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Support via the network

DEVELOPMENT The Lichtenfels Center of Next Generation Digital Technologies (*Forschungs- & Anwendungszentrum für digitale Zukunftstechnologien, FADZ*) may still be under development, however, it is already leaving its mark.

BY TOBIAS KINDERMANN



The FADZ will move into the Kirschbaumühle mill in 2024.
Photo: Tobias Kindermann

District of Lichtenfels – In early March, there was still a lot of uncertainty: With what force would coronavirus hit Germany, how would the numbers of infected people increase – and above all: Would there be dramatic situations in hospitals as in many neighbouring European countries? When Sven Eisele, emergency room nurse at the Bamberg hospital, will receive the first dozen of new face masks these days, this can also be attributed to the new Lichtenfels Center of Next Generation Digital Technologies, which is currently under development.

You certainly would not think of the term future technology when you look at the quite simple construction consisting of a head ring and a Plexiglas panel. And yet, it contains a lot of future, because this story shows how networks can operate successfully. "Sven contacted me in early March to see if I could help him obtain some simple protective equipment," says Frank Herzog, Chairman of FADZ. The two men know each other privately. His friend was worried that the available material could run short if coronavirus spread across Germany as it did in other countries, and infection rates suddenly rose sharply. This concern was with good cause; nobody could say for sure how many people were already infected and what would await hospitals.

"This was the starting point of my activities. The objective was not to reproduce certified products, which is not even possible in such a short time, but to create a complete protective set consisting of a face shield, a protective gown, and a face mask in order to provide basic protection especially for nursing staff in the worst-case scenario, i.e., an interruption of the supply chain."

1. The contacts of the new research center helped with this endeavour: The company Innocept located in Neuses in the district of Kronach has developed a new type of face mask in cooperation with an Upper Franconian business partner. The idea: A reusable face mask that is comfortable to wear and consists of two soft plastic shells between which various filter elements can be inserted.

The advantages: The filter of the face mask is not in direct contact with the face, which makes breathing much easier than with fabric face masks. In addition, the face mask is produced in large quantities, thus allowing low production prices, and is environmentally friendly as it is not necessary to dispose of the complete mask.

"Birgit Partheymüller, Managing Director of Innocept, is a member of the board of FADZ. We talked on the phone for another reason and I told her about my activities by chance. It then turned out that Birgit Partheymüller was already working on the concept for the face mask and that even CAD data was already available.

To speed up the development process, Frank Herzog offered her to have five prototypes produced free of charge on one of the 3D printers at Hofmann – Ihr Möglichmacher in Schney. Hofmann fired up the printer the same day and was able to hand over fully functional prototypes the next day. The product was ready two and a half weeks later.

"The patent application went even faster, I was able to refer to my long-standing partner law firm in Nuremberg. The application was filed with the German Patent and Trademark Office in Munich within one day."

2. Hofmann with its large 3D printer facilities was not only able to help Innocept unbureaucratically but also produced various items of face protection equipment or ventilation valves for the ventilation of intensive care patients and made them available free of charge.

"In this case, 3D printing allows the individual, yet cost-effective production of urgently needed products in the shortest possible time and gives us the opportunity to react quickly especially in such times of crisis," says Frank Herzog. Another advantage: Print files can be used as a uniform basis in many devices, they were made available centrally, for example, via Bayern Innovativ. As a neutral institution of the Free State of Bavaria, Bayern Innovativ pools relevant expert knowledge especially for small and medium-sized companies so they can successfully implement their innovations.

Frank Herzog is involved in Bayern Innovativ as a member of the expert committee for additive manufacturing within the framework of the second digital master plan (Masterplan Digital II) of the Bavarian State Government. The Coburg University of Applied Sciences, co-initiator of FADZ, also produced more than 120 face masks for the Coburg hospital.

3. Finally, Frank Herzog contacted André Baumann, a colleague on the board of the Sponsoring Society for Lichtenfels Center of Next Generation Digital Technologies and the owner of the company Verpa, a manufacturer of films, in Weidhausen in the district of Coburg. "I asked him whether it would be possible to produce a simple protective suit on a large scale. This resulted in a simple protective suit made of film."

On 09 April, Frank Herzog presented the results of all participants to the disaster control management body in the District Office. Meanwhile, several hundred face masks have already been delivered to hospitals. They have also officially gone on sale and will continue to be used after the coronavirus pandemic. If protective clothing should run short, the parties involved could establish a just-in-time supply chain together within a matter of days.

Certainly, the technology was not the focus of this first FADZ operation. The first step was networking, says Frank Herzog. After all, the research center does not even have its own premises yet. In 2024, the former Kirschbaumühle mill in Lichtenfels could become the face of FADZ. There is still a lot of work to be done. "Helping each other, as in this case, has been a nice start before tackling bigger things."

Our social system is working

The appreciation of nursing professions and of people such as truck drivers, cashiers at the supermarket cash registers, and many more people who keep public life running cannot be overestimated and will hopefully continue long after the coronavirus crisis. Our social system is working. How important it is to incorporate a strong middle class in society. How important it is to continue promoting volunteer work where people work

for the community in fire brigades, technical emergency services, the Red Cross, various sports clubs and much more, and are now helping in a wide variety of areas and are bearing responsibility during the crisis.

And very importantly: Extreme political attitudes have not helped even a little bit during the crisis. Cohesion, public spirit, and wise action allowed us to, first of all, prevent the worst, despite the many deaths which are being mourned here in Germany as well.

Maybe this crisis will not change everything, but it may bring about a change in thinking: How we deal with each other, how we use our resources, and the understanding that faster, further, higher may not be the solution for our future.

Soon, there will be a first contact point

Lichtenfels – Before FADZ starts operations in its final building, there will be an intermediate step. At the end of this year or the beginning of next year, premises for the FADZ Lab in Lichtenfels will be rented until the opening of the Kirschbaumühle premises. There will be a kind of repair café and a maker space, but it will also be a venue for events. FADZ is currently trying to get all Lichtenfels schools to cooperate in this center.

Open to the public

This maker space will house 3D printers, laser cutters, 3D scanners, and many other devices. In a further step, once the required infrastructure has been established, FADZ maker space will also be open to the public and will also host university events, especially in the field of additive technologies.

The development of FADZ maker space is also supported by the Coburg University of Applied Sciences and Creapolis located in Coburg. In coordination with the city of

Lichtenfels and the District Office, a sponsorship concept is currently being developed, which will be decided in the near future.

About Frank Herzog

Frank Herzog was born on 30 October 1971 in Bamberg and attended Dientzenhofer Gymnasium secondary school in Bamberg. Between 1989 and 1992, he completed his vocational training as an industrial mechanic with Siemens in the Medical Technology Division in Erlangen. He then completed his technical diploma in Bamberg and studied mechanical engineering at the Coburg University of Applied Sciences with a semester abroad at the University of Huddersfield. From his student research projects, he developed the laser curing technology and was able to file two basic patents for this process. In 2000, he founded Concept Laser GmbH together with his wife. In 2016, the rapidly growing company entered into a partnership with the large corporation General Electric. Frank Herzog remained the Managing Director until 2019.

He is one of the initiators of the Lichtenfels Center of Next Generation Digital Technologies (Forschungs- & Anwendungszentrum für digitale Zukunftstechnologien, FADZ), which is currently under development, and the Chairman of the Sponsoring Society for Lichtenfels Center of Next Generation Digital Technologies.