MiniMotor –
a new automated contact technology

The institute of electronics (IfE) is a leading competence centre for electrical contact technologies. For the successful manufacturer Maxon Motor, the IfE has carried out a comprehensive study on contact technology for mini-motors.

Motivation

Maxon Motor AG is the leading manufacturer in high precision drives and systems. The company is constantly introducing more assembling automation into motor production to reduce production cost and improve yield as well quality.
In this project, the institute of electronics (IfE) has carried out a comprehensive study of contacting technologies for coil wires in a fully automated brushless DC mini-motor production environment.

Description

The goal of this activity was to develop a reliable, industry-proofed, automated contacting technology for realizing electrical (ohm resistive) contacts from coil wires to Flexprint pads for EC6-type (or smaller) motors. This technology had to fulfill a number of specifications in terms of processing time, cost, compatibility with materials and geometries of the motors, yield and reliability. Three different classes of technologies were evaluated experimentally:

- Soldering: iron tip, hot-air, micro-flame, laser and mini-wave
- Bonding: thermo-compression
- Conductive adhesive: tests with optimized conductive adhesives in terms of reliability

For all these technologies, contacts to different equipment suppliers have been established. Some of the tests were made in collaboration with the equipment suppliers.

Results

Two of the above mentioned techniques turned out to be well suited for this application and were extensively studied in terms of process parameters, process yield and contact reliability. As a result of this project, a recommendation was given to Maxon, which technology fits the specified requirements best and which contacting equipment configuration should be employed. Maxon is aiming at building a manufacturing line according to the recommendations provided by the Institute of Electronics.
The know-how acquired throughout this project has contributed to position the Institute of Electronics as one of the leading competence centres for electrical contacting technologies in the micro-scale in Switzerland.

Project
Maxon Motor assembly

Project Partners
Maxon Motor AG, CH-Sachseln
www.maxon.ch

Project Duration
12 months

Project Budget
CHF 60‘000

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