Pressinformation

BINE Informationsdienst

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Capturing CO2 from power plants with lime

Separation only costs 15 euros per tonne

The flue gases from coal-fired power plants contain considerable amounts of CO2. This greenhouse gas can be captured. Researchers and industry are testing various methods for this. The BINE-Projektinfo brochure “CO2 capturing using lime” (01/2014) presents the “carbonate looping” method. Here, CO2 is bound by lime in coal-fired power plants and then separated again using heat, whereby it costs 15 euros to capture one tonne of CO2. This value is well below the cost of other retrofittable capturing processes.

During the first sub-process, lime binds the CO2 in a fluidised bed reactor. This frees a large amount of heat, which is then available for the power plant process. The CO2-free flue gas is then released into the atmosphere. In the second sub-process, the CO2 bound in the resulting calcium carbonate is separated in a pure oxygen atmosphere by supplying heat, and can then be recycled or stored geologically. The strengths of carbonate looping include the low costs with a 90% capture rate. This is due to the lower efficiency losses in comparison with other methods. Existing power plants can be retrofitted with carbonate looping.

The research project, which is being coordinated by the Department of Energy Systems and Technology (EST) at the Technische Universität Darmstadt, is being jointly conducted with industrial partners. The researchers are currently testing the method on a 1-megawatt demonstration plant. During the next few years they will be in particular testing the behaviour with rapid load changes.

The BINE Projektinfo brochure, which can be obtained free of charge from the BINE Information Service at FIZ Karlsruhe, is available online at www.bine.info or by calling +49 (0)228 92379-0. The brochure cover and an additional image can also be downloaded from the press section in this web portal.

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