MAPPING THE BRAIN

Dieter Grossegger, director of Dr Grossegger & Drbal GmbH (B.E.S.T. medical systems), on the innovative technologies they have developed for real-time evaluation of neurological states

The company Dr. Grossegger & Drbal GmbH (B.E.S.T. medical systems) was founded in 1980 by Dieter Grossegger, PhD and his former partner Vladimir Drbal in Vienna, Austria. The company, B.E.S.T. medical systems, was one of the first pioneers to offer a PC-based EEG system in the mid to late 1980s worldwide.

Brain mapping

The first marketed product was a brain mapping system (Brain Electrical Signal Topography – B.E.S.T.) presenting FFT (fast Fourier transform – frequency analysis) analysed EEG data in a topographic form. These early projects were partly funded by the Austrian Research Promotion Agency (FFG, former FFF).

Time synchronised video (EEG)

In the mid to late 1990s we introduced our first alpha-trace branded digital EEG systems and a line of very successful products followed. One development needs a special mention – the time synchronised video EEG recording. Especially in epilepsy diagnostics, it is very important to have the EEG with high temporal resolution – together with the video of the patient's behaviour – available during the recording and later for review. We developed methods to record analogue, later digitised analogue and today fully digital video-data, in such a way that a patient's action and his/her EEG can be viewed side by side in high resolution and perfect ease of use. These technologies have now also found their way into routine EEG recording, adding an extra value to EEG-based diagnostics.

Evoked and event related potentials

To broaden our coverage of the electro diagnostic tool market required for neurology and neurophysiology, we developed methods to record and evaluate stimulus-generated responses from the brain. We support modalities for acoustic, visual, and somatosensory (electrical) stimulation and averaging of brain response for routine EP-testing and cognitive research (event related potentials).

Nerve conduction studies (NCS)

Based on the initial database-centred concept for EEG/EP recording, we broadened our alpha-trace range of products in the 2000s to cover the area of nerve conduction studies and neurography. The design concepts always assured ease of use, flexibility to adjust to special user requirements, a common data-base and a consistent user interface.

Electromyography (EMG)

Electrodiagnostic methods are available to study muscles and their state of health. This technique uses surface, as well as needle electrodes, to investigate human muscles in detail. Again, the alpha-trace benefit of common database and the unique user interface (graphic working plan) assures that each module of hard- and software fits well into the overall concept of the product line.

Sleep studies (polygraphy)

In the 1990s we started in this field with special polygraphic workstations to record and automatically analyse human sleep. Especially for babies and small children, new methods for sleep recording and analysis have been developed. Today our product line includes sleep diagnostic systems as hard- and software modules fitting into the overall alpha-trace concept. With sleep systems, videometry (time synchronised video recording) is standard and infrared illumination (IR) is used to record videos in complete darkness during the night.

Ambulatory and 24-hour recording

As notebooks appeared on the market, we developed systems which packaged a complete EEG machine into a small carry case for transportable applications such as EEG recordings for suspected brain death. Another developmental stage miniaturised the EEG unit such that it can be worn by the patient. Today we offer small 24-hour, 24-channel recording systems for EEG and sleep recordings at work or at home.

Research

B.E.S.T. medical systems have always invested a lot of money into research and we are pouring our EEG knowhow into cutting edge projects in society relevant fields such as learning, ageing, dementia, and improving our minds. If you see alpha-trace products, it's about EEG and beyond.

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