Research Center Jülich GmbH), Dipl.-Ing. Frank Siedenstein (Runkel Fertigteilbau GmbH), Prof. Dr. Henning Zoz (Zoz Group), Dr. Albert Herrmann and in the front Birgit Mohrhardt (Fuchs Lubritech GmbH)

During the so called Kick-off meeting on June 10, 2009 at Wenden and under the attendance of representatives from all project partners as well as Dr. Hans-Jörg Clar, the responsible supervising manager from the project operator BMBF-PTJ at Research Center Jülich, the consortional-agreement was signed and the project work is already in progress.

For this, at Wenden a pilot plant will be set-up and installed and another but smaller unit will already in these days start to manufacture nanostructured steel-mill-sand- and clinker-materials day and night. These activities are supported by the University of Siegen and by Dyckerhoff where at Siegen in particular the characterization of the materials will be performed. The other two project partners Fuchs Lubritech and Runkel will become active later in time once 1-3 parameter/materials systems are chosen and manufactured quantitatively in the then finished pilot plant.



During the next and insofar the „3rd German Japanese Symposiums on Nanostructures“ which will be held in early March next year at Wenden, Dr. Strunge from Dyckerhoff will give a presentation and most likely inform about the latest status as far as legal and also an excursion to the pilot plant can be expected.

Further already confirmed speakers for this coming event are the presidents of Doerken MKS (zinc coatings) and High Power Lithium (Li-Ion Battery) as well as high-ranking representatives from Prayon (Li-Ion Battery), Ford Motors (alternative drives, fuel cells), Bayer MaterialScience (Carbon Nanotubes + Aluminium), US-Air Force (armament and aerospace) as well as EADS (Airbus etc.).



3rd German-Japanese Symposium on Nanostructures
3rd International Symposium on Nanostructures

*February 28 - March 02, 2010
Wenden/Olpe, Germany*

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