OPTICAL CLEANING SENSOR
Save and efficient detection of food contamination

Basic principle
Food contamination on surfaces can be made visible by detecting its inherent autofluorescence. The optical cleaning sensor makes use of this principle. This innovative method allows for eco-friendly, cleaning, as well as continuous process- and quality management.

Sector focus
- Food industry
- Pharmaceutical industry
- Industrial component cleaning
- Gastronomy and catering

Possible applications
- Safe and efficient monitoring of cleaning processes
- Detection and verification of cleaning results
- Detection of the current degree of contamination
- Possibility for monitoring both on a large scale and on specific local weak points
- Determination of film thickness
- Process optimization by decreasing the required cleaning time and detergent

1 - contamination in a foodtank
2 - types of contaminations
   a - Red wine
   b - Apple juice
   c - Beer

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Motivation

The cleaning of surfaces plays a major part in every industrial branch. Whether it is the numerous individual hygiene requirements, which guarantee safe consumption, or the ever-rising restrictions on permissible remaining residues in component manufacturing: Hygienic standards exist in every industry and must be adhered to.

Automated process- and quality monitoring is an essential contribution to guaranteeing the safety of the individual product. Furthermore, reproducibility can be increased and the scrap rate decreased.

However, automated cleaning monitoring of appliances, machinery and parts, especially in the hygienic field, needs a solution, which meets both the technical and the hygienic requirements.

Cleaning monitoring

The Fraunhofer IVV Dresden has developed a contact-free, optical sensor process, which makes it possible to detect contaminations on surfaces by making use of their autofluorescence.

This procedure is able to implement automated process monitoring. Spot checks, which are usually procedures with product contact and can therefore often check the test area only selectively, can thus be avoided.

Thanks to the newly developed process it is now possible to check both on a large scale and on local or critical spots. The type of monitoring is variable. The system is applicable in procedures like quality control to ensure specified quality regulations.

Resource efficient cleaning

Not only does the cleaning sensor detect whether or not a surface is contaminated, but also to which extent. This allows it to monitor the cleaning process, and, with the help of applicable calibration, enables the erosion of the contamination to be viewed over time.

It is therefore possible to end the cleaning program as soon as the required state of cleanliness has been achieved, thus avoiding unnecessarily long cleaning times and extensive use of detergent.

Your benefit

- continuous and extensive monitoring of cleaning success
- no sampling inspection required
- reduction of cleaning time
- decreasing the required detergent

![Model of a cleaning process](image)