

“We’re nowhere near the end of the flagpole”

Artificial intelligence in medical science

Digitalization is set to open up entirely novel avenues in medical engineering. That’s the view of Alexander Kunz, a graduate of the University of Stuttgart, who now works as a product manager for Fresenius Medical Care, a medical engineering and healthcare company. His interests include such things as how dialysis machines can be upgraded for the future Industry 4.0.

Medical dressing, injections and implants: the range of medical materials encompasses everything from simple everyday products to highly-complex technical devices. The history of medical engineering – or, more correctly “medical products” – goes back a long way and is intimately entwined with the developmental history of mankind. Much has changed since the first primitive forms of treatment, which involved treating wounds with tree bark or the leaves of medicinal plants, and not only with respect to dressing materials.

Chronically ill patients in particular are able to enjoy significantly longer lives and an existence more worth living thanks to sophisticated technology such as dialysis machines when the kidneys no longer properly function or fail completely. Based in Bad Homburg, Fresenius Medical Care is one of the companies that have made a substantial contribution to the development of dialysis products. Over the past few decades, the company, which specializes in products and services for chronic kidney failure, has advanced the relevant medical and technical progress through intensive research. Yet, as Alexander Kunze knows: “we’re nowhere near the end of the flagpole”. Because the digital transformation is paving the way to a plethora of promising new possibilities in the medical products sector. Kunze is certain that: “artificial intelligence and big data will play a major role in medical engineering going forward”.

Smart machine maintenance

In his role as product manager within the company, he represents the interface between the Development Department and the customers, and is, therefore, involved in the entire product lifecycle from the initial planning phase to active product support following the market launch. His earliest experiences in product development were acquired during his studies at the Furtwangen University of Applied Science and in his role as research associate at the Fraunhofer Institute for Manufacturing Engineering and Automation (IPA). The Master’s in Medical Engineering that he gained at the University of Stuttgart provided him with the necessary tools for his areas of interest, orthopedic technology and cardiology. “On the one hand”, he says, “we did of course have close connections to the research community here, whilst on the other there were close links to practical applications. That opened many doors to the industrial sector to me during my studies”. Today, almost three years after completing his studies, he and three of his colleagues form the “Smart Dialysis Clinic” within the company. Among other things, this still very new business unit focuses on the development of new and existing systems and devices in the wake of digitalization. The 30-year-old has sole responsibility for artificial intelligence. “This involves such things as the development and application of algorithms that analyze data for prognoses”, he says: Primarily, this plays a significant role in the maintenance of the devices”. What increases productivity in other sectors of industry, i.e., the ability to predict and, therefore, avoid machine outages in good time, could be life-saving in this context.

New requirements and business models

However, the primary focus of the “Smart Dialysis Clinic” is the development and implementation of new business models, which is why Kunze keeps a watchful eye on the market to ensure that he recog-



Gazing into the future of medical engineering: product manager and maverick, Alexander Kunze, is pushing the development of artificial intelligence for dialysis machines at Fresenius Medical Care.

Photo: University of Stuttgart / Uwe Nolke

nizes customer demand and requirements in a timely manner, whereby it appears that the hardware itself no longer plays such an essential role. “By now, we’ve already achieved an extremely high quality in this area”, Kunze explains: “if anything, the most important thing now is our promise to guarantee it”. For Fresenius Medical Care as a technology provider, that means a comprehensive restructuring of their portfolio; a transition from a device developer to a service provider. “Doctors should be able to depend 100 per cent on the technology so that they can concentrate fully on treating patients. what we’ll be selling in future will no longer be our own product but the results, just as if the customer were no longer to purchase a drill but rather the finished hole”.

As if that were not enough, the ambitious 30-year-old is also busy launching his own start-up on the side, which, totally in line with the spirit of the age and his own expertise, is also concerned with digitalization in the healthcare system. “Our business idea is based on an Internet platform for brokering and coordinating patient transport services”. Although the project is still in its infancy, he and his business partners have set themselves no less an objective than “revolutionizing the organization of patient transport”. Indeed, the product manager has

a heart-felt desire and drive to ensure the wellbeing of patients: “since my paramedic’s training at the latest, I have been passionate about doing my very best to help patients. We’re well provided for in this country, but there is still room for improvement”.

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