

Business Session I: A Microelectronic Telemetrical Measurement System for Intracranial Pressure and Temperature

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Abstract

Microsystem technologies (MST) have become the basis of a new industry. The advantages of MST compared to other technologies provide opportunities for application in implantable biomedical devices. This presentation shows how a fully implantable stand-by device for measuring intracorporal pressure and temperature under normal conditions can be implemented, consisting of a sensor element combined with a transcutaneous telemetric interface without the use of energy storing components like batteries. The measurement of intracranial pressure (ICP) is very uncomfortable for the patient today. For more comfort and mobility, a portable measurement unit for parameter calculations is proposed. It consists of an implant in the head with a pressure sensor, a second one outside the head and a portable data recorder including a display. The aim of the subject is to calculate the compliance and resorption and to measure ICP under daily conditions.

One further point of interest is automatic event recognition in order to capture special signal components in an emergency situation. Therefore, signal processing and waveform analysis are exigent, first to observe the measured signal in realtime on a portable unit, and second to process the data offline on a stationary unit.

Biography



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Bernd Flick was born in Germany in November 1965. He received the Dipl.- Ing. Telecommunication (FH) with high honors from Fachhochschule Deutsche Bundespost Telekom, Berlin, in 1990. He received the Dipl.-Ing. degree in electrical engineering in 1994 and the Dr.-Ing. degree in electronics in 1999, both from the Technical University of Berlin.

He spent six years as a full time electronics research and design engineer for medical microelectronics implantations at the Sican F&E GmbH in Hannover while in Technical University and after. After changing to the corporate research center of Robert Bosch GmbH, he developed another five years multimedia systems for medical and automotive applications.