

Accurate Non-Contact Temperature Measurement

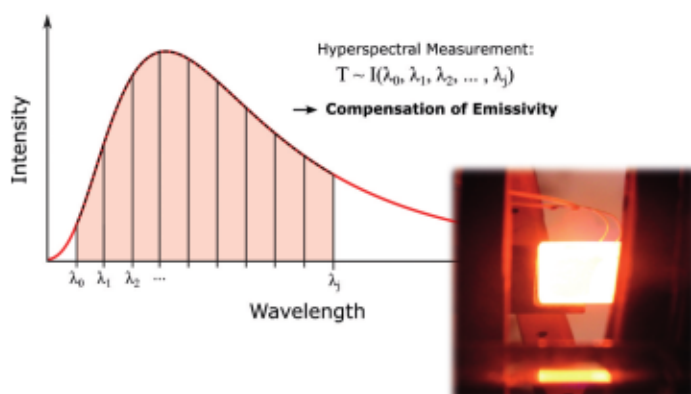
Exploit the full information of thermal radiation

We offer a non-contact temperature measurement technology for temperatures above 200°C. In contrast to standard industrial pyrometers, we apply hyperspectral detection of thermal radiation in combination with Machine Learning (ML) methods. This approach removes the influence of the emissivity, which allows to extract accurate surface temperatures and to identify false temperature readings. That is a feature not available with currently available industrial instrumentation.

Pyrometric measurements are a popular technique to measure temperatures in the industrial environment without direct sample contact, especially for very hot and/or moving samples. This technology usually relies on a 1- or 2-point measurement of the thermal radiation emitted by the sample surface according to Planck's law. However, this approach is prone to measurement errors, especially when the emissivity of the sample surfaces changes, e.g., at different temperatures or through surface oxidation. To overcome these limitations, we apply state of the art technology based on micro-electro-mechanical-systems (MEMS). Making it possible to realize a compact, rugged and cost-efficient device for the acquisition of continuous and broadband spectra in the infrared

spectral range. This allows to utilize sophisticated Machine Learning (ML) techniques to extract precise and accurate temperature values unaffected by the surface emissivity of the investigated sample.

Moreover, the emissivity itself can be estimated from the acquired spectral data, and false temperature readings caused by e.g. dirty optics, smoke, or strong atmospheric changes, can be automatically identified. Many years of experience with MEMS-based spectrometer technology as well as advanced data processing techniques, allows RECENDT to develop application and customer specific spectroscopic temperature sensors which offer significant customer benefits in terms of sensor reliability, usability, as well as accuracy.



Facts/Key-Values/ Features & Benefits

- Temperature measurement from 200°C upwards
- Non-contact
- High accuracy through spectroscopic emissivity correction
- Flexible time resolution: down to milliseconds
- Automated identification of false temperature readings through Machine Learning methods
- Cost-efficient, compact, and rugged hardware suited for industrial environments
- Flexible in terms of measurement spot size and distance

Potential Users & Fields of Application

- Steel-industry
- Metallurgy
- Welding
- High-temperature processes
- Additive manufacturing

Status – what do we offer?

- Industrial implementation of non-contact spectroscopic temperature sensors
- Different Data interfaces for process monitoring and control (OPC-UA, Modbus TCP etc.)
- Individually designed optical interfaces

Contact data

Robert Holzer
robert.holzer@recendt.at
+43 732 2468 4602