> Dr Jochen Kopitzke: "Magnetocalorics offers a great deal of potential for disruptive innovation and could replace compressor refrigeration technology in the intermediate term."

>> In 2017, Philipp Kirsch GmbH moved from Offenburg to the neighboring town of Willstätt. The company's new building includes 4,500 square meters of production space and 2,000 square meters of storage space.

"Projects like these are fun, and it's important to have fun!"

Dr Jochen Kopitzke studied Economics in Tübingen and completed his doctorate in Mannheim, Germany. He has been owner and Managing Director of Philipp Kirsch GmbH since 2010. Now forty years old, he already knew as a student that he wanted to take on a management role in a mid-sized company. Together with Fraunhofer IPM and other partners, Philipp Kirsch GmbH is developing a market-ready magnetocaloric refrigerator.

Philipp Kirsch GmbH located in Willstätt, Baden-Württemberg, Germany, is a globally active manufacturer of professional refrigerators and freezers for the healthcare industry and laboratories and is the market leader in German hospitals. Its broader customer base includes pharmacies, blood banks and chemical and pharmaceutical companies. It was founded in 1865. Together with Fraunhofer IPM, Philipp Kirsch GmbH is developing an innovative refrigeration technology based on magnetocaloric materials for particularly efficient and environmentally friendly cooling. For more information, visit www.kirsch-medical.de

Mr. Kopitzke, what are Philipp Kirsch GmbH's main products?
We manufacture medical refrigerators and freezers which offer advanced precision for storing valuable goods. We are Germany's market leader in this area. You can find our products across Germany in nearly all hospitals, in many laboratories associated with the pharmaceutical industry, and in pharmacies.

Is there a global trend being observed in medical refrigerating technology?
More importance is being placed on healthcare worldwide. Even newly industrialized countries are continuously improving their healthcare systems. We already supply our products in over 100 different countries. The high-quality storage of medication is thus becoming more and more important – and quality assurance is key. Some doctors used to use domestic refrigerators to store vaccines. Quality standards are higher now, due to regulatory requirements. Electronic quality documentation pertaining to storage conditions is also becoming more and more important.

What led to the first project with Fraunhofer IPM?
At the beginning of 2012, we at Kirsch started to concentrate more closely on magnetocalorics. At that time, we were already working on a preliminary study with the University of Freiburg. We then started implementing this technology with a project partner from Alsace. With this partner, we developed the first magnetocaloric refrigerator – working towards a cold side temperature of 5 degrees – and presented it at Medica 2015 in Düsseldorf. However, it soon became clear that the technology of active magnetocaloric refrigeration that we'd used had reached its limits, and so we entered into talks with experts from Fraunhofer IPM and brainstormed the possibility of a joint project. The impetus to make contact came from the State Ministry for Economic Affairs in Baden-Württemberg, since Fraunhofer IPM had made great advances in magnetocalorics based on its patented system concept as a part of a project backed by the state.

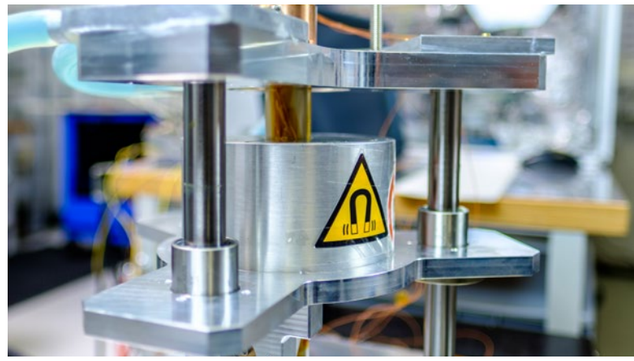
Did you already have a target product in mind at the beginning of your collaboration?
Yes – precisely the product that we are currently working on together; we want to use magnetocalorics to introduce a device to the market that's capable of reaching -86° C. Our customers are already requesting such a product. And it was clear to me that I wouldn't be able to achieve anything with compressor technology – there are already enough manufacturers working in that area. Instead, I wanted to take the next step and create an innovative product based on an extremely reliable and energy-efficient technology, which meant restarting with a completely new approach. Magnetocalorics offers a great deal of potential for disruptive innovation and could replace compressor refrigeration technology in the intermediate term. We have found a clear market that we would like to tap into.

What do you see as crucial for successful collaboration?
I believe it is important to work on projects that one finds interesting, to be open to new things and to have the right partner on board – with a project duration of three years, it's important to have a streamlined, effective team. In terms of project management, it's good to set regular appointments and deadlines and be sure to keep track of them. Last but not least, the chemistry has to be just right. It can make things very difficult if someone is not prepared to share created knowledge with the rest of the project team. The collaboration within our project team is excellent – we're forthright, purposeful and productive. We aren't scattered thousands of kilometers away from each other. We are extremely supportive of one another. Nobody says, "That's not my job; that's your job!" We are united by a common purpose.

What do you appreciate about working together with Fraunhofer IPM?
First and foremost their experience and knowledge in the area of magnetocalorics, of course. Fraunhofer IPM holds an important patent, the employees are highly skilled, and so many technical resources are available for properly investigating relevant topics. Working at the institute is wonderful in terms of the technology, the expertise, and the people, and it's really a level playing field. Projects like these are fun, and it's important to have fun!

What do you develop yourselves and what is accomplished with external partners?
We have over 60 years of experience in calibrating individual components within refrigeration technology products. We do all of that ourselves. Otherwise, we only develop things in house if we have all the necessary skills. Everything else is done in collaboration with partners we can trust.

Thank you very much for talking to us, Mr. Kopitzke!



A cooling cycle can be realized using magnetocaloric materials. Fraunhofer IPM holds an important patent for a particularly fast cooling cycle.

from: Fraunhofer IPM: Measuring, Monitoring, Optimizing. Annual report 2018/2019, Freiburg i.Br. 2019. pp 22-23