

CorTec GmbH Exploits German Technology Roots to Build New Neurotech Devices

by Jennifer French, senior editor

Emerging from technology originally developed at the University of Freiburg, CorTec GmbH has entered the market of closed-loop implanted technology including novel electrode design and manufacturing. The company is positioned to be a full-service design, testing, and manufacturing partner in the field of implantable neurotechnology systems and components. With its roots out of the Institute for Microsystems Technology (IMTEK), CorTec began with specific grant funding from Go Bio for Life Sciences, which is specifically earmarked for start-up companies in Germany. That was in 2005 with the amount of €2.5 million.

The technology born out of this effort is fueling the next generation of implanted neurotechnology systems. The initial electrode design was as an ECoG electrode used for epileptogenic foci and brain mapping. The neuromonitoring electrode branded as the AirRay was launched as a feasible compromise between surface-based EEG systems and the penetrating Utah array, commonly used in BCI applications. Using common materials for human implants, CorTec has also developed flexible cuff electrodes to be used in bioelectronic medicine applications for such conditions as inflammation and bladder control. “Our electrodes are softer, more flexible, and produce more refined signals,” said CEO, Jörn Rickert.

The company is also committed to the development of the CorTec Brain Interchange, a complete system for closed-loop interaction with the human brain. Consisting of multi-channel electrodes, wireless communication system, and adaptable software, this closed-loop system can record and stimulate simultaneously on 32 channels while having the capability for processing recorded data. The system controls itself autonomously by calculating activities based on recorded data and transmits needs-oriented stimulation impulses within biological reaction times. This capability allows for personalized therapies for conditions like epilepsy and Parkinson’s disease as well as classical

BCI approaches for paralyzing diseases such as ALS.

Earlier this month, CorTec announced a partnership with the Wyss Center for Bio and Neuroengineering in Geneva, Switzerland. Within the terms of the agreement, the CorTec Brain Interchange technology will be used to develop subcutaneous neuromodulation solutions for tinnitus, dyslexia, epilepsy and other brain circuit disorders. “Our partnership with CorTec could result in far reaching benefits for many neurotech device development projects underway today. CorTec’s existing technologies, along with their enthusiastic approach to research and innovation, makes them an ideal partner for the Wyss Center,” said center director, John Donoghue.

With a current staff of about 40 people, the company is led by co-founder, Jörn Rickert, who studied biology in Hamburg and Freiburg. After completing his Ph.D. in 2004, he joined the core multidisciplinary team of clinicians, engineers, and neuroscientists as the project manager of the Brain Machine Interfacing Initiative in Freiburg. From the technology developments and university grant seed funding totalling €5 million, Rickert assembled a six-person startup team consisting of software and hardware developers, manufacturing engineer, quality and regulatory engineer, and a businessperson handling market analysis and public relations.

The company launched in 2011 while renting space at the University of Freiburg and worked with Thomas Stieglitz to build the necessary cleanrooms for production. Stieglitz later joined the scientific advisory board. Another key member of the management team is Martin Schüttler, CTO and second CEO, who moved from a full-time position at the University to join the leadership at CorTec. His expertise in microsystems engineering and international reputation in neuroprostheses is a valuable addition.

As the company has evolved from the start-up phase, so have their rounds of funding. The initial round was €850,000 and earmarked for the company launch.

A few years later, series A funding was closed at €3 million and led by Bernhard Meder of MEDER CommTech with matching funds from KfW bank of Germany. In 2016, CorTec closed series B financing for under €10 million and led by Klaus Mangold, along with other private investors. Mangold later became chairman of the board and brings industry experience as the former CEO of Daimler Services AG. CorTec also has board industry expertise from Hans Dietl, formerly with Ottobock, and Hanns-Peter Knaebel from Röchling SE & Co. KG.

By the summer of 2018, CorTec will be in their new facility in Freiburg to house the headquarters along with the manufacturing and cleanrooms. Positioned as a full-service manufacturer from idea through commercialization, CorTec offers the complete closed-loop system as well as single components such as electrode arrays built with laser micro-machining production and hermetic encapsulation. “With the demand for our cuff electrodes, we changed the company focus as a developer and manufacturer of neurotechnologies,” said Rickert. “Our most significant near term milestone is to get the Brain Interchange into humans.”

With their full quality systems, they are currently completing the biocompatibility tests and have submitted their 510K applications with the U.S. FDA. CorTec is seeking strategic partners in the U.S. and is also considering opening an American location in the near future. CorTec is paving the way for human applications to be the intersection between the human nervous system and artificial intelligence.

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