

Regional University Knowledge Centre (GND RKC) project**GENOMNANOTECH DEBRET****D. Beke, I. Szabó**

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1. Implementation of a method based on modern noise analysis for biomedical measurements and data processing.

We have developed motion analysis and data collection device for long time monitoring for the collection of data suitable for the application of modern noise analysis techniques. This goal was performed in two fields: static-balance examination with force measurement based platforms, and dynamic motion monitoring using an accelerometer based device. In the previous period we have developed a single axis balance monitoring device and a radio connection based accelerometer system. We implemented general noise-processing algorithms for the determination of fractal exponents. We have performed successful tests in this area based on the data provided by the **Labtech Ltd.**

2. Development of the production technology and quality control of electronic panels produced for biomedical applications.

This R&D subprogram contains four elements. *i) Optimization of panel parameters during wave soldering.* We performed model measurements on the conveyor line, developed a new method for the measurements of the temperature distribution and recognition of temperature gradient perpendicular to the direction of the direction of motion. Based on these results it became possible to regulate the conveyor line continuously. An important new feature is that the time for adjustment became much shorter. *ii) Construction of a line-code reading system, development of the visual control system of products.* We integrated previously constructed hardware

elements (adjustable moving table, line code reader) and investigated its introduction on panels of different current circuits. We tested the programs for adjustments and developed new software. *iii) Investigation of soldering on the card No. 194918B-01L by optical- and electron-microscopy* Our task was to solve the problem whether soldering material can fully climb between the legs and the copper case and how well bonds to the copper. We found that the soldering material, climbing up from the bottom, not always fills up fully the space between the legs and the copper case, but at the same time the bonding, where it formed, is good. *iv) We installed a new analytical Scanning Electron Microscope at the Department of Solid State Physics, that can be a very effective tool for the investigation of the distribution of different elements in the soldering points (e.g. in the quality control of the soldering).*

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