Thermal sand refinement for the production of concrete

Summary

Profile type	Company's country	POD reference
Technology offer	**Germany**	**TODE20230914021**
Profile status	**Type of partnership**	**Targeted countries**
PUBLISHED	**Research and development cooperation agreement**	**• World**
Contact Person	**Term of validity**	**Last update**
Rita ELSTE - TOMSONE	**14 Sep 2023** **13 Sep 2024**	**14 Sep 2023**

General Information

Short summary

Scientists at a German university have developed a process to refine conventional sand (especially desert sand) and make it usable for the production of concrete. The university is offering a technology cooperation agreement.

Full description

Conventional sand (primarily desert sand) is usually fine-grained and therefore unsuitable for manufacturing concrete. To solve just this problem, scientists at a German university have developed a process for refining sand to make it usable. The sand is thermally refined with solar radiation while serving as a heat medium.

During the sintering process, small particles are melted with focused sunlight and agglomerated to larger particles, increasing grain size. The sand trickles over a stationary or moving surface while subjected to solar radiation. In individual areas, some of the sand grains are melted. When the surface is tilted, gravity moves larger particles downward. On the way, they stick to other grains to form larger particles up to a set size. Size setting can be made with surface tilt, which can be adjusted as desired.

This invention intends to contribute to the energy revolution. It solves two problems associated with resource waste. It combines cheap, efficient solar thermal energy storage with refinement of desert sand to form commercially viable building sand. This combination lowers the strain on the system with targeted overheating of the storage medium

(sand). The associated reduction of operating costs in energy provision along with the increased profits from building sand sales promises quick system amortization.

The main beneficiaries of lower costs for raw materials, such as building sand, and of energy-efficient process technology are the construction industry and institutional and private investors from that industry. The capability of decoupling high-temperature heat so that it can be used as process heat for energy-intensive industries such as power production and district heating provides an environmentally friendly, cost-saving additional benefit that is increasingly important under current conditions.

The university is offering a technology cooperation agreement to companies in the materials industry to further develop the process.

Advantages and innovations

The main innovative aspects are:
- Improvement of the production process of building materials compared to existing production processes.
- Energy saving
- Cost reduction

Technical specification or expertise sought

Stage of development

Concept stage

Sustainable Development goals

• Goal 9: Industry, Innovation and Infrastructure

IPR Status

IPR applied but not yet granted

Partner Sought

Expected role of the partner

The university is offering a technology cooperation agreement to companies in the materials industry to further develop the process:
- Construction industry/building materials industry
- Process technology
- Raw materials industry
- Process engineering

Type of partnership

Type and size of the partner

Research and development cooperation agreement

- **Big company**
- **SME <=10**
- **Other**
- **SME 50 - 249**
- **SME 11-49**

Dissemination

Technology keywords

- **002006001 - Building Materials, Components and Methods**
- **02007002 - Building materials**
- **02002009 - Machine Tools**

Market keywords

- **009007002 - Manufacture of building materials**
- **06006001 - Thermal insulation**
- **08001023 - Other chemicals and materials (not elsewhere classified)**
- **09007002 - Manufacture of construction materials, components and systems**

Targeted countries

- **World**

Sector groups involved

Media

Images

Photo of the sand test rig at SIJ with 60 kW sand cooler and 30KW IR emitter.