Interview with Dr. Gunnar Merz

We interviewed Dr. Gunnar Merz, CEO of CFK Valley e.V. in Germany. The CFK Valley e.V. is an established World-wide competence network for carbon fiber reinforced plastics (CFRP, German abbreviation is CFK). More than 100 international companies, research facilities and universities are organized in the non-profit association.

Dr. Gunnar Merz, thank you very much for your time for this interview. At first, could you briefly introduce the CFK Valley? The purpose of establishment of this organization, when it was established what encouraged you to establish it, the role in the network, and so on.

In 2004. seven members established CFK Valley e. V. in Stade. These included Airbus, CTC, Saertex, Hexcel Composites, German Aerospace Centre, Fraunhofer Institute for Manufacturing Technology and Advanced Materials, and the Hanseatic City of Stade. In the same year the CFK Valley Technology Centre Stade, is inaugurated. We have now become an internationally recognized competency network for CFRP. Around 120 national and international companies and research institutes are now part of the network and are promoting like this the fiber composite technology as industrial production technology. Various work groups have already been initiated along the value-addition chain and a technology roadmap is updated on a regular basis.

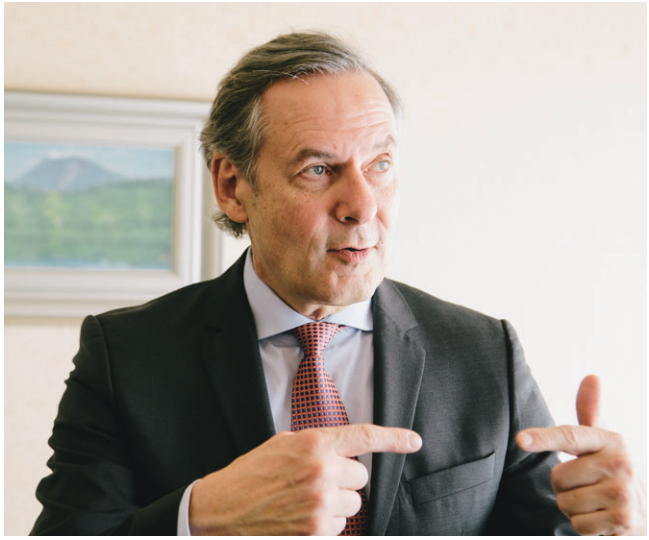
Why CFRP? Could you explain to us about CFRP application and its potential usage for the future after briefly outlining what CFRP is?

CFRP is a so-called composite material. Carbon fibers are embedded in a matrix, which consists of duroplastic epoxy resin or thermoplastic synthetic materials, and is brought into shape. This results in excellent mechanical properties, such as an extremely high tensile strength and stiffness in the compound. Apart from this, further convincing advantages are fatigue behavior, resistance to corrosion, low thermal expansion and a good damping capacity at low density (2/3 of aluminum, 1/5 of steel).

Considering these characteristics, CFRP is best suitable for the manufacture of products, which must be light, but at the same time should show a high stability. CFRP has the same strength as metals and is being used today in more and more innovative application areas, for example, in airplanes. Lighter-weight parts create faster vehicles, which can also create more energy-saving airplanes. Other than the airplanes, the applications expand to automobiles, ships, rotor blades for wind power plants, medical technology, or also in construction, where products made from CFRP are being used in roof construction right up to building complete houses.

Was CFRP your research theme? If not, please let us know why you changed your direction from your original research theme to CFRP.

I was originally working as a chemist at Dow Chemical which is one of the CFK Valley member companies. I was involved as the representative of Dow Chemical, and had been conducting my projects at CFK Valley since 2008, and in 2014 I accepted the full-time CEO position at CFK Valley.



What achievements have you made so far? What are you going to do next? Would you share your future vision with us?

Here are some examples of the successful projects. The first one is in the airplane industry. Following applies to airplanes: the lighter, the better. The largest aircraft part made from CFRP by Airbus is an upper wing shell with a length of 32 m and is installed in Airbus A350. Naturally, this was manufactured in Stade.

We also made achievements in construction area. When Dr. Amer Affan purchased a sailing ship with a CFRP mast, he was absolutely fascinated by the material and its possibilities for the construction sector. In 2010, Dr. Affan visited the CFK Valley booth at the JEC Paris and became a member of the association. Today, he is one of the international experts for innovative design solutions with CFRP.

Recycling and waste prevention are our challenges and achievements as well. For instance, the company Strehl produces new, high-quality orthoses from the carbon-fiber production wastes of Airbus. This example of a cross-sector cooperation shows how synergies provide for more sustainability.

To develop these cross-sector cooperations, we are proceeding with our open innovation more aggressively. Together with its national and international partners, CFK Valley e. V. will become the world's leading and most innovative composites-meta-cluster.

One major challenge for CFRP is automation of the production process. When we establish automated mass production platform, the cost of the CFRP will decrease and more applications can be available. We believe open innovation and global networking can accelerate the research for those technical solutions.

What do you think you need to realize your future vision?

I think we are on the way to our future vision, and to realize it, we need more resources and the right partners. CFK Valley e. V. looks for national and international suitable companies, institutions and networks, which, complementary to the experience and knowledge, infrastructure, technologies and trained specialists of the members of the CFK Valley network, bring in their know-how, in order to develop innovations for market-oriented customer solutions. We've already established our sites in Japan, Korea, China, and planning to open in India in the near future.

Finally, could you tell us what you expect us to do as a vendor of analytical and measuring instruments? How can we help you?

When we proceed with the automation of mass production process, we need more scientific analysis and measurement to improve the process. Industry 4.0 is changing the manufacturing process dramatically, and everything is controlled by data. When I visited ICC, Innovative Composite Center, in Japan, I saw many Shimadzu analytical instruments and measuring equipment working in the lab. Currently they are mainly used for research and development area, but I expect those instruments to play the important role in the future process automation as well.

It was significant to know what you think of us and our collaboration. We will strive to meet your request. Thank you very much.