



## Method for improving MEMS components stability and reducing their temperature coefficient

### Problem

The excellent properties of micromechanical sensors (MEMS) are demonstrated in many commercial applications, e.g. as pressure sensors, accelerometers, gyroscopes, etc. The enlarged applicability of the sensors is currently limited by their instability. Major sources for the instability are the temperature coefficient of Young's modulus (modulus of elasticity) and electrostatic charging of the component.

### Invention

The new invention introduces a simple and inexpensive way to add a DC voltage over a MEMS moving plate capacitor, which either compensates the so-called built-in voltage, which causes charging of the component, or multiplies the temperature coefficient of the built-in voltage so that the sum of the modified built-in voltage temperature coefficient and the Young's modulus temperature coefficient cancel each other in the first order. The built-in voltage is a DC voltage over the component in the absence of an external voltage source and it can be measured from the component capacitance voltage curve. (Patent pending)

### Solution

The improved stability of MEMS sensors enables their use in precision applications like inertial navigation and position detection. VTT is looking for an industrial partner to commercialize the invention.



### Why partner with VTT?

#### 10 reasons for technology partnering with VTT

1. Key factor in Finland's success story with a track record to prove it
2. Licensing and co-venturing opportunities
3. Portfolio of more than 1,000 patents and inventions
4. New business and product concepts based on strong IP and world class research
5. Combined experience of more than 2,000 motivated researchers in eight focused areas of technology
6. Active member in hundreds of scientific & business communities
7. Excellent track record as coordinator and partner in EU projects
8. Collaboration with TOP 50 R&D companies in Finland
9. Global R&D partnership with 50 Fortune 500 companies
10. Market driven multi-disciplinary solutions

### Additional information

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