Carbon capture solutions for high-emission industries

**Carbon capture: GEA solutions pave the way for decarbonizing the cement industry**

- GEA presents carbon capture portfolio as strategic sustainability solution for key high-emission industries
- Pilot plant at Phoenix Zementwerke in Beckum, Germany, confirms that it is possible to trap 90 percent of carbon emissions in cement production through carbon capture

**Düsseldorf (Germany), September 15, 2023** – If the cement industry were a country, it would rank as the third-largest contributor to global carbon emissions. GEA, the international technology group, has developed an extensive carbon capture portfolio to push forward the decarbonization of carbon-intensive industries both swiftly and cost-effectively. This will notably enable high-emission sectors such as the cement, glass and chemical industries to enhance the environmental sustainability of their operations. Practical trials conducted at a pilot plant at Phoenix Zementwerke in Beckum, Germany, have demonstrated that CO2 emissions in cement production can be reduced by 90%.

**Trailblazing decarbonization in key industries**

GEA CEO Stefan Klebert positions the Group as a trailblazer in this field. “‘Engineering for a better world’ signifies our dedication to advancing the sustainable development of key industries with our plants and solutions. With this ambitious approach, we are helping our customers to massively reduce their carbon footprint.” GEA’s carbon capture portfolio integrates proven technologies. These solutions recover waste heat, pretreat gas, capture CO2 and prepare it either for utilization or storage.

**Practical trials at Phoenix Zementwerke pilot plant**

With a production capacity of 500,000 tons of cement per year, the Phoenix Zementwerke plant in Beckum emits an estimated 1,000 tons of carbon dioxide every day. Data on carbon emissions in the exhaust air from the plant is now being gathered over several months of testing. Based on this data, GEA will then scale up and refine the system for larger emission volumes. The options available encompass both carbon capture and storage (CCS) as well as carbon capture and utilization (CCU). “We view carbon capture as an exceptionally promising technology,” says Marcel Gustav Krogbeumker, Managing Director of Phoenix Zementwerke. “Leveraging GEA’s decades-long expertise in exhaust gas treatment, I am highly optimistic that, together, we will engineer and implement a solution capable of capturing at least 90 percent of our emissions.”
Standardized systems for rapid, cost-efficient entry

GEA’s carbon capture portfolio features four plant sizes, with the dimensioning of each dependent upon the waste heat generated in carbon-emitting production processes. Once adapted to the production plant in question, these systems can remove emitted carbon with minimal to zero energy input.

The evident need for action and the market’s readiness to invest indicate that carbon dioxide can be turned from a problem pollutant into valuable input for reuse in other industrial processes. “Every customer has distinct opportunities for carbon utilization. This is why it’s crucial to draw up a comprehensive site plan that explores the options for carbon utilization and the requisite infrastructure,” explains Dr. Felix Ortloff, Senior Director GEA Carbon Capture Solutions. “In the long run, this will lead to a new sector of the economy centered around CO2.”

Download link to images (expiring in 90 days)

From problem to potential:
CO₂ as feedstock for industrial use.

Utilization
- Carbon capture and usage (CCU)
  - Food/beverages
  - Chemicals (plastics, building materials)/ pharmaceuticals
  - Fuel

Sequestration
- Carbon capture and storage (CCS)
  - as a solid carbonate in the soil
  - as a solid carbonate in the ocean floor
  - in CO₂ pipelines as a carrier of green hydrogen

Captured carbon can be stored (CCS) or utilized for industrial processes (CCU).
Source: GEA
The Managing Director of Phoenix Zementwerke in Beckum, Marcel Gustav Krogbeumker (l.), with Dr. Felix Ortloff, Senior Director Carbon Capture Solutions at GEA. They will analyze the data from the pilot plant and use it to develop the scope for scaling up the system in the next stage.
Source: GEA/Tim Luhmann
Press Release

The pilot plant at Phoenix Zementwerke in Beckum, Germany
Source: GEA/Tim Luhmann
If the cement industry were a country, it would rank as the third-largest contributor to global carbon emissions. GEA has developed an extensive carbon capture portfolio to push forward the decarbonization of carbon-intensive industries both swiftly and cost-effectively. Infographic: GEA

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Contact Media Relations
Anne Putz (daily and financial press)
Peter-Müller-Str. 12, 40468 Düsseldorf, Germany
Telefon +49 211 9136-1500
anne.putz@gea.com

Dr. Michael Golek (trade press)
Peter-Müller-Str. 12, 40468 Düsseldorf, Germany
Telefon +49 211 9136-1505
Michael.Golek@gea.com
About GEA
GEA is one of the world's largest suppliers of systems and components to the food, beverage, and pharmaceutical industries. The international technology group, founded in 1881, focuses on machinery and plants, as well as advanced process technology, components, and comprehensive services. With more than 18,000 employees working across five divisions and 62 countries, the group generated revenues of more than EUR 5.1 billion in fiscal year 2022. GEA plants, processes, components, and services enhance the efficiency and sustainability of production processes across the globe. They contribute significantly to the reduction of CO₂ emissions, plastic usage, and food waste. In doing so, GEA makes a key contribution toward a sustainable future, in line with the company’s purpose: "Engineering for a better world".

GEA is listed in the German MDAX and the STOXX® Europe 600 Index and is also among the companies comprising the DAX 50 ESG and MSCI Global Sustainability and the Dow Jones Sustainability Europe Indices.

More information can be found online at gea.com.
If you do not want to receive any further information from GEA, please send an e-mail to pr@gea.com.