SITA Process Solutions

Inline System Solution

SITA CLEAN LINE CI

Process-integrated fluorescence measuring technology for cleanliness and surface inspection

Inline Fluorescence Measurement

Cleanliness Inspection

The SITA clean line CI is used for inline cleanliness inspection of parts regarding filmic contamination such as oil, grease, cooling lubricant or release agent prior to cleanliness-critical processes such as bonding, coating, welding and hardening.

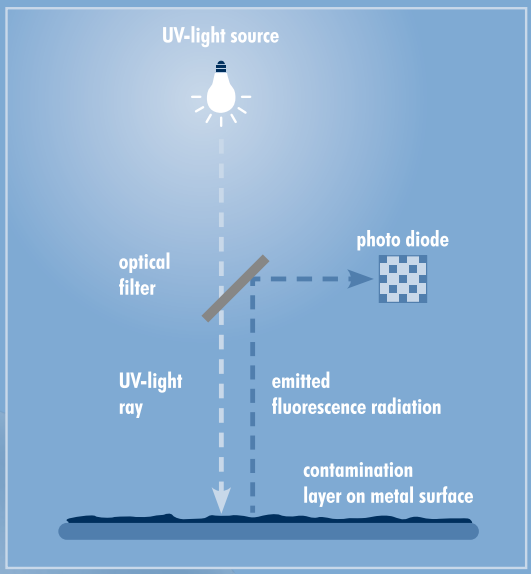
Layer Thickness Inspection

Another application is the inspection for sufficient layer thickness when applying corrosion protection oils or when applying a primer prior to adhesive bonding.

Application Examples:

- Cleanliness inspection of wires, pipes and steel strip prior to coating
- Inspection for residues of release agent on aluminium die-cast parts prior to adhesive bonding
- Inspection of functional surfaces after selective cleaning (laser cleaning, ultra-fine plasma cleaning, CO2 snow blasting, …)
- Monitoring the primer application prior to lamination of plastic profiles
- Monitoring the application of corrosion protection oil (quantity, distribution)
- Inspecting large metal parts prior to coating and printing
- Determining the distribution of contamination on parts surfaces in the production process

Measuring Principle:



Typical contamination on surfaces in industrial manufacturing processes such as oil, grease, cooling lubricants or parting agents fluoresce when being excited by ultraviolet light. The intensity of the fluorescence increases with the thickness of the contamination.

The intensity is measured in RFU: Relative Fluorescence Unit. The lower the RFU value, the cleaner the surface.

An integrated UV-LED is used for excitation. A photodiode measures the intensity of the resulting fluorescence.

SITA *CLEAN LINE CI* – High-performance and Robust

- **Cleanliness inspection** prior to bonding, painting, coating, welding and hardening
- **Layer thickness inspection** of corrosion protection oils, when applying a primer prior to adhesive bonding
- **Inline measurement** contact-free, non-destructive, layer thickness sensitive

Application

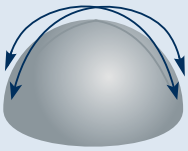
Line scan

Continuous monitoring of the cleanliness of wires, tubes or steel strip with one or multiple sensors

Surface scan

Cleanliness inspection of flat part surfaces with travelling axles

Free form scan

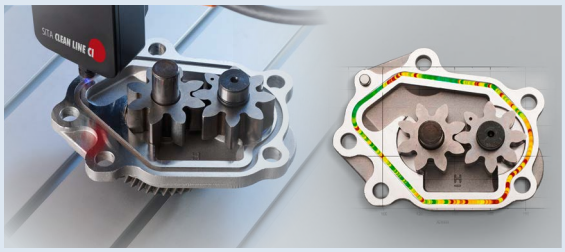


Cleanliness inspection of complex part surfaces with a 3D positioning system (e.g. robotics)

Practical Examples:

Inspection of wires, tubes, steel strip

Inspection of aluminium die-cast parts prior to adhesive bonding



- ✓ **Detection of filmic contamination: contact less, non-destructive, layer thickness sensitive**
- ✓ **For process analysis and -optimisation**
- ✓ **Documented process quality**
- ✓ **Flexible system solution**
- ✓ **Scalable to multi-sensor system**
- ✓ **Automation solution combinable with robotics**

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.

SITA *Advanced Cleaning Control*

Process-Specific Inline Solution

The system solution SITA clean line CI can be customised to the inspection tasks due to its modular hardware and software concept.

The software SITA ProcessControl uses real-time capable automation components for control and data processing. The system can be customised depending on the requirements using different interfaces for integration in the higher-level process control as well as operating and display devices.

The system solution is easily scalable: from compact systems with one sensor to multi-sensor systems for complex tasks, e.g. several production lines can be monitored centrally. For integration we cooperate with your automation and robotics partners.

In a joint analysis our SITA application engineers develop the SITA clean line system solution to fit your application.

Technical Data

Sensor

Measuring range	(0…2,000) RFU*
Measuring deviation	max. 0.5 % of the measuring range
Excitation	365 nm, max. 150 mW
Detection	460 nm**
Measuring distance	4.7 mm**
Diameter measuring point	1 mm**
Sampling rate	up to 100 Hz
Surface speed	max. 10 m/s
Dimensions (HxWXD)	95 mm x 50mm x 30 mm
Weight	200 g
Interface	RS-485
Power supply	24 V

*Relative Fluorescence Unit

** Standard optics

Control:

Real-time capable industrial PC in control cabinet

EtherCAT-based (Software PLC)

Hardware modules for input and output interfaces

Optional touch display

Control of multiple sensors

Software:

SITA-ProcessControl

- Data processing and data visualisation
- Sensor calibration
- Software modules for sensors and interfaces

Software utilities for data analysis and networked storage

Additional configurations upon request

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