



Assembly and application rules for 1000 °C sensor elements

Mechanical design rules

- differential thermal expansion of all materials used for assembly should be considered from manufacturing and operating point of view to avoid any thermal-mismatch-induced mechanical stress in the sensor element
- vibration stress is to keep as low as possible
- it is necessary to consider abrasive effects of potting materials (ceramic powders)

Material issues

- all materials must be capable to operate over 1000 °C
- all materials used for assembly must be completely moisture and contaminant free
- all materials used for assembly should be pre-annealed in oxidizing atmosphere at higher temperature than the maximum working temperature
- the build-up of reducing atmosphere inside of the sensor housing should be avoided
- incompatible materials (Na, K, Ag, Au, soda lime glass, ...) or materials (vapours) which can cause an acidic reaction inside the assembly should be avoided to protect sensor element against poisoning at elevated temperatures
- an unprotected or partially protected sensor element shall be used for dry environment only

Electrical circuit topics

- To avoid shunt effects at elevated temperatures due to NTC material conductivity, the electrical resistance of all used materials must be as high as possible especially at high operating temperatures
- it is strongly recommended to keep the electrical power applied to the element as low as possible
- if possible, it is recommended to use AC measuring method to avoid electrical polarisation effects



INNOVATIVE SENSOR TECHNOLOGY

