NETWORK of EXCELLENCE
DESIGN FOR MICRO & NANO MANUFACTURE PATENT (DfMM)

DfMM NoE PATENT

www.patent-dfmm.org

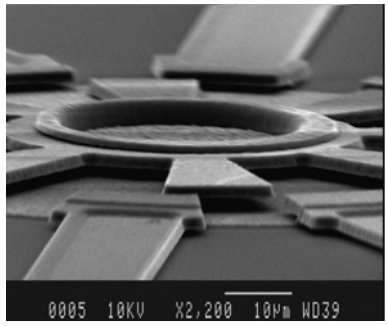
Methodology and high level design of failure modes of MEMS

Objectives

• Set up of methodology of failure modes based on Failure Mode and Effect Analysis (FMEA).
• Design of some causes of failures using high level design language VHDL-AMS.
• Modelling of the influence of failures on the operation of some MEMS using VHDL-AMS.
• Theoretical and experimental validation of methodology for an electrostatic micromotor

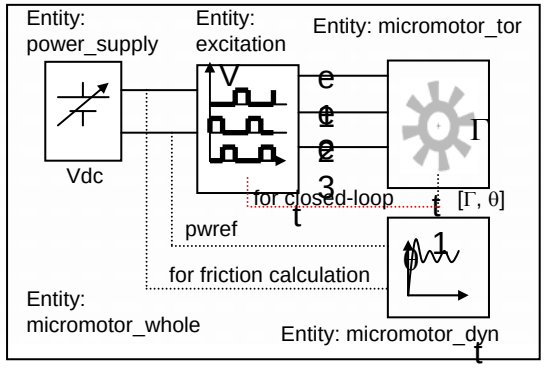
Partners involved and roles

• LAAS, France: manufacture and test of micromotors
• HWU, ISLI, UK: FMEA, high level design of MEMS
• IMEC, Belgium: experimental validation
• Lancaster, UK: high level design



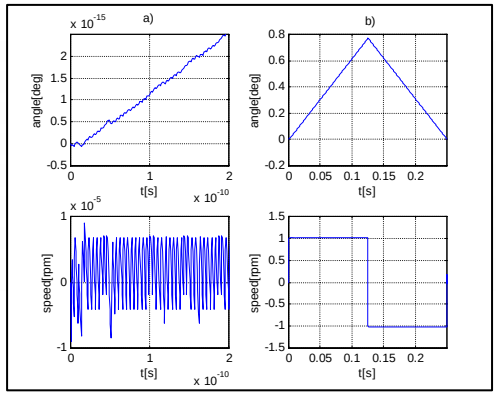
Summary of results

• Fully developed FMEA methodology for MEMS
• Build up of database on MEMS failure modes
• Closed form expression of micromotor static and dynamic behaviours
• High level design (VHDL-AMS) model of motor
• Simulation of environmental factors such as temperature and pressure on MEMS operation



Offer to industry

• FMEA methodology for MEMS
• High level design of MEMS using VHDL-AMS



Contact

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Project status

Phase 2 (experimental validation),
Extension to thermal actuator,
(started in March 2005)