

CORTEC PRODUCTS & DEVICES

CorTec Brain Interchange



The Brain Interchange System enables interconnection of the nervous system to external information technologies. An interchange of information is realized to modulate the nervous system.

As an investigational device, the fully implantable system is designed for both recording and stimulating on 32 channels. The system can be used in the central and peripheral nervous system to develop new therapies.

1. The CorTec Brain Interchange system receives electric signals from the electrodes connected to the nervous system. The system then amplifies, digitizes and transmits these signals to a computing unit via the External Unit.
2. Software on a computer collects the signals, stores and processes them and takes decisions on implant operation.
3. The computing unit can command the implant to execute stimulation pulses which are delivered to the nervous system via implanted electrodes.

Brain Interchange ONE is the first implantable version of our Brain Interchange Technology that is available for pre-clinical and clinical research. This first version can be used to develop novel therapies for neurological diseases.

CorTec Brain Interchange ONE joins the scope of our competences interconnecting the neural system to artificial intelligence. The fully implantable system for recording and stimulation both on 32 channels enables open- and closed-loop interaction with the nervous system. As an implantable investigational device, Brain Interchange ONE is designed for both recording and stimulation 32 channels. It is intended to be used for long-term measurement of neuronal activity and electrical stimulation of neuronal tissue in the brain.

CorTec Brain Interchange Evaluation Kit

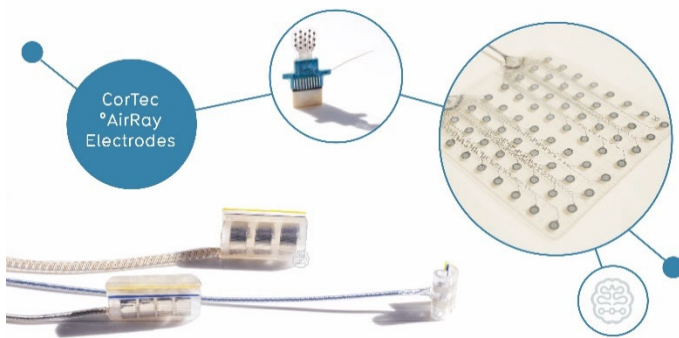


The Evaluation Kit is a bench-top-version of the Brain Interchange System. It is electrically identical to the implant, but much easier to handle. The Evaluation Kit is the ideal entrance to the clinical use of the Brain Interchange.

1. Evaluation Kit used on the laboratory bench
 - Learn programming of the Brain Interchange & write your own Brain Interchange therapy code.

- Check Brain Interchange properties, like recording quality, noise level, wireless link robustness, latencies, stimulation output, and others.
 - Easy access to Brain Interchange using existing lab equipment like oscilloscopes and signal sources.
2. Evaluation Kit used in clinical setting
 - Electrode implanted with externalized leads.
 - Electrode leads connected to Evaluation Kit.
 - Check: Does your clinical hypothesis work in sub-chronic settings?
 - Is your application software usable by patients?
 3. Brain Interchange is fully implanted
 - Brain Interchange is implanted with electrodes
 - Fine-tuning of operation easily possible (algorithms run outside the implant)

AirRay Electrode Technology



CorTec's °AirRay electrodes are made from very soft silicone using a high-precision laser manufacturing process. They offer an unprecedented combination of flexibility, softness, stretchability, thinness and density of contacts.

The °AirRay Technology allows electrode customization to fit your specific application:

- Number of contacts & contact density
- Grid, Strip, Paddle or Percutaneous electrodes
- Mechanical properties
- Contact materials

Our Cuff Electrodes offer a wide spectrum of closing mechanisms and sizes to design specific electrodes for your application.

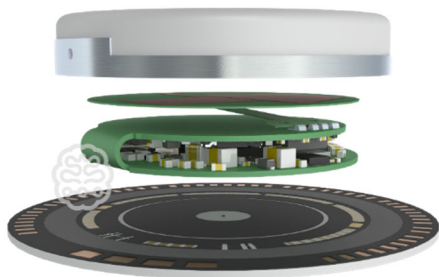
Sling or Tunnel Cuff Electrodes are ideal for small nerves in animal research. The larger designs such as the Spiral and Helix Cuff electrodes are ideal for chronic applications in pre-clinical and clinical settings for human application.

Cuff electrodes are electrical interfaces to the peripheral nervous system. CorTec offers design families for individual applications, which strongly depend on the implantation site (e.g. nerve size) and character of the interface:

- Neural signal recording
- Electrical stimulation of nerves
- Blocking of propagation of neural signals

The cuffs are built from soft silicone to minimize the risk of mechanical nerve irritation. CorTec's micro-machining technology permits the electrical contacts to be produced as very flexible micro meanders. At the same time they prevent the effect of plastic deformation of the cuffs during handling. Of course, we also offer custom-tailored designs to meet your specific requirements, e.g. high-channel versions.

Active Implantable Technologies



CorTec is offering a wide spectrum of services accompanying you all the way through the development of innovative technologies leading to an approved medical device in the end. Our CorTec Encapsulation Technologies enable us to develop customized solutions for your specific requirements. We offer hermetically sealed encapsulations as well as non-hermetic solutions, like overmolding technologies.

Thanks to our development process and modern production technologies our team of highly skilled and experienced engineers can rapidly implement your design ideas and provide you with silicone molding prototypes faster. Designed according to your requirements we offer hermetic and non-hermetic encapsulations for the protection of the implant electronics.

Our services include all important steps from providing solutions how to realize your idea of a product over development and testing up to manufacturing the approved medical device. With our application-related, technological, and regulatory know-how we support every step on the way to your implant.

°AirRay Cortical Electrodes



°AirRay Cortical Electrode is CorTec's ECoG electrode for invasive neuromonitoring. It is designed for the recording and stimulation of brain activity from the cortical surface. Monitoring of electrical brain signals supports e.g. the localization of epileptogenic foci or brain mapping. The electrode may be used for a maximum of up to 29 days.

Due to CorTec's special laser manufacturing process, °AirRay Cortical Electrode is very soft, thin, and flexible and adjust well to the brain's curvature. Additionally, °AirRay Cortical Electrode requires only a small number of electrode cables. A number of 64 electrode contacts, for instance, can be connected via only two cables.

Health and well-being of the patient are of the utmost importance to us. Therefore, we greatly emphasize safe electrode design. °AirRay Cortical Electrode has an even surface; individual electrode

contacts are almost impalpable and safely interlock with the material to prevent their separation from the silicone.

°AirRay Cortical Electrode has received market clearance from the Food and Drug Administration (FDA) in the USA for invasive neuromonitoring in the central nervous system. The product portfolio includes all possible contact arrangements from 1×4 to 8×8 electrode contacts.

Services



CorTec stands for cutting-edge technology for the next generation of active implants. We provide products and services to enable the communication with the brain or other parts of the nervous system.

With our strong expertise in engineering and electrophysiology we support every step on the way to your implant – from your idea to the

manufacturing of an approved medical device.

Our service portfolio includes the following steps:

- Consulting & Feasibility Studies
- Development & Prototyping
- Validation & Design Transfer
- Technical Documentation
- Series Production
- Reliability