



INNOVATIVE SENSOR TECHNOLOGY



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# Comparison of Temperature Sensors IST with various Competitors

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Comparison of  
Temperature Sensors  
IST with Competitors

## Overview Load Tests: (extreme environmental conditions)

- Storage at high temperatures (e.g. 600°C)
- Thermal shock cycling  
(e.g. between room temperature and 600°C)
- Cycling in climate chamber (cycling between -20°C to +60°C)

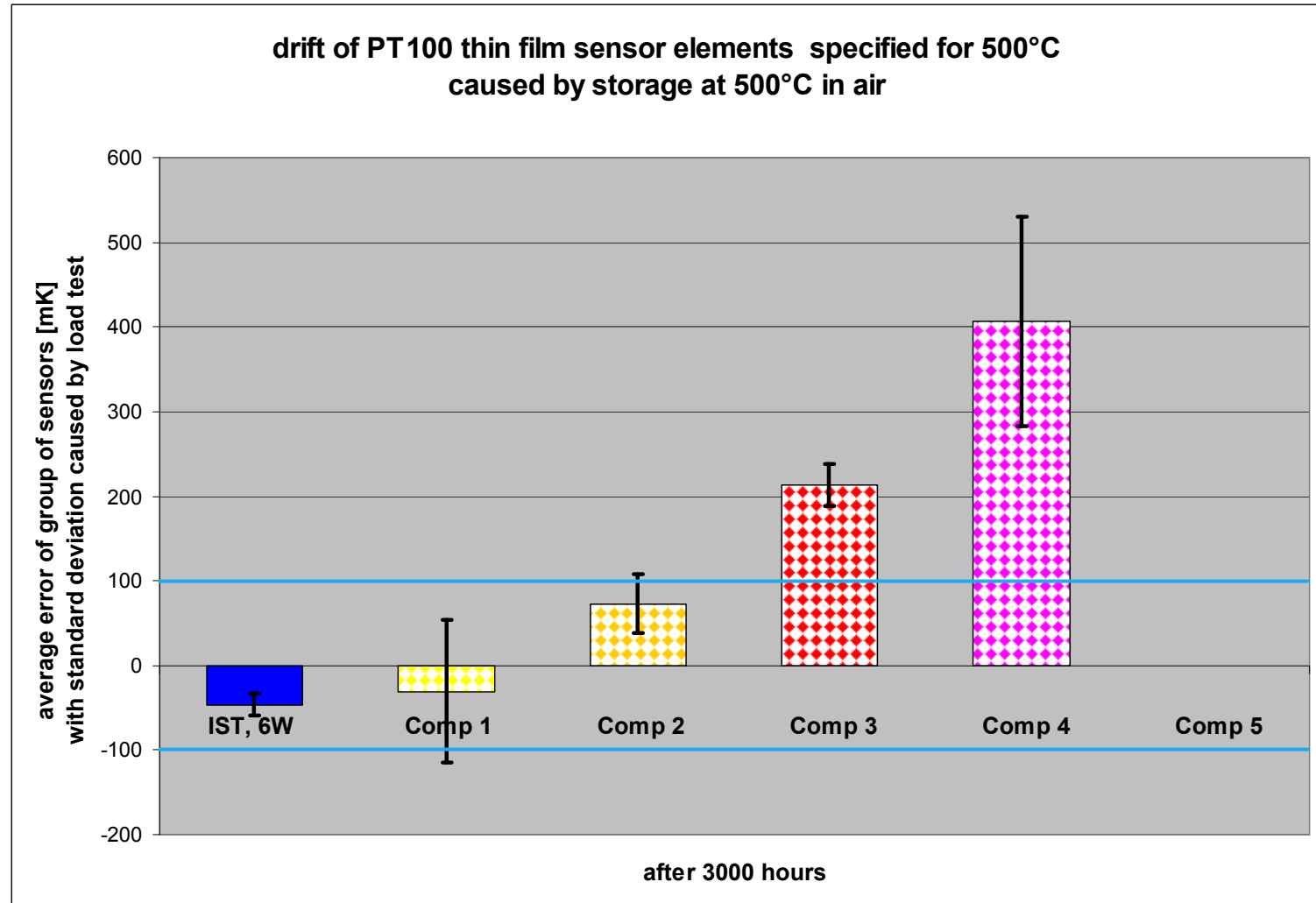
Procedure of load-tests: comparable types of temperature sensors (e.g. groups of 5 sensor elements) are placed together at the same time in load tests mentioned above. After defined time intervals they are again put in our precise stabilized baths at 25°C and 85°C to measure the drift (error) of the resistance. No drift means perfect stability of the sensor.



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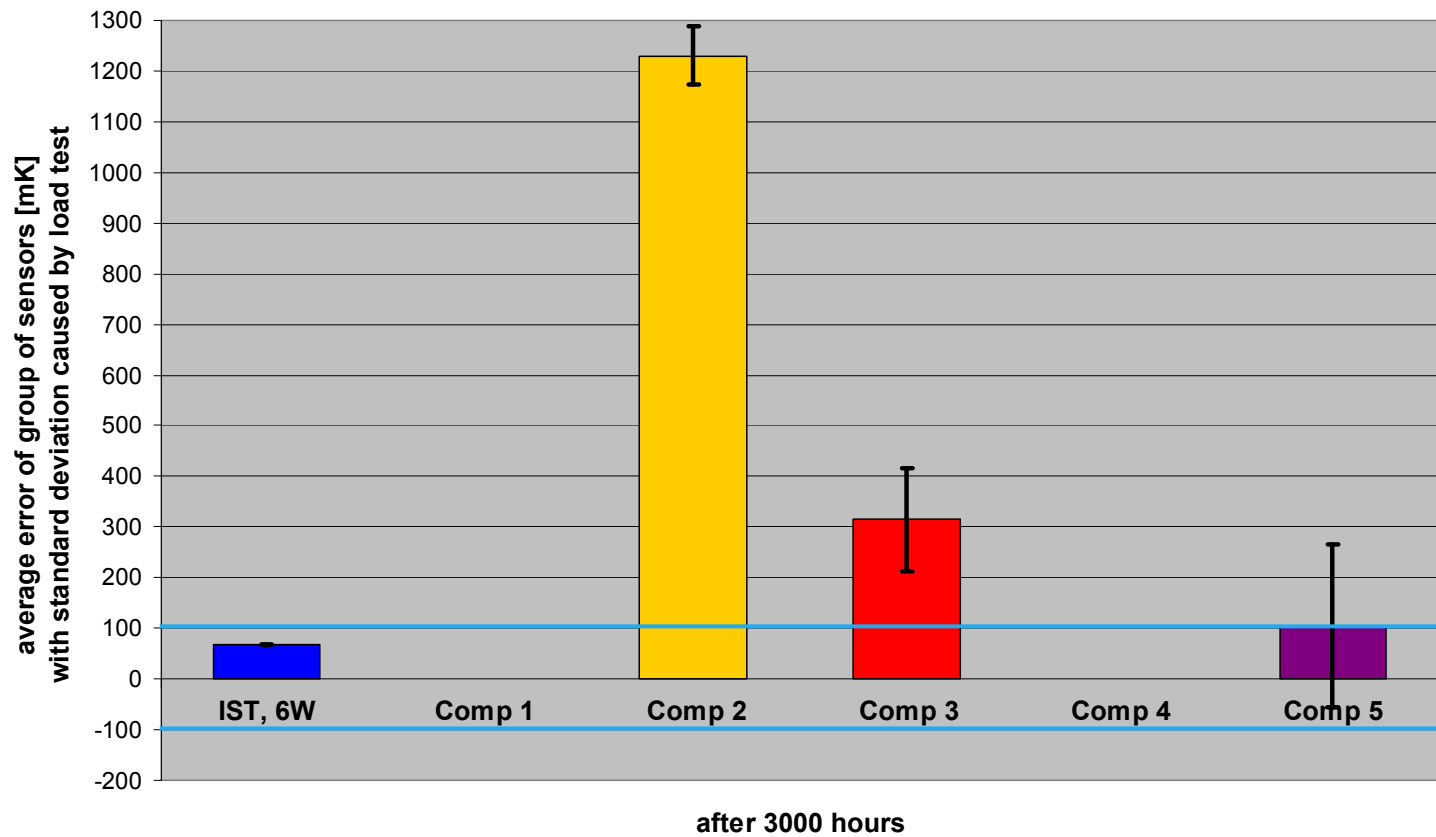


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Comparison of  
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drift of PT100 thin film sensor elements specified for 600°C  
caused by storage at 600°C in air



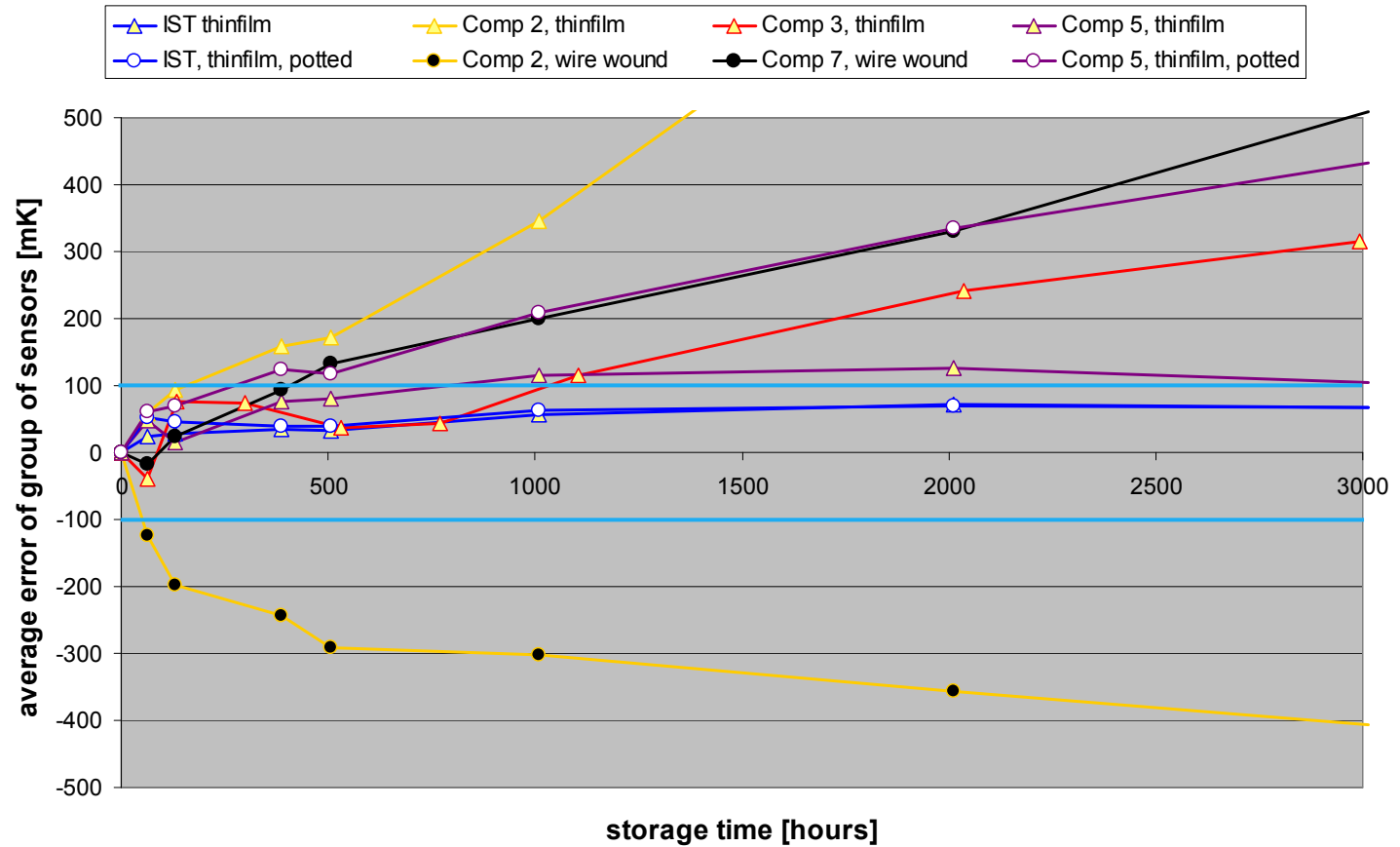


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### Comparison of Temperature Sensors IST with Competitors

**drift of PT100 sensor elements specified for 600°C  
caused by storage at 600°C in air**



IST specified stability: drift less than  $\pm 100\text{mK}$  in 1'000 hours (6 weeks) at max. temperature

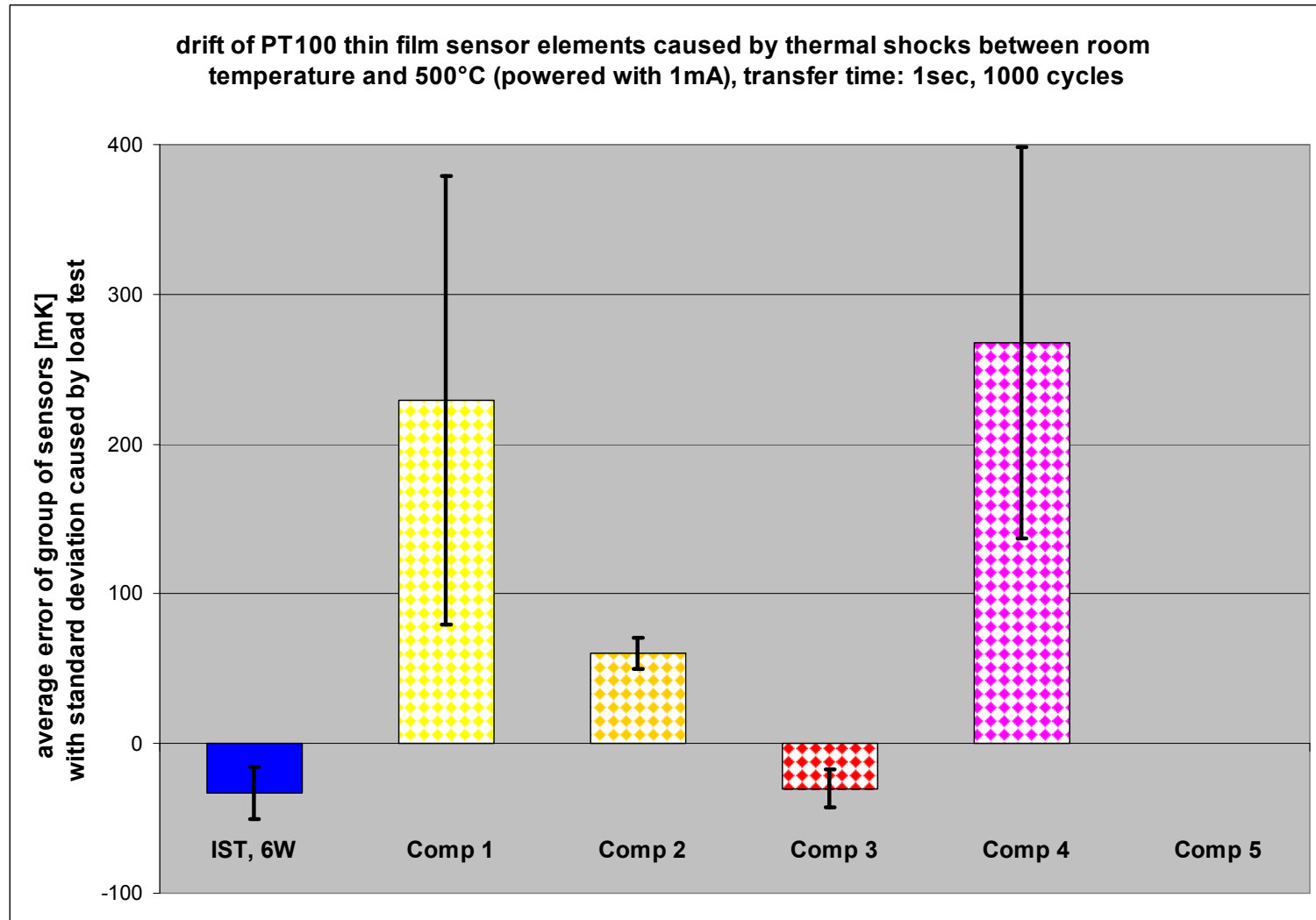


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### Comparison of Temperature Sensors IST with Competitors

**drift of PT100 thin film sensor elements caused by thermal shocks between room temperature and 500°C (powered with 1mA), transfer time: 1sec, 1000 cycles**



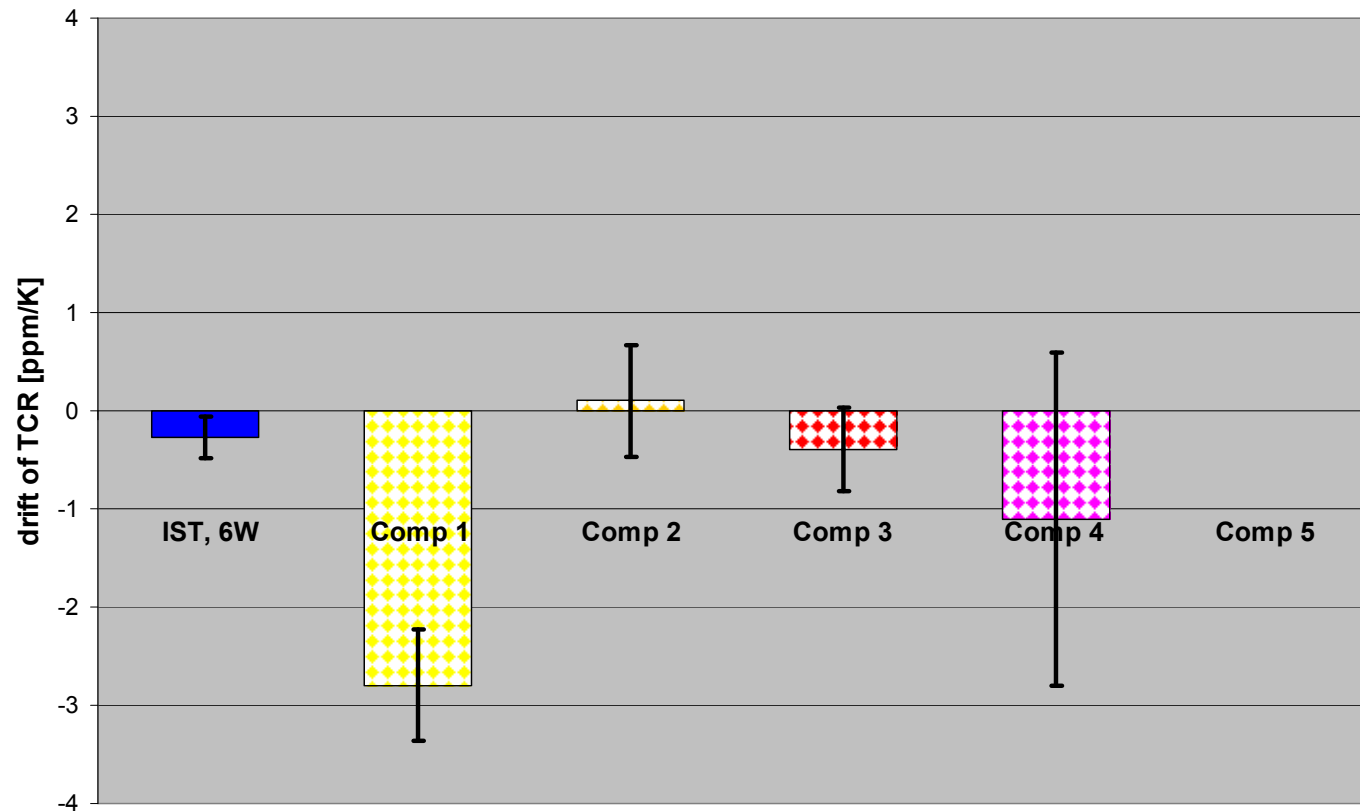


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### Comparison of Temperature Sensors IST with Competitors

**TCR-drift of PT100 thin film sensor elements caused by thermal shocks between room temperature and 500°C (powered with 1mA), transfer time: 1sec, 1000 cycles**



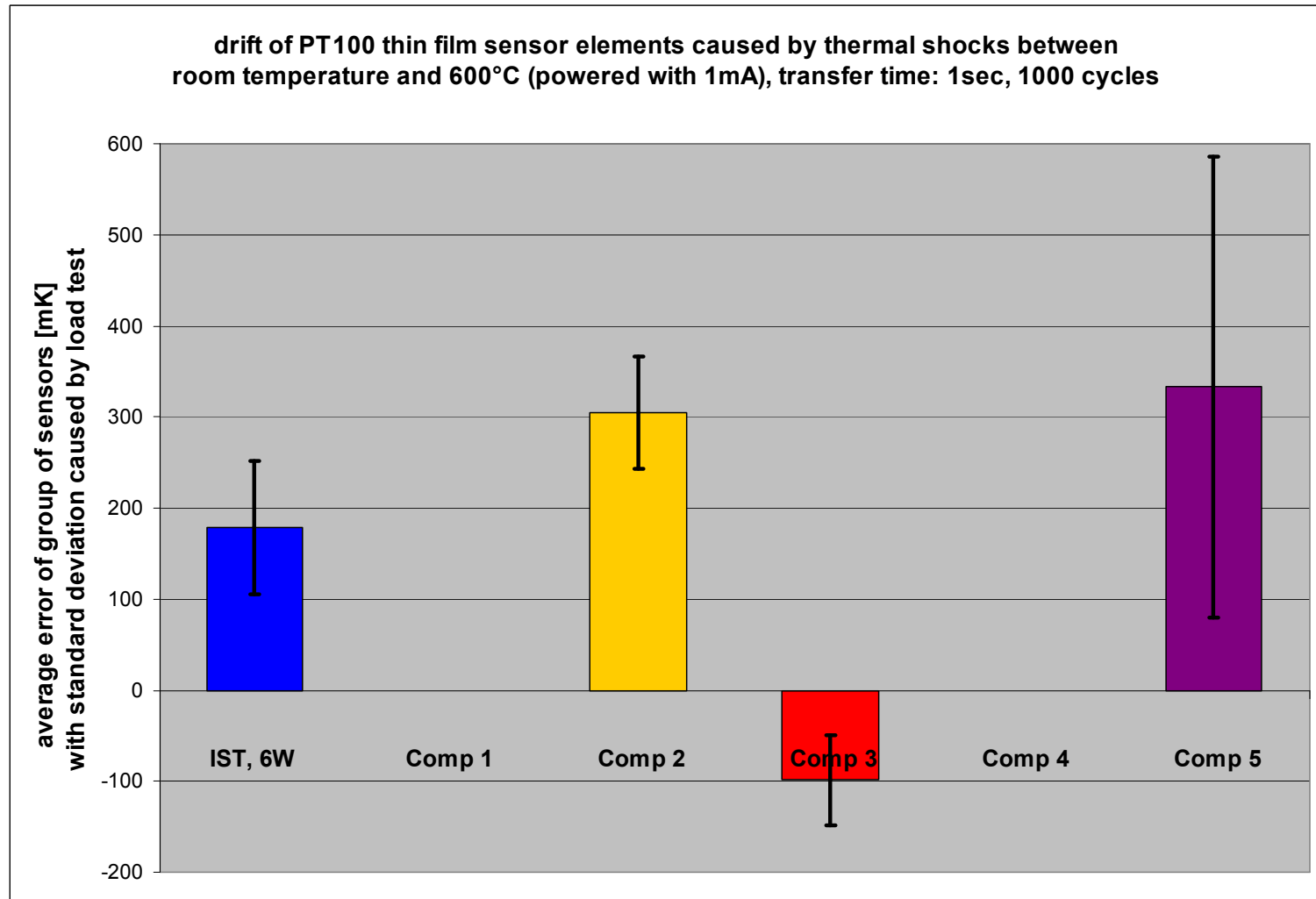


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**drift of PT100 thin film sensor elements caused by thermal shocks between room temperature and 600°C (powered with 1mA), transfer time: 1sec, 1000 cycles**



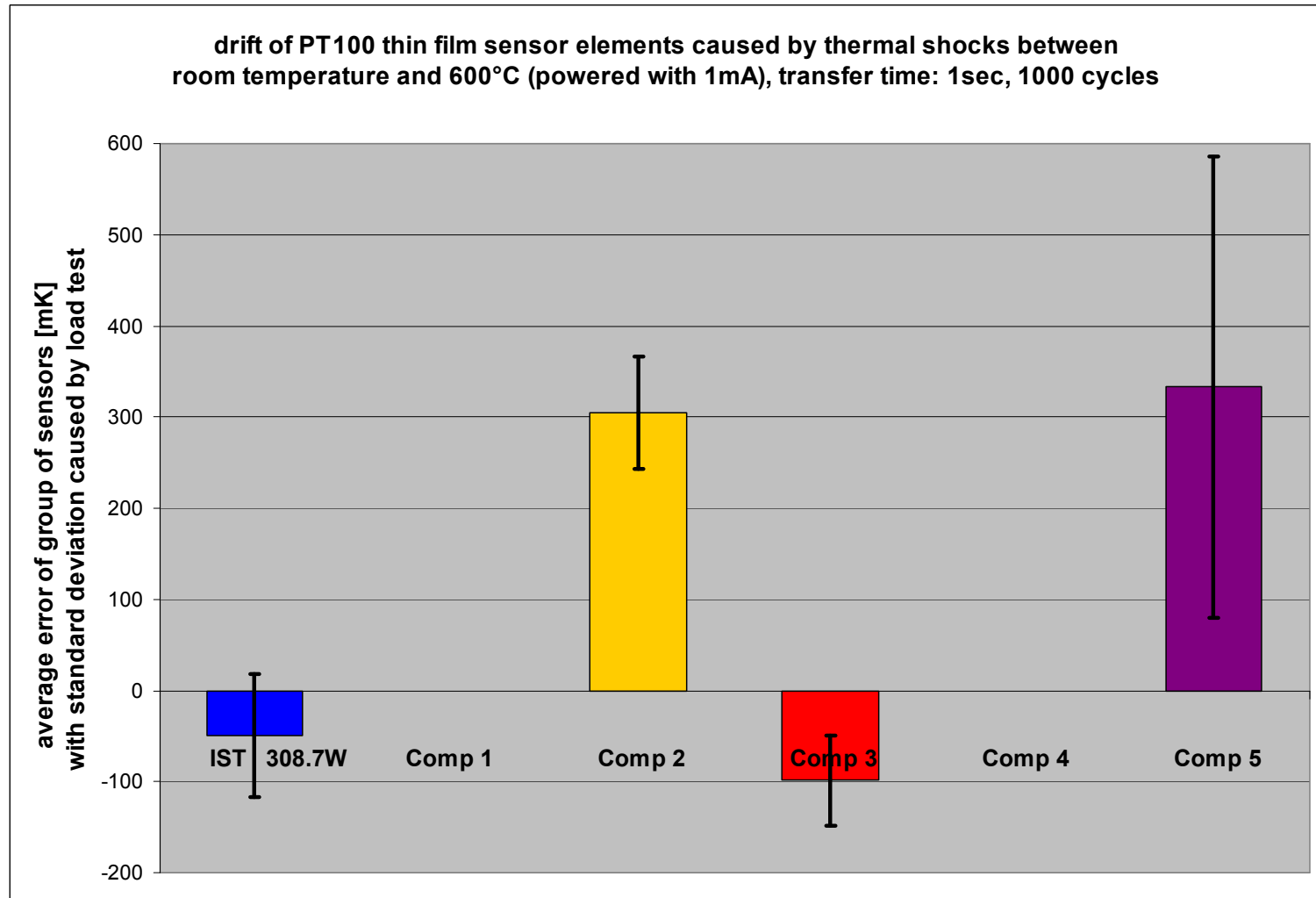


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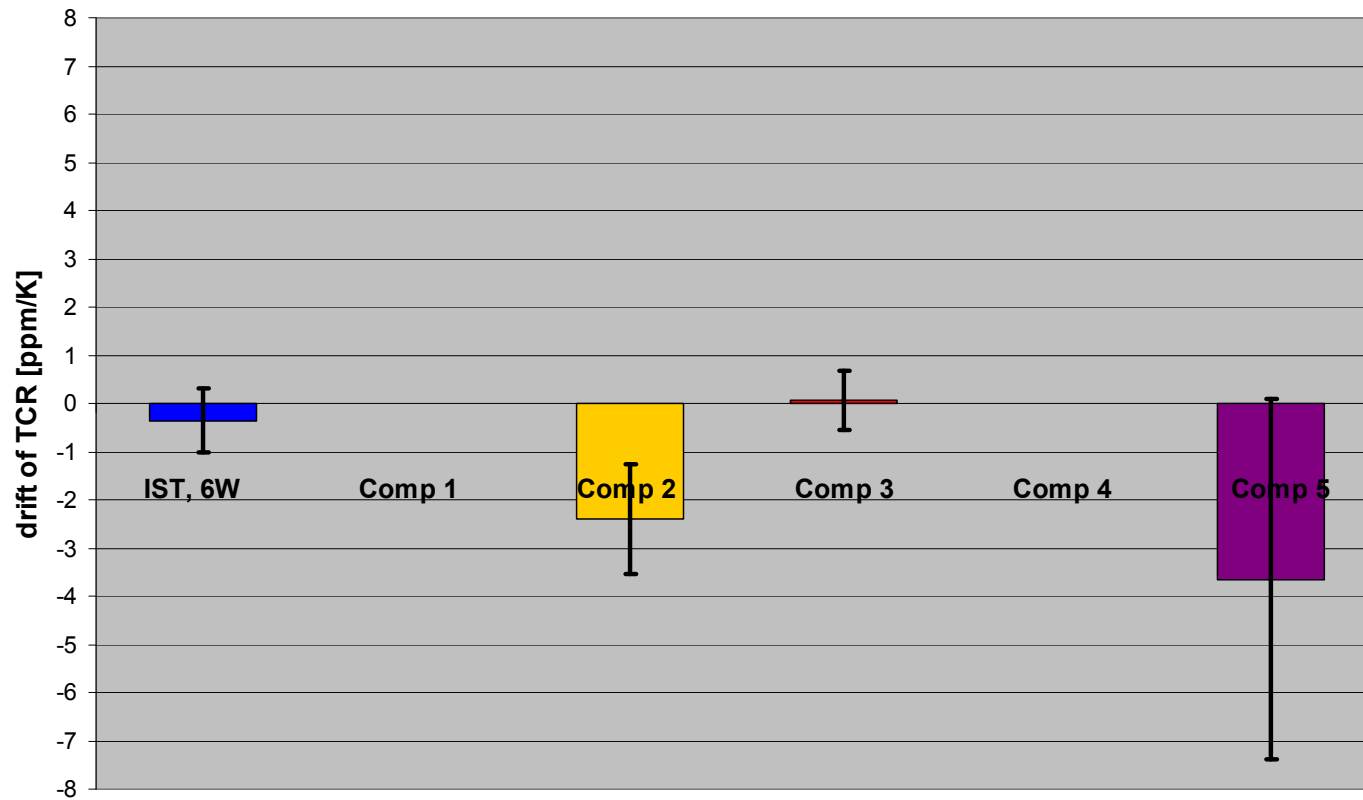


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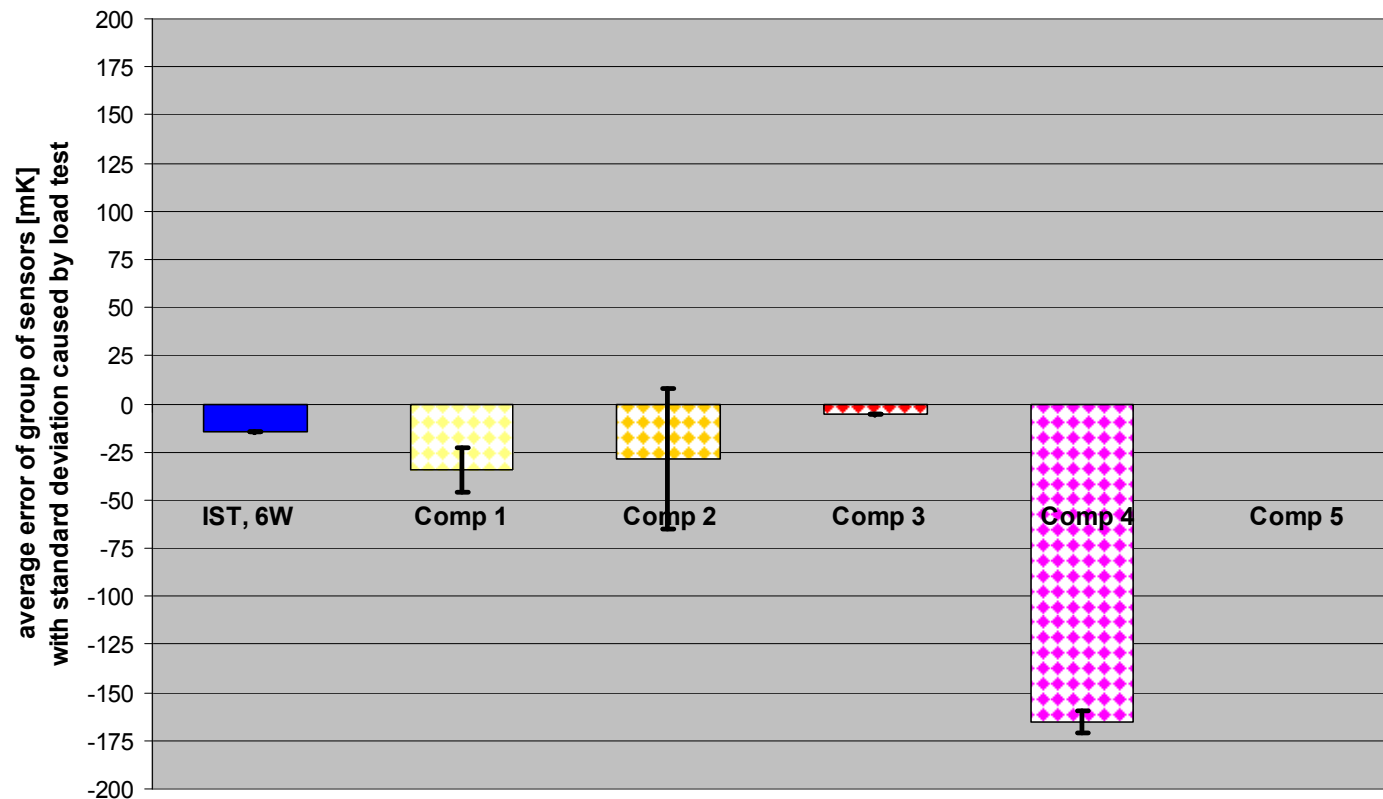


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Comparison of  
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**drift of PT100 thin film sensor elements specified for 500°C caused by cycling in climate chamber: -20 to +60°C, period: 90min, duration: 1000 hours**



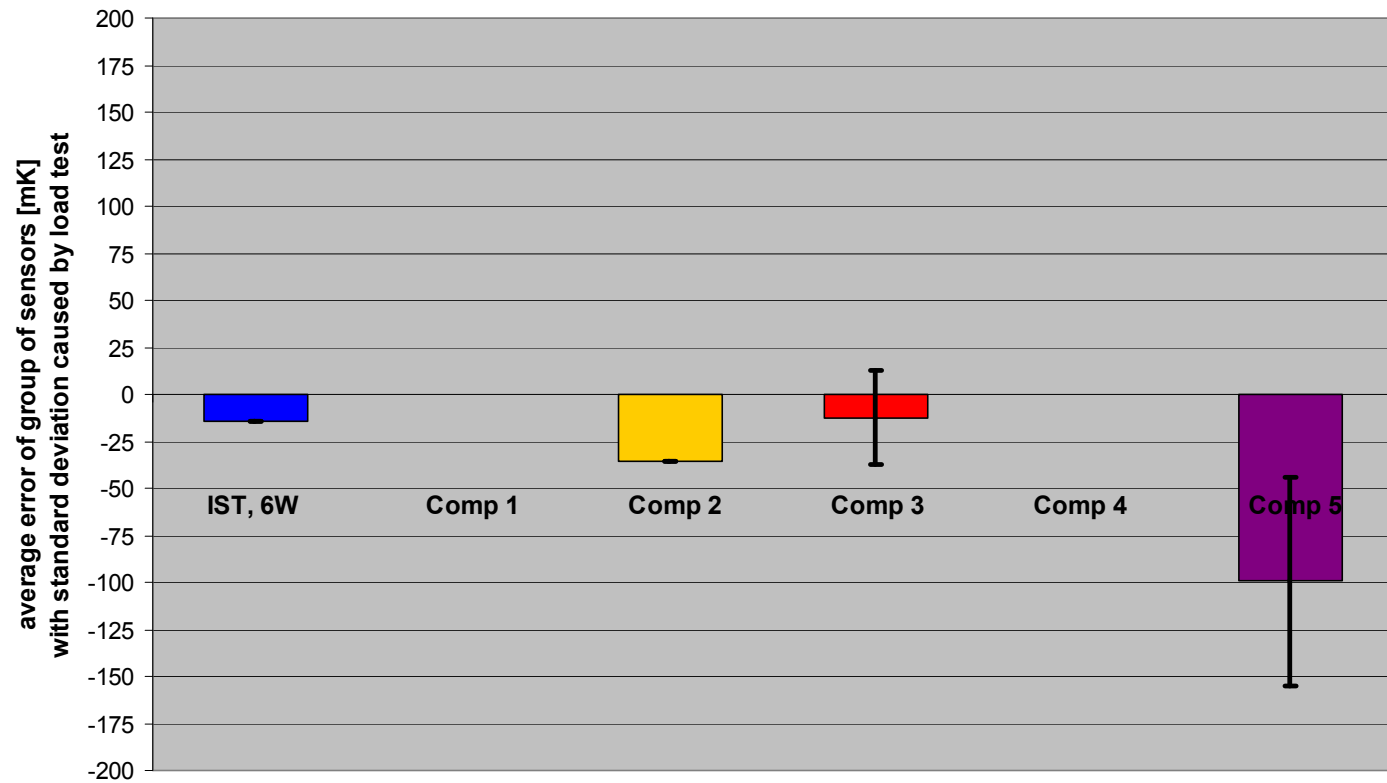


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Comparison of  
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**drift of PT100 thin film sensor elements specified for 600°C caused by  
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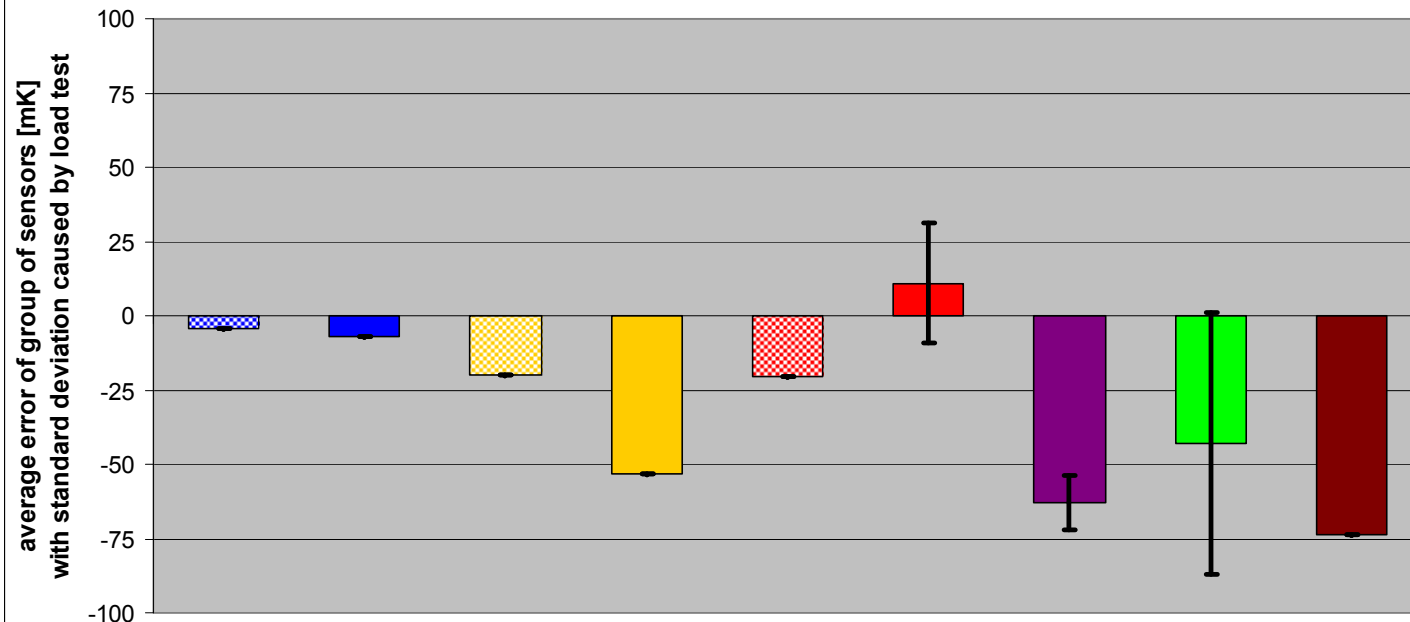
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### Comparison of Temperature Sensors IST with Competitors

#### drift of platinum thin film sensor elements caused by cycling in climate chamber: -20 to +60°C, period: 90min, duration: 1000 hours

- |                              |                      |                       |
|------------------------------|----------------------|-----------------------|
| IST, PT100, 300°C, flat wire | IST, PT100, 400°C    | Comp 2, PT100, 250°C  |
| Comp 2, PT100, 400°C         | Comp 3, PT100, 150°C | Comp 3, PT1000, 400°C |
| Comp 5, PT100, 400°C         | Comp 6, PT100, 400°C | Comp 9, PT100, 300°C  |





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## IST sensor elements, conclusion:

- Various tests prove that our temperature sensors have superior stability to most competitor sensor elements:
  - ultra low drift after cycling in climate chamber
  - Very low drift after storage at 500°C and 600°C
  - Very low drift after extreme thermal shock cycling



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## IST sensor elements, features:

- Largest temperature range in market: -200 to +850 (+1000)°C  
lowest hysteresis within the whole temperature range
- Choice of classification up to 1/10 DIN B accuracy
- High resistance to vibration and mechanical shocks
- High tensile strength of contact wires
- Resistant to humidity



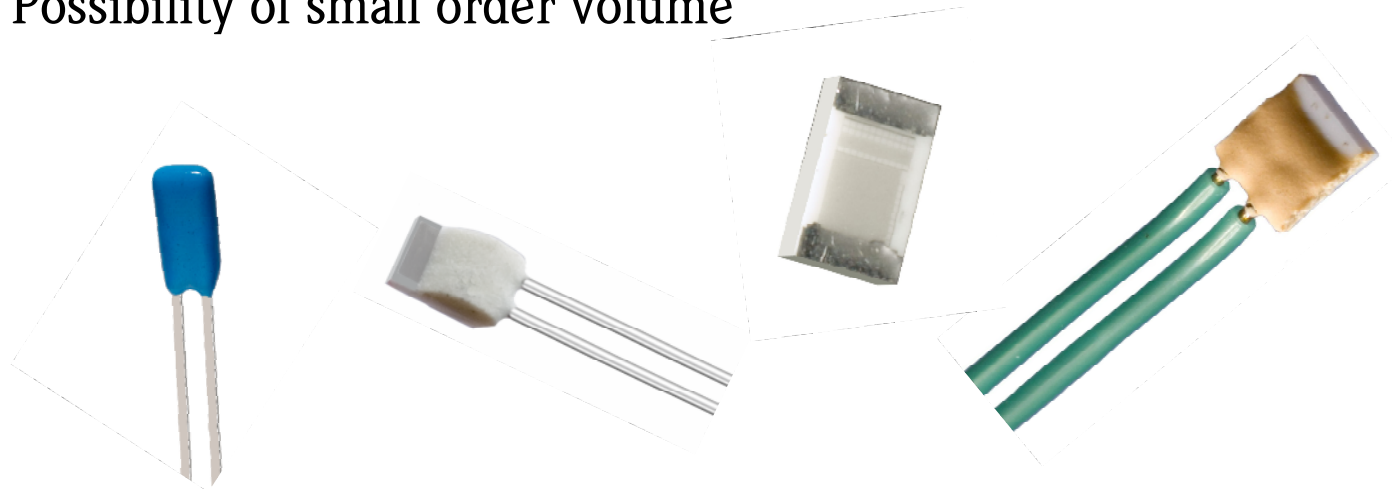
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## IST sensor elements, features:

- Large range of different types of sensors available, Pt and Ni, SMD, flat and round with choice of wires and insulation
- Customer specific sensor elements with the same superior performance as standard types
- Possibility of small order volume





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## IST-sensor elements:

- IST “3FW” sensor: up to 300°C, flat wire with possibility of welding, soldering and crimping, for a favorable price
- Minisens with smallest dimensions of 1.6 x 1.2 x 0.8mm, and very fast response times
- Slimsens: temperature sensor with width of only 0.8 mm

