

SITA **CLEAN LINE CI**

Inline Inspection
of Cleanliness



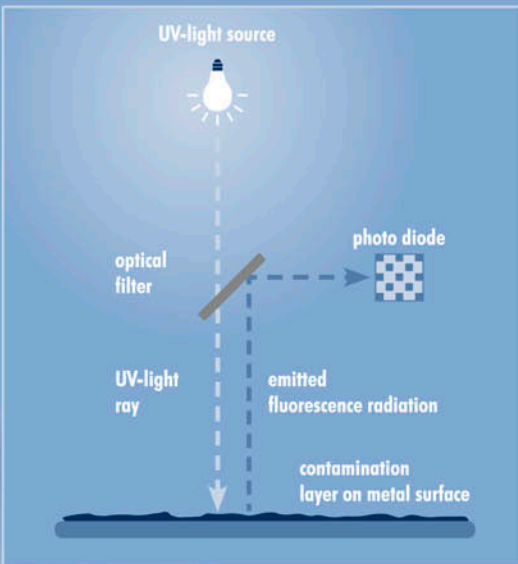
- ✓ Highest product quality through controlled cleaning
- ✓ Contact-free cleanliness control
- ✓ Documentation of lowest contamination levels
- ✓ System solution for high process security
- ✓ Cost effectiveness through process optimization

SITA **CLEAN LINE CI**

Inline Cleanliness Inspection of Surfaces

The inline fluorescence measurement technology SITA clean line CI is optimal for a continual cleanliness control in cleaning processes. Slight traces of contamination such as oils, greases, cooling lubricants or surfactants cause quality defects in following surface treatment and surface coating processes leading to higher costs. A regular inspection of part surfaces ensures that the required cleanliness levels are maintained. Further actions such as dosing up the cleaning agent components or bath care can be initiated immediately if the part cleanliness decreases.

Measuring Principle



Typical contamination in industrial manufacturing processes such as oils, greases or surfactants fluoresce when being excited by ultra violet light. The measured intensity of fluorescence radiation increases with the thickness of the contamination layer.

An integrated UV-LED stimulates the excitation of the fluorescence. A photo-diode measures the intensity of the resulting fluorescence radiation. The calibration of the cleanliness takes place on reference parts defined as being 100 % clean.

Reference surfaces with a known contamination amount are used to determine limit values of reliable cleanliness.

SITA **CLEAN LINE CI** – Reliable and Robust

- Measures contamination films on part surfaces continually and contact-free
- Avoids problems during coating, bonding, welding, printing or hardening processes
- Displays the cleaning quality directly

Application

Line Scan



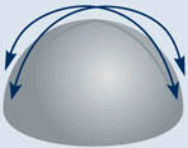
Continual monitoring of band surface cleanliness with one or more sensors

Surface Scan



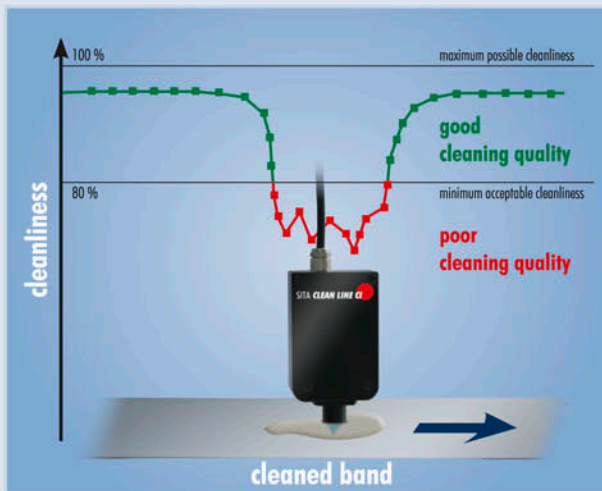
Detecting the cleanliness profile of part surfaces with an X-Y positioning system

Free Form Scan



Measuring the cleanliness of part surfaces with a 3D positioning system

Practical Example: Inspection of Band Steel



High cleanliness standards for the coating of band steel assure a high coating quality in the process. SITA clean line CI measures fluorescence continually and detects even the smallest amounts of contamination.

The cleaning process can be immediately interrupted when cleanliness values fall below defined limit values.

- ✓ **Highest product quality through controlled cleaning**
- ✓ **Contact-free cleanliness control**
- ✓ **Documentation of lowest contamination levels**
- ✓ **System solution for high process security**
- ✓ **Cost effectiveness through process optimization**



The flexible, customer-specific integration of single or multiple sensor solutions of the SITA clean line CI is used in production processes for the inspection of the smallest parts of medical technology as well as band surfaces in the steel industry.

Technical Data

Sensor SITA clean line CI

Housing	Anodized aluminum IP51
Interface	RS-485 per Bus or point-to-point topology
Measured Value	Cleanliness or relative fluorescence related to SITA Fluorescence Standard
Measurement Speed	Maximum of 100 individual measurements per second (100 Hz)
Surface Speed	Maximum 10 m / s
Dimensions (W x H x D)	50 mm × 95 mm × 30 mm
Weight	200 g

Operational Conditions

Relative Humidity	Maximum 70 %
Surrounding Temperature	10 ... 50°C

Measured Value Cleanliness

Measuring Range	0 ... 100 % Cleanliness (100 % correspond to a calibration standard with ideal cleanliness values)
Resolution	0.1 %

Measured Value Fluorescence

Diameter Measuring Point	1 mm
Measurement Distance	4 mm
Wavelength Excitation	365 nm
Wavelength Measurement	460 nm
Measuring Range	0 ... 1,000 RFU (Relative Fluorescence Unit), SITA Fluorescence Standard N1 = 100 RFU
Error of Measurement	Maximum 0.5 % of measuring range
Resolution	0.1 RFU

Process-specific System Solution



The measuring system SITA clean line CI can be adjusted to each customer's unique inspection tasks.

Used with an industrial PC or an SPS with touch panel, the central control unit of the SITA clean line CC allows process-specific system solutions to be realized. The customized software controls the cleanliness inspection, saves and visualizes the measured data and communicates with superordinate process controls.

Upon the basis of a combined analysis of process and plant, SITA application engineers develop the SITA clean line system solutions to be adapted to each customer's specific set of criteria.



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