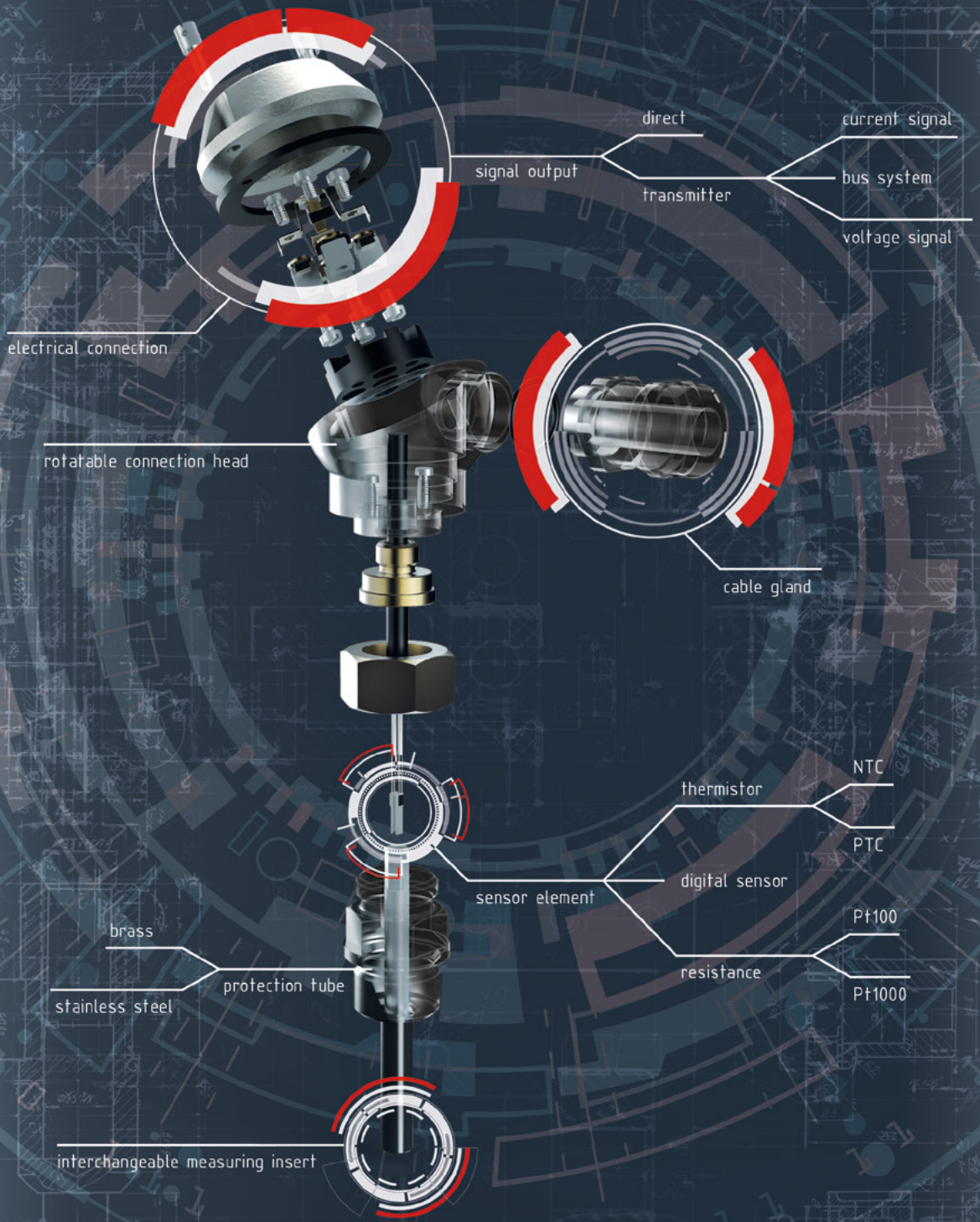
# TEMPERATURE SENSORS

Success through custom-made solutions



# SIKA – Who we are
## Good with temperature sensors

There is a small story behind the development of every temperature sensor. Challenging installation situations, a wide variety of environmental conditions, sometimes extreme, and individual customer requirements demand just the right temperature sensor.

### FROM THE IDEA TO THE SERIES

Right for the actual application and technical measuring reliability: We at SIKA design temperature sensors according to your specifications so that they perform your measurement task optimally. The focus here is on small and medium-sized series.

### "MADE IN KAUFUNGEN" QUALITY

Our products impress through durability, robustness and precision. In order to meet all quality requirements, SIKA develops and produces exclusively in Germany. We thus guarantee easy co-engineering, high-quality products and scheduling and delivery reliability.

### MODERN PRODUCTION AND TESTING TECHNOLOGIES

Our ample production depth and our measurement technology know-how allows for the production of exceptionally good temperature sensors.

We carry out numerous tests in parallel with development and production in order to satisfy the quality for the actual conditions of use and the high requirements for the product. For example:

- Response time monitoring
- High voltage and insulation testing
- Helium leak tests
- Tensile strength testing
- Durability tests
- Vibration analysis
- Climate tests
- EMC testing
- Explosion evaluation
- MTBF analysis

// ASK US –
WE LOOK FORWARD
TO EXACTLY THAT. //

# Wishes come true
## Your temperature sensor

### YOUR BENEFITS, OUR COMPETENCE

The close collaboration begins with us asking you what properties the temperature sensor absolutely has to have. A technically and economically optimal solution results from this. Our sales representatives provide advice on site.

The perfect temperature sensor for your application is thus created in collaboration with our product specialists and the design department in Kaufungen. You benefit from more than 20 years of engineering know-how here.

Our design employees are so experienced that they are familiar with the specific requirements and keep them in mind, as well as taking a great deal of other application experience into account. The resulting temperature sensor meets your requirements as closely as possible.

Please contact us: Arrange an appointment with our sales representatives using our phone number +49 (0) 5605 803-0, our email address temperature-sensors@sika.net or use the QR code opposite. We look forward to your measuring task!

THE SIKA TEMPERATURE SENSOR TEAM

# SIKA – Temperature sensors
## Good with vibration

Exhaust sensors for large engines have to withstand extremely unfavourable conditions. They are subjected to high temperatures, major temperature fluctuations and extreme vibrations: These are conditions in which a normal temperature sensor does not flourish.

When you add environmental factors such as oil to this, more than just the sensor element needs to be considered. The entire sensor must be designed for the conditions in order to ensure a long service life. Our customer's concrete requirements included a Pt1000 sensor intended for service on a large diesel engine.

In order to perform this challenging task, we developed and tested a unique sensor:

- The connector was overmolded with hotmelt so that no oil can get into the measuring element.
- The sensor element is protected with construction measures.
- Comprehensive vibration and temperature cycle tests verified the high durability and long service life of our special sensor.

By now, the temperature sensor is used around the world with outstanding results. Solution found – happy customer.

Particularly oil-resistant cable

Shrink tubing

Vibration-resistant connection technology

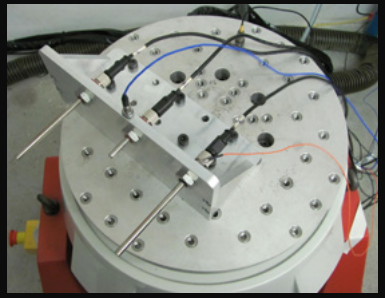
Sealing with hotmelt overmolding

Use of oil-resistant and extremely temperature-resistant materials

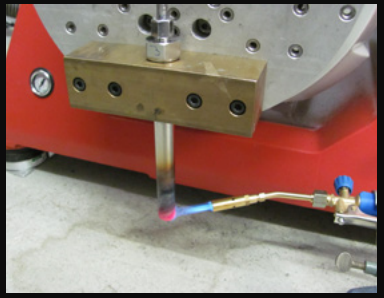
DEUTSCH connector, 2-pole

Sensor element protected with construction measures

Pt1000 sensor element



Vibration test on various temperature sensors



Vibration test on an exhaust sensor: 10 g at 2000 Hz and 600 °C

# SIKA – Temperature sensors
## Good with extreme weather

Electromagnetic compatibility (EMC) can really put measurement technology off their stride. As was the case for one of our customers when then requested support from our technical consultants in our sales force. The air conditioning systems used in trains had developed problems with the built-in temperature sensors.

The area of application is very challenging: Temperature and humidity are measured together, there are extremely rapid temperature changes, strong electromagnetic interference interferes with operation and there are constant strong vibrations during operation. The ambient conditions also require protection against a possible risk of fire and explosion in the event of a coolant leak.

We designed a special sensor for these extensive requirements:

- Low installation costs owing to combined temperature and humidity measurement
- Significantly reduced wiring requirements owing to digital 1-wire bus
- Thermal decoupling from the place of installation using a special thread made from fibreglass and plastic composite
- High reliability owing to an integrated protective circuit
- Compact design

After development and subsequent type testing in accordance with the railways standards, the sensor went into series production. Solution found – happy customer.

Use of customised, cutting edge materials

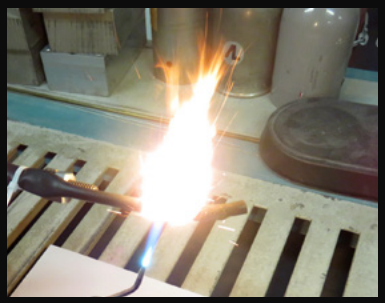
Flange plug M12x1, brass, nickel-plated

Vibration resistance in accordance with EN61373: Category 1, Class B

Special internal structure in order to ensure very high stability and long service life

Particularly robust and temperature-resistant embedding of the printed circuit board

Laser-etched serial number



30-second flammability test for certification in accordance with DNV GL

Humidity and heat climate test

# SIKA – Temperature sensors
## Good with high voltages

An enquiry for the delivery of temperature sensors reached us from a wind turbine manufacturer. After calculation and generation of a quote, the order was placed with SIKA and the sensors were developed exactly according to the customer's specifications.

To our great surprise, the first complaints arrived soon after: Sensors were failing in series. In-depth examinations, by the Fraunhofer Institut among others, revealed: A several thousand volt spark was jumping over the sensor and destroying the circuit board coating.

We were finally able to identify the problem through intensive collaboration with the customer: The temperature sensors are used in the rotor blades of wind turbines. Here, as in helicopters, the friction which is present results first in an electrostatic charge and this in a high-voltage discharge which was responsible for the failure of the temperature sensors.

We were able, through appropriate grounding measures and shielding, to make the temperature sensors resistant to the discharge effects. Solution found – happy customer.

FEP cable, 4 x 0.22mm², shielded

Special shielding against voltage spikes caused by static discharge

Perfect for gluing into glass fibre reinforced plastic

Particularly resistant to extreme temperature fluctuations

Pt100 sensor element

High voltage test system

# SIKA – Temperature sensors
## Good with applications

Because we know the application so well, we are also able to build excellent temperature sensors. SIKA stands for getting into a wide range of requirements and meeting them with high quality.

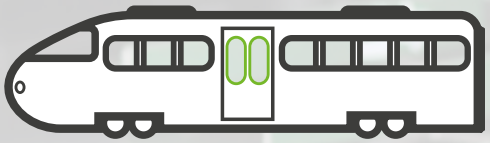
### ENGINES AND COMPRESSORS

- Vibration-resistant
- Resistant to oily ambient conditions
- Long-term stability, even at high exhaust gas temperatures
- Special solutions e.g. for bearing bushing measurement
- High long-term stability
- EU-RO type approval
- DNV GL type approval

### ENERGY TECHNOLOGY

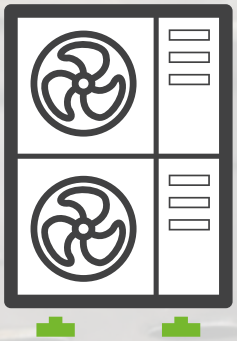
- High EMC stability
- Traceability
- Individual identification with serial number
- Routine testing

## AIR CONDITIONING



- Temperature and humidity can be combined
- 1-wire bus system
- Fire-resistance tested
- Explosion assessment
- High EMC stability
- Rail approval

## HVAC – HEATING, AIR CONDITIONING, VENTILATION



- Optimal installation size
- Rapid response time
- Materials which are suitable for the application

**We offer clever measurement technology solutions for:**

- Temperature
- Flow
- Pressure

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