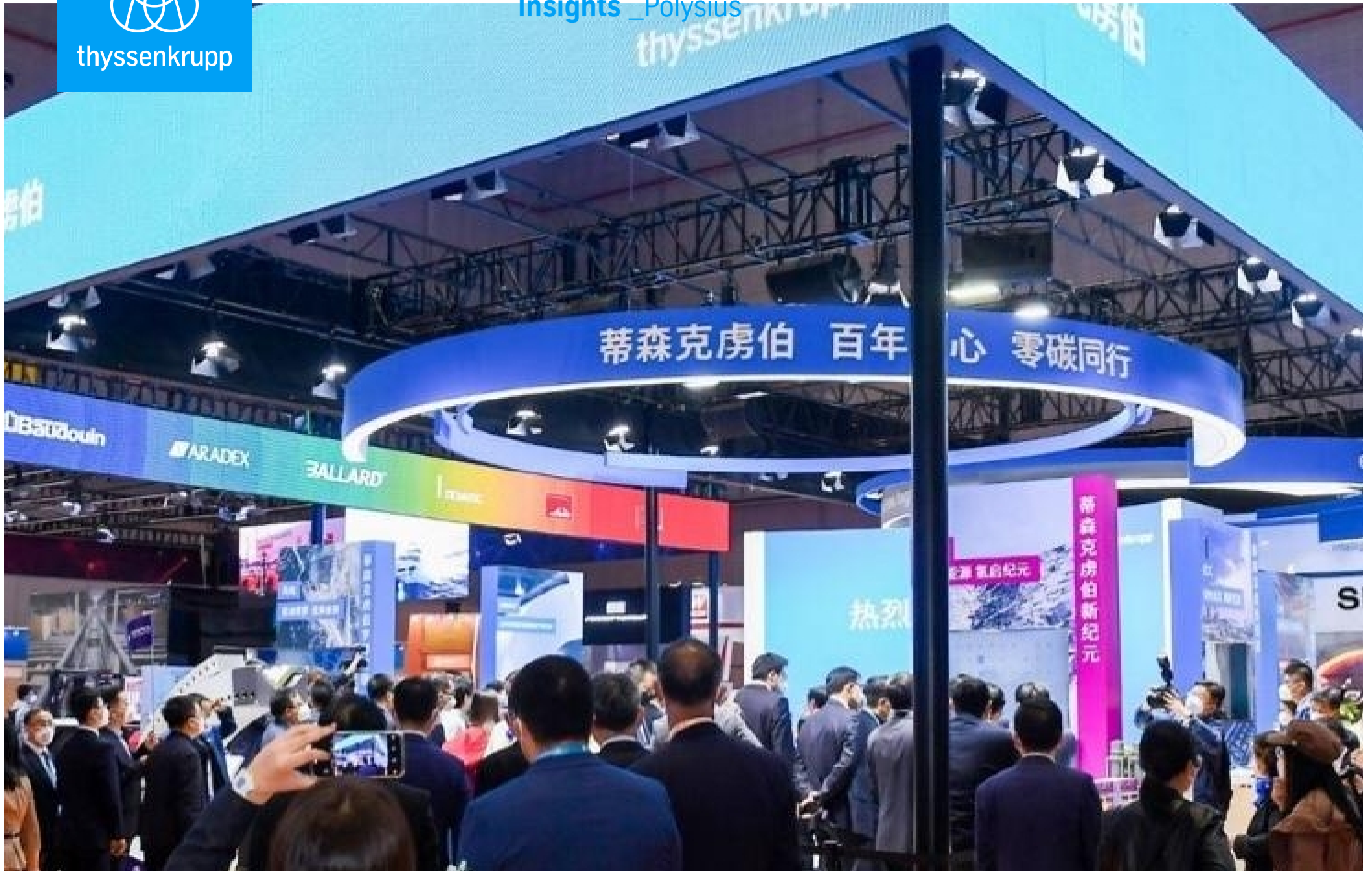




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Let's talk:

100 years of creativity to achieve

zero emissions

China Building Material Magazine interview with Chen Shixiang (CEO tkIS China).

China's "dual carbon" target accelerates green transformation and modernization of enterprises. At the 5th China International Import Expo, thyssenkrupp showcased low-carbon and environmentally friendly

technologies and application examples from cement and lime, wind power, green hydrogen, steel, chemical industry and transportation under the slogan "100 years of creativity, zero carbon emissions".

"The Chinese cement market offers tremendous development prospects. thyssenkrupp's comprehensive green technology in the cement and lime industry supports the market's low-carbon development and Chinese customers' needs for energy saving and emission reduction," explained Chen Shixiang, CEO of thyssenkrupp Industrial Solutions (China). "To quickly achieve the goal of carbon-neutral transformation and modernization in the current situation, companies must strive to balance environmentally friendly, low-carbon and high-cost measures," he explained. "With the help of advanced technology and precise implementation, we can develop a specific technical transformation program for each customer's production line to save energy and reduce emissions, so as to achieve the green transformation of the cement and lime industry."

China accounts for more than half of the world's cement production and consumption. Carbon emissions account for 13% of total national emissions, second only to the energy and steel industries. Reducing emissions in the cement industry is critical to achieving carbon neutrality in China.

### **Technology enables green, smart manufacturing**

At its booth at the Expo, thyssenkrupp showcased advanced technologies and solutions covering the demand, supply and infrastructure sides of the climate-neutral value chain. Under the slogan "#grey2green," thyssenkrupp Polysius showcased its total solutions and product lifecycle services in the areas of alternative fuels, fully automated laboratories, energy saving and emission reduction, efficient cooling, low pressure drop, new lime kilns, nitrogen and carbon reduction, and smart manufacturing through 3D models and multimedia.

Chen Shixiang underlined that thyssenkrupp is driving the realization of the "double carbon" target for cement companies mainly through three technological paths.

The first path is to reduce energy consumption, improve quality, increase efficiency and reduce clinker content by using energy-saving and consumption-reducing technical conversion solutions. The second way is through innovative technologies, namely the use of alternative fuels and green energy. For example, hydrogen generation technologies using photovoltaic and wind power are used to calcine clinker with green hydrogen with high calorific value, achieving 100% replacement of coal and 30-50% reduction in carbon emissions. The third pathway is carbon capture and reduction technology, which is the capture of carbon dioxide for reduction. This pathway can achieve a 30-65% reduction in carbon emissions.

The prepol® SC product launched by thyssenkrupp is a very simple and efficient combustion grate consisting of several static and immobile refractory stages. This technology is characterized by high efficiency, reliability and safety. Waste can be used for combustion, saving fuel costs and significantly reducing carbon emissions.

To reduce carbon emissions in cement production, thyssenkrupp offers a solution for producing active materials from intermediate layers of coal mining waste. Chen Shixiang told the reporter that this can largely replace clinker, reduce the use of limestone, reduce carbon dioxide emissions, and maintain or even improve the performance of cement. Since the temperature required to activate the reaction is lower, energy demand can be reduced by up to 40%, reducing energy consumption. Converting waste to energy, reducing land consumption.

In addition, thyssenkrupp's industry-leading SCR technology can effectively convert harmful nitrogen oxides into harmless nitrogen and water with a conversion efficiency of over 95%. Oxygen-enriched combustion, which uses pure oxygen instead of air as a combustion oxidizer, can eliminate nitrogen produced by the chemical reaction between limestone and air during combustion.

As an alternative fuel, hydrogen can reduce the amount of coal combustion. Actively exploring the use of hydrogen and researching key technologies for the production of cement clinker by substituting hydrogen energy for coal combustion is of great importance for reducing carbon emissions in the cement industry. As an energy- and resource-consuming industry, the green and low-carbon development of the building materials industry must be inseparable from the application of hydrogen energy. However, various cement companies and R&D institutions are still in the study phase for hydrogen energy due to the economics and supportive policies for the application of green energy in the domestic cement industry.



(from right to left): Lilian Chang (HR & Administration Manager tkIS China), Andy Han (Head of Maerz Business tkIS China), Danny Chen (CEO tkIS China), Dr. Olaf Assmann (Division Head of Cement Technology tkIS AG), Dr. Rodrigo Gomez (Head of Product Engineering & Services tkIS China), Frank Tang (Head of IT tkIS China)

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**The bottom line:** thyssenkrupp Polysius continues to actively expand its local layout to provide high-quality technical services and total

solutions to improve quality and efficiency for China's cement and lime markets. Chen Shixiang hopes that based on the existing good cooperation with Chinese partners, thyssenkrupp Polysius' comprehensive green technology can be more widely introduced in China, create more value for Chinese enterprises and even more customers around the world, and contribute to the realization of China's dual-carbon goal.

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