



thyssenkrupp

Insights Polysius



Cement production: How hot air becomes green energy

In the production of cement, raw materials such as limestone, clay, sand and iron ore are burned at more than 1,400 °C to form clinker and then ground with gypsum to produce the finished cement. The air generated in the preheater or during cooling of the cement clinker, which can reach temperatures of up to 400 °C, is then often released unused into the environment. With thyssenkrupp's waste heat recovery systems, the waste heat from cement production can be used to generate electricity. For this

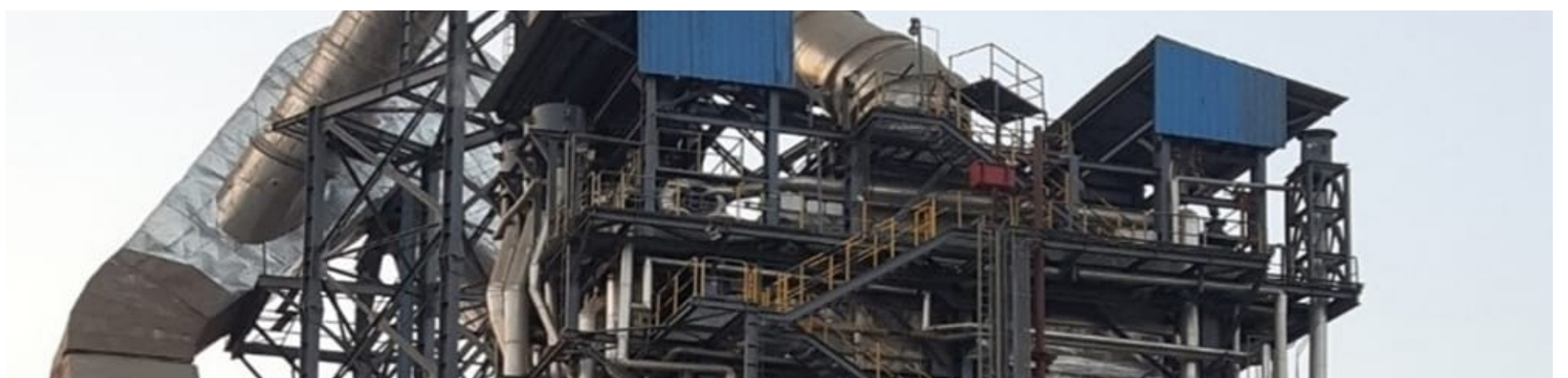
purpose, steam is generated in boilers which then drives generators. This sustainable use of waste heat reduces environmental impact and lowers production costs of cement.

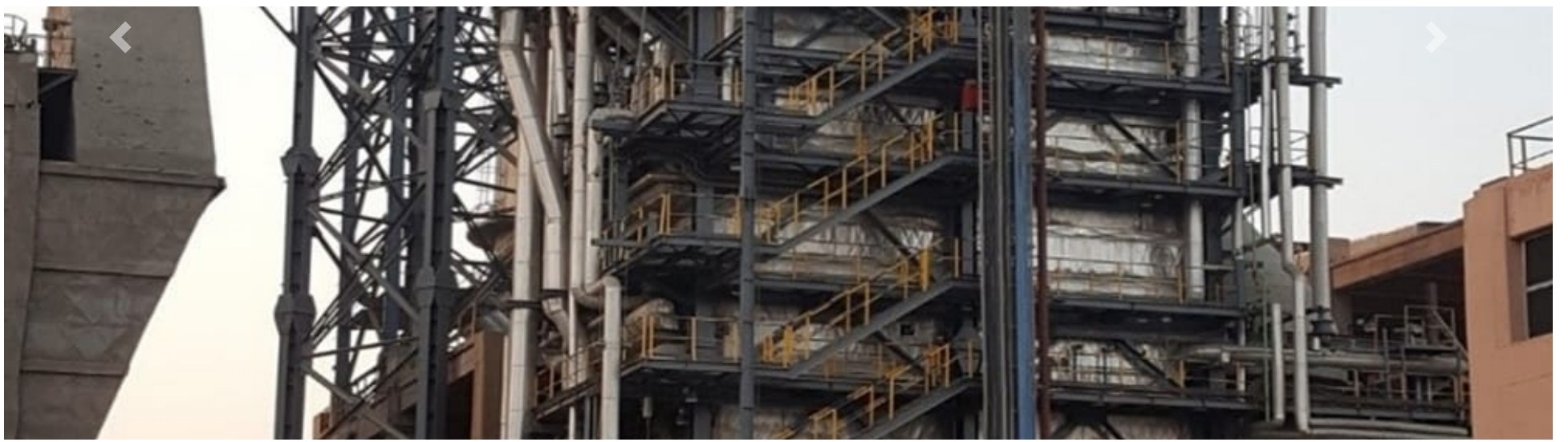
So far, Indian cement producers in particular have relied on the complete power plant solutions with waste heat recovery made by thyssenkrupp. No wonder, since they were developed by thyssenkrupp Industries India in 2008. With these plants it is possible to use up to 33% of the waste heat from the kiln and the waste heat from the preheater tower for power generation. In this way, the plants installed in India and the United Arab Emirates in recent years are capable of generating more than 290 megawatts of electricity on continuous basis. More and more cement producers are showing interest and want to optimize the energy management of their plant. Demand for thyssenkrupp heat recovery systems is growing continuously.

“In 2021 alone, we will commission ten more plants in India. I am sure that our heat recovery solutions will also convince cement producers outside India in the future. Protecting our environment and rising energy costs are ecological and economic drivers.”

Abhay Patil, Director Energy Division, thyssenkrupp Industries India

For the conversion of waste heat into electrical energy, thyssenkrupp produces customized boilers for its cement customers at the Indian sites in Pimpri and Hyderabad. Depending on the size of the plant, between 30 and 300 metric tons of steam can be generated per hour in the boilers. Turbo generators then convert the steam into electrical energy. The power generation plants built by thyssenkrupp have capacities of five to 33 megawatts. Another advantage is that the heat recovery plants can be installed and commissioned in a short time. Existing cement plants can also be optimally retrofitted with this low-maintenance technology.





The bottom line: A sustainably operating cement plant is a challenge of the century for thyssenkrupp and its customers. Minimizing emissions, especially CO₂ and reducing energy consumption are fundamental to the future of this industrial sector. With the waste heat recovery technology developed by thyssenkrupp, up to 33 percent of the waste heat from the preheater and clinker cooler can be used to produce electricity. While this technology has so far been used mainly in India, in the future it will also win over customers worldwide. Efficient use of energy reduces the environmental impact of cement production and is an important element of our #grey2green transformation journey.
