

Germany – “ Land of Ideas 2017”

Würth Elektronik honoured for INTAKT

The BMBF INTAKT (interactive microimplants) innovation cluster, beat out around 1,000 other entries to be crowned one of the 100 innovative prize winners by a high calibre panel of judges at the “Extraordinary places in the Land of Ideas 2017” competition.

The goal of INTAKT, which is coordinated by the Fraunhofer Institute for Biomedical Technology (IBMT), is to develop the next generation of active integrated implants. On the basis of medical data that is collected in real time in combination with the patient’s management, the nerves and muscle structures should be stimulated. The developmental focus of these innovative adaptive systems lies in a completely redesigned interaction between humans and technology; specifically between the patients and their implants as well as the attending physician.

Würth Elektronik is one of the leading circuit board manufacturers in Europe and as a member of the cluster they have taken on responsibility for the development of the electronics for the implant. As part of their responsibilities, they were able to come up with a thin and mouldable circuit carrier. The goal was to push the limits of miniaturisation while also increasing the device’s functionality. They achieved this by integrating sensors, ASICs and energy components into the PCB. They used proven integration technologies in order to move as many components as possible to the inner layers of the circuit board. For one, this allowed for space to be saved, but moreover, it allowed the implants to be discreetly placed in the body while also retaining reliable effectiveness.

Würth Elektronik is researching new biocompatible materials, the properties that make such materials biocompatible, as well how to process the materials for circuit board production. Moreover, we tested new approaches in order to successfully transfer energy using etched planar coils or embedded inductivity.

Possible applications of INTAKT

Because they are answering complex medical questions, these intelligent, integrated implants are becoming more and more significant. The systems that are currently available to users are often not transparent enough for users to operate on their own. In the future, interactive microimplants will be actively integrated into a network thereby achieving comprehensive functionality. In addition to the fact that these implants are good for life, the implant offers patients the opportunity to directly influence their therapy according to their current needs. This results in a tangible improvement in patient care as well as a clear increase in quality of life.

This project should result in technology that can be used as a foundation for a wide variety of medical applications. These applications include suppressing tinnitus, improving hand grip as well as treating gastrointestinal motility disorders.