

## Quality Factor Measurement and Reliability for MEMS Resonators

Integrated Quality Factor Measurement may be of interest for many different kinds of applications: process control monitoring, vacuum packaging monitoring, Built-In Self test of MEMS, Auto-calibration and on-line testing ...

This project aims at studying the possible integrated architectures to perform electrical quality factor measurement, and then selecting the most interesting solutions in terms of accuracy, speed and cost.

### Partners involved

University Paris 11 (IEF)  
 University of Lancaster  
 QinetiQ

### Summary of results

Review of possible electrical measurement principles

High level modelling of 4 integrated architectures

Sensitivity Study to select the 2 most interesting solutions

Publication : DTIP 2005

### Offer to industry

High-level modelling of MEMS-based architectures

MEMS devices Quality Factor Measurement

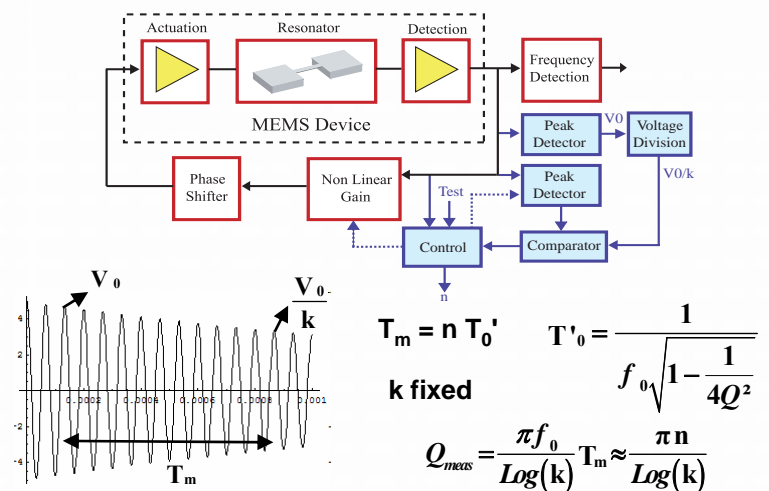
Consultancy on DfT of MEMS-based architectures

### Contact

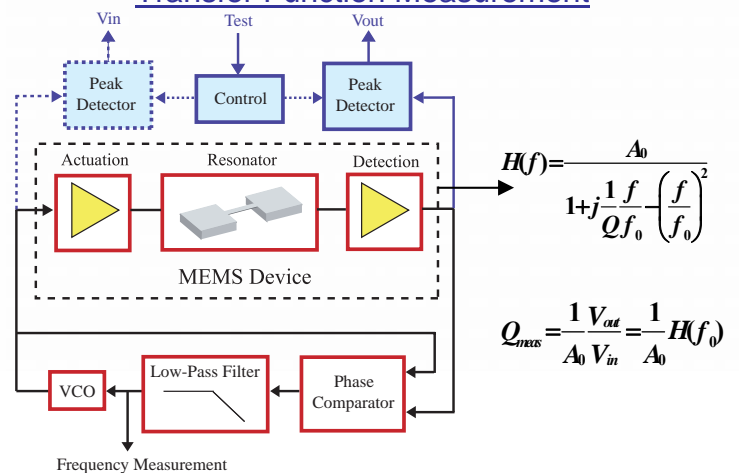
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**Project status : live – phase 2**

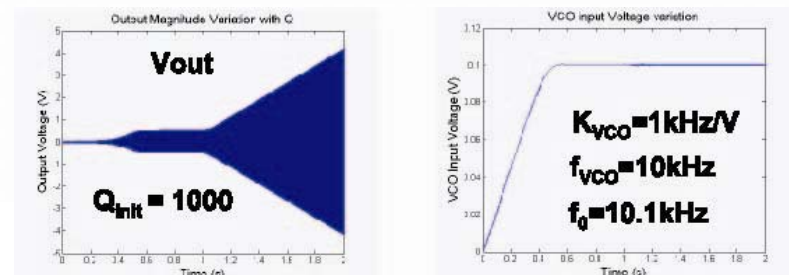
### Step Response Analysis



### Transfer Function Measurement



### Simulation Results for TFM Architecture



Output Magnitude variation for a linearly increasing Q

Corresponding VCO input