

Show-Case “LTCC-Si-Pressure Sensor”

High stability pressure sensor for process industry 4.0



Continuous monitoring of technical processes requires innovative solutions that meet the need for higher quality of products and energy saving technologies. Industry 4.0 sensors like e.g. pressure sensors must be situated closer to the process so that they interface better with the environment that they are measuring. Such applications require long term and stable high performance parameters that reliably operate in harsh environments. Further-more with the developed sensors an extension of range of pressure can be realised by a piezoresistive silicon strain gauge, special metallisation and passivation.

The main advantages are:

- Piezoresistive technology platform with a high TRL, which has been compared by other products already commercially available (silicon membrane pressure sensor e.g.)
- This platform is comprehensively described and adheres to the trend of More-than-Moore technology
- Competitive building blocks like metallisation and passivation enable diverse and new market applications
- Beside LTCC and steel membranes other substrate materials with a signal modulation concerning bending are now possible for sensor integration
- Further miniaturisation, cost reduction, technological compatibility at the interfaces of the building blocks including the transfer to industrial processes for mass production is achievable

The project partners of SMARTER SI can provide necessary technologies and building blocks to realise this innovative sensor system with high-end, but low-risk TRL: Sensor system based on silicon integrated piezoresistive transducer (platform by **CIS**), metallisation and passivation (building blocks by **Tyndall**).

The German SMEs **ADZ GmbH** and **Prignitz MST GmbH** contribute signal processing, hermetic casing, calibration and tools for production. These companies are specialists in pressure sensor system know how, development and production of electronic hardware and software, calibration, adjustment and commercialisation of final products.