

Kraft Curing Systems GmbH, 49699 Lindern, Germany

A Green Way to Cure Concrete

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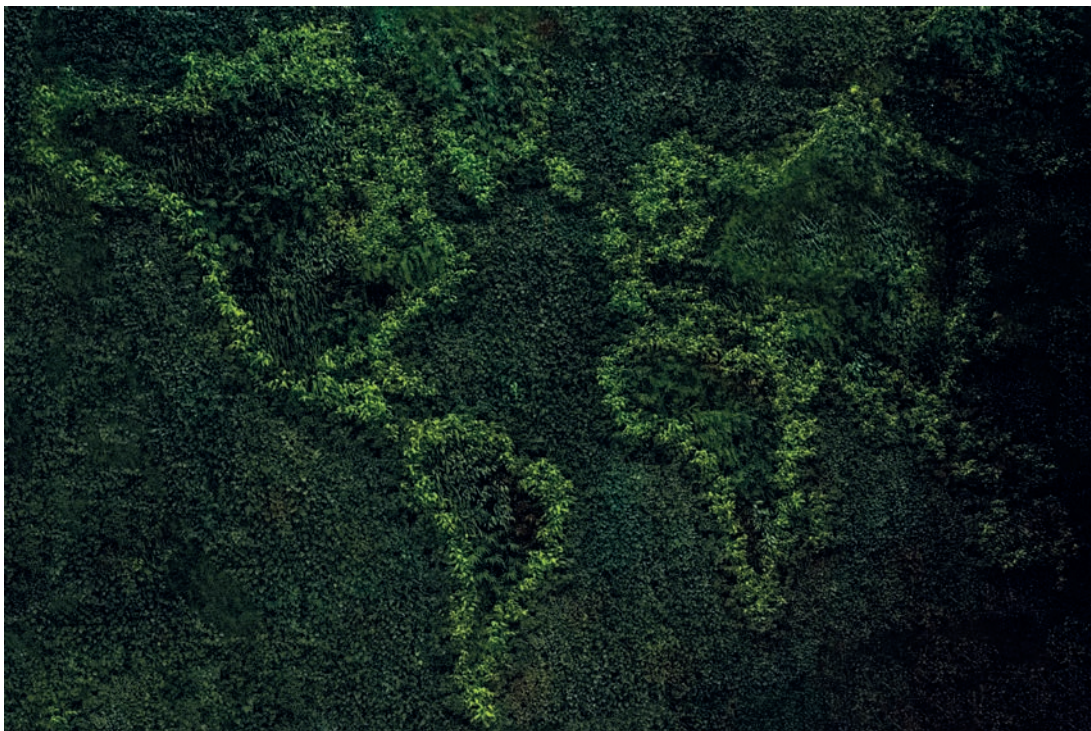
Climate change, sustainability, global warming and CO₂ are on people's minds all over the world, regardless of the industry, and this will not change in the near future. Hardly a day goes by without hearing one of these words in the news. Opinions are divided about the subject. For some, it is a thorn in the side and the issue is mocked in silence; others are passionate about it and turn their own companies around to make them more sustainable. This article will explore how Kraft Curing Systems GmbH can lend support in the process of concrete curing.

For many years now, Michael Kraft und Sascha Kansy, entrepreneurs and managing directors of Kraft Curing Systems GmbH, have had this topic on their radar and have been working on solutions that can help the concrete industry address the issue of sustainability by means of appropriate concrete curing systems. A sizeable part of the whole would be constant modernization of the system technology and components needed for a high-quality curing system. An important step would already have been taken if modern heat exchangers, for example, could achieve an efficiency of 94%, even if operated with fossil fuels. In fact, Kraft has been work-

ing with vapor systems since 1990, which are indeed operated using gas but have only low CO₂ emissions overall, since the CO₂ is absorbed to a great extent directly by the concrete products in the curing phase. So, as with many other things, it is important to think outside the box.

Concrete curing with alternative energy sources

In the past, Kraft Curing has engaged in pre-equipping curing systems for some alternative energy sources. A few years ago, for example, a Quadrix system, which supplies a fully insulated curing chamber including rack unit with hot air and humidity, was set up and commissioned for a concrete producer in Germany. The special feature of the project was that the system runs primarily on geothermal energy and heat exchangers in the air compressors that heat process water which in turn heats the curing chamber with warm air. Since some system components also require electrical energy, photovoltaic units were installed to cover the system's power consumption. The concrete producer was thus able to operate the curing chamber independently of an external energy supply and still does so today.



*Go-green
knows no
borders*



Systems technology possible with a wide range of energy sources

On top of this, there is also the possibility of collecting waste heat generated by e.g. pumps, compressors, etc. via liquid and air heat exchangers and feeding it via a closed circuit into an insulated storage tank. The thermal energy available there can be supplemented by Kraft with additional energy from an external source and serve as the basis for the heat exchanger of a curing installation. The not always constant energy generated by pumps and compressors can thus be supported by Kraft's system.

Proper insulation

The issue of proper insulation is quite often underestimated, regardless of the energy source. In many production facilities, curing chambers have already been retrofitted and enclosed with insulation panels, among other things. This will happen even more often in the future and is also a sensible thing to do. Nevertheless, it often occurs that precisely this aspect of the work is only carried out half-heartedly. Poorly sealed joints in the walls or ceiling of the curing enclosure, caused by poor workmanship, often result in a considerable loss of energy. This means that the energy source, no matter where this energy is drawn from, has to deliver more.

Kraft Curing Systems GmbH was quick to recognize this very early on and places great emphasis, among other things, on assembling and connecting panels properly during installation. The Kraft insulation concept also includes insulating and isolating the concrete floor between the exterior and interior of the curing chamber - thus preventing cold bridges.



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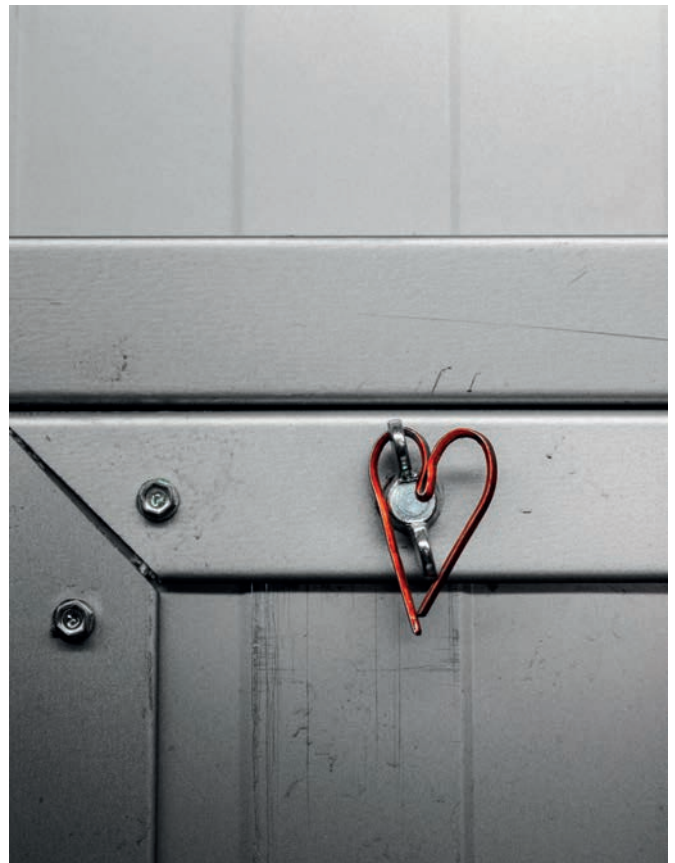
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Future-Proofing

The cement industry is one of the biggest producers of carbon dioxide. CO₂ generation not only harms the environment on a large scale, but now also costs companies money in the form of certificates. Many are now also aware that the cost of these certificates will continue to rise in the coming years. In the future, it will be more interesting for companies to minimize their CO₂ footprint and save costs accordingly. The demand for cement can certainly continue to be optimized, but it is also certain that concrete products will remain irreplaceable.

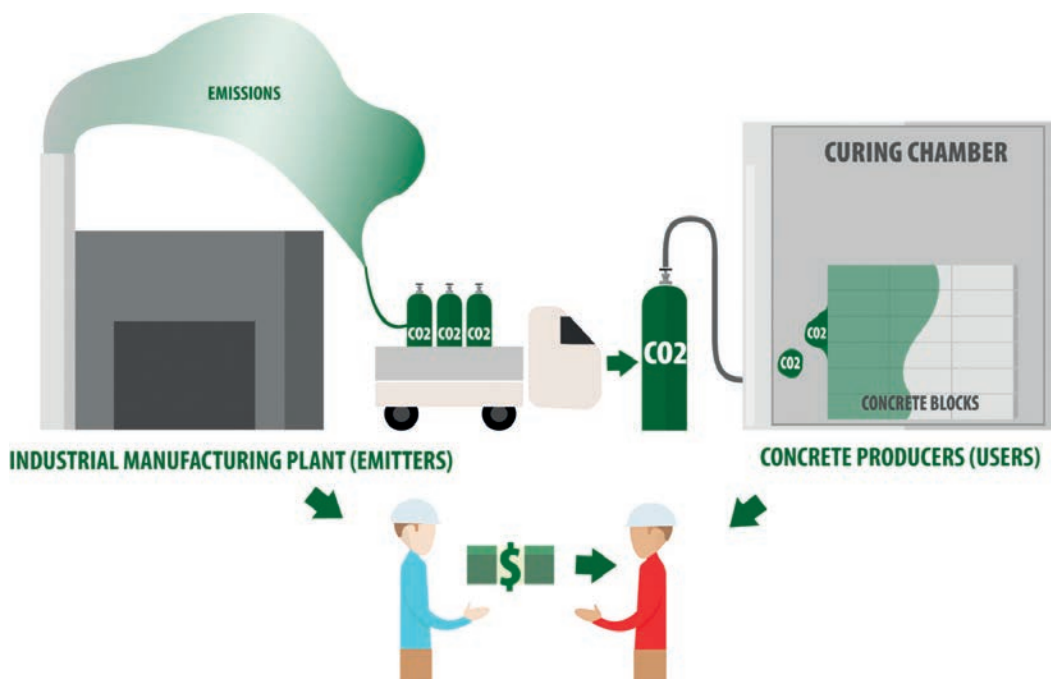
Over the last few years, it has been observed that concrete absorbs CO₂ during the curing stage and continues to do so for many years afterwards. Based on the assumption that there is approx. 400 ppm in the atmosphere at any given time, the considerable potential of this matter can already be seen when comparing this value with measurements taken inside a customer's insulated curing chamber. The cement acts like a sponge and absorbs carbon dioxide. This natural process is known as carbonation weathering. It does not just relieve the atmosphere; the concrete product also benefits from this absorption. Tests on conventional or commercially available cements have shown that denser surfaces, harder edges, less efflorescence and more durable coloring can be achieved with higher proportions of CO₂ in the curing environment.

This may mean adding CO₂ to the curing process in future to improve product results and also reduce one's own CO₂ footprint. It would also seem reasonable in the future that there will be more ways to cleanly store waste CO₂ and make it available to other industries. This could create a market that may surely become very interesting for the concrete industry, because concrete delights in a high proportion of carbon dioxide in the curing atmosphere. Kraft Curing has recognized this and is already running facilities that operate in such a way.



Proper insulation - the heart of the entire system

It is already possible today to do a lot for the environment if this technology is combined with alternative energy sources. Kraft Curing Systems GmbH calls these concepts "Go Green - Future Proofing" as well as "Extreme Green" concrete curing and is already working on some great projects in this direction all over the world.





*There must
be time for
consultation
and planning*

Kraft Curing manufactures high-quality concrete curing systems and supplies customers all over the world from its production base in Lindern near Oldenburg, Germany. Since the company was founded, more than 1,600 curing systems have been produced, delivered and commissioned in 67 countries in a wide variety of designs. Concrete manufacturers are individualists as Kraft Curing well knows. A customer-specific approach is important to every enquiry and only when the company has understood the core of the enquiry is a corresponding offer prepared. In doing so, the customer will have already been advised with regards to alternative possibilities. Kraft is also keenly aware of the depth of the subject matter and is happy to take the time needed for it.

These are, of course, only part of the possibilities that can be implemented in a concrete production facility. However, when it comes to environmental protection, every little step counts. ■



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