

eDisc – Getting 21st century technology into lab on disc applications

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Lab on a Disc (LoaD) analysis has seen an incredible increase in possible applications and an improvement in quality over the last decade. It allows for testing of a vast variety of features. It has become so successful and reliable that global players have developed products based on LoaD technology for the market. Nearly all these devices, both lab equipment as well as commercial products have in common, that they are based on a purely passive rotating disc and stationary sensor and actuator components. This approach has three major disadvantages: 1) It requires highly sensitive and powerful sensors and actuators, placed at a distance from the disk and while the disc is spinning these components only have access to the region of interest for short periods. 2) There is no real continuous online monitoring and hence also not a real feedback control of the disc and predefined recipes need to be performed. and 3) Primarily analog electromagnetic signals can be transferred on and off the disc. This is comparable to central heating in houses, where a central oven is switched on and off, and the room temperature is set by setting valves to experience-based positions. House automation based on embedded systems and smart actuators is currently changing this situation at a drastic rate, converting the house from a passive shelter into a highly interactive environment. Based on similar principles, LoaD can profit from the multitude of MEMS sensors and actuators as well as on the computational power available in embedded systems today.

Biography

Dario Mager has studied Microsystem Technology (MEMS) at the University of Freiburg. He also obtained his PhD there in the field functional inkjet printing for the direct manufacturing of microstructures. Currently, he is a group leader at the Karlsruhe Institute of Technology in the field of low-cost MEMS where he is focusing on the modification of existing technology to suit new applications, mainly using technology adapted system designs for functional inkjet printing and embedded systems.

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