

## EddyCus® TF inline HF – High Frequency Monitoring

P\_T\_inlineHF\_20



### Highlights

- ▶ Contact free and realtime
- ▶ High repeatability and stability
- ▶ Large gap / distance to substrate
- ▶ High sampling rates with hardware trigger for monitoring of fast processes
- ▶ Complex impedance analysis for separation of electric, dielectric and magnetic properties

### Applications

- ▶ Composition assessments of electric, dielectric, magnetic properties
- ▶ Printing
- ▶ Impregnation
- ▶ Drying
- ▶ Curing
- ▶ Chemical reaction monitoring
- ▶ Mixing
- ▶ Sorting
- ▶ Defect analysis (anomalies, hot spots)

### Sensor Series

- ▶ Wet thickness ( $\mu\text{m}$ ) / weight ( $\text{g}/\text{m}^2$ )
- ▶ Drying status (%)
- ▶ Permittivity (F/m) *Beta*
- ▶ Conductivity / resistivity ( $\text{mOhm}\cdot\text{cm}$ )
- ▶ Permeability (H/m) *Beta*
- ▶ Sheet resistance ( $\text{Ohm}/\text{sq}$ )
- ▶ Electrical anisotropy (%)
- ▶ Metal thickness (nm,  $\mu\text{m}$ )

### Materials

- ▶ Wet thin films and surfaces
- ▶ Wet components and structures
- ▶ Liquids, slurries, inks, resins, dispersions, chemicals
- ▶ Powders and particle films (cosmetics and medicines)
- ▶ Bulk materials (plastics, ceramics)
- ▶ Composites (prepregs, impregnated fibers and tapes, CFRP)
- ▶ Compounds (casting compounds)

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Made and Engineered in Germany 



## Working Principle

- ▶ EddyCus sensors generate electromagnetic fields (EMFs) consisting of electric and magnetic fields
- ▶ EMFs change when material with electric, dielect and /or (ferro)magnetic properties is present
- ▶ The evaluation of the resulting field changes provides information on amount / volume and its properties
  - ▶ Conductivity (eg. metals, semiconductors, graphite)
  - ▶ Permeability (eg. Co, Ni, Fe)
  - ▶ Permittivity (eg. water, solvent, polymers, chemicals)
  - ▶ Complex impedance analysis is used to separate properties.

## Data Sheet

Measurement technology	Non-contact high frequency eddy current sensor
Substrates	Foils, glass, pipes, various containers and transport items
Max. sample thickness/ sensor gap	Transmittance setup: 1 – 50 mm (defined by the thickest sample) Reflectance setups: infinite (only surface area is analyzed)
Number of sensor pairs / monitoring lanes	1 – 99
Sensor sizes (W x L x H) in mm	Sensor M: 80 x 100 x 66    Sensor S: 34 x 48 x 117
Measurement types	Wet thickness (µm) / weight (g/m²) / drying status (%) / conductivity / resistivity (mOhm cm) / permeability (H/m) <i>Beta</i> / permittivity (F/m) <i>Beta</i>
Measurement range / accuracy	Depends on the measurement task and the material composition and test object volume. Please consult with the SURAGUS team
Further available measurements	Sheet resistance, metal thickness, anisotropy, optical transparency, reflection, haze
Environment	Ex-vacuo / in-vacuo / ATEX on request / T < 60°C (higher on request)
Sample rate	1 / 10 / 50 / 100 / 1,000 measurements per second
Hardware trigger	5 / 12 / 24 V
Interfaces	UDP, .Net libraries, TCP, Modbus, analog/digital

## Device Control and Software

- ▶ Several views and user level
- ▶ Live view with upper and lower limits and alarm functions
- ▶ Analysis view providing statistics
- ▶ Can handle data of several thousands measurements per second
- ▶ Data storage into SQL database
- ▶ Customizable automatic data export (csv, txt, xls,...)
- ▶ Several smart functions (automated DB cleaning, self-reference etc.)
- ▶ Parameterizable I/O modules (triggering of actions or alarms)

