Spot4Line

CHAUVIN ARNOUX INDATECH

Chemicals Agro

Identifying the colors of industrial liquids in-line

- *Monitoring of liquid fermentation*
- *Identification*
- *Color validation*
- *Filtration error*
- *Contamination*

Objectives: in-line measurement for better action

Colorimetry is widely used in laboratories in the chemicals or agri-food industries. There are highly diverse measuring systems available, depending on the sector (EBC, ICUMSA and Lab).

Growing numbers of industrial companies are seeking an in-line measuring tool enabling them to act quickly on the production process (improvement of production rate and reduction of environmental contaminants, risk reduction). Spot4Line is designed to fulfill these requirements.

The customer's objective?

Detergent manufacturing involves continuous production processes with automatic recipe changes every hour.

Consequently, the new product must be qualified immediately so that the composition can be adjusted in real time, if necessary.

Spot4line enables you to immediately identify the products and transition phases.

Color: a criterion for both quality and safety

The color of the end-product is particularly important in many industries.

Indeed, it may sometimes represent 70% of consumers' purchasing criteria for hygiene products or cosmetics, for example.

This parameter can also provide very useful information on the status of a process, the appearance of contamination in the waste water or quality control of a product at a given time.

Colorimetry is an analytical method which is widely used in the chemicals and agri-food industries.

How?

Spot4Line is connected directly on a 25mm pipe. It uses 4 LEDs of different colors (in addition to UV and NIR) to provide a robust source suitable for a measurement every 5 seconds 24/7 in a demanding environment.

To adapt to any type of situation and media, the measurement is performed from 4 different angles (dense media such as emulsions or transparent media).

Color prediction is carried out case-by-case by means of chemometric modeling based on the absorbance measured by Spot4Line.

Qualification and quantification of vitamins in a blend in solution

Each product is measured in the laboratory with the sensor to model the specific target color of the recipe. The sensor is then installed in-line to monitor the process.

Figure 1 shows an example of the different types of products measured.

Figure 2 shows that the sensor is perfectly capable of separating the products (here on an RGB scale) on the basis of the spectra which can be seen in Figure 3.

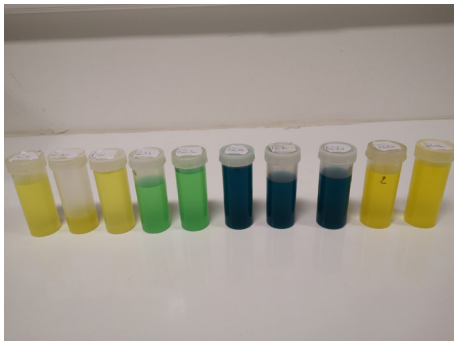

Figure 1: Colored detergents measured

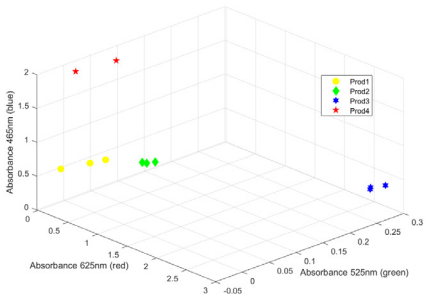

Figure 2: Absorbance at the characteristic wavelengths of the RGB system

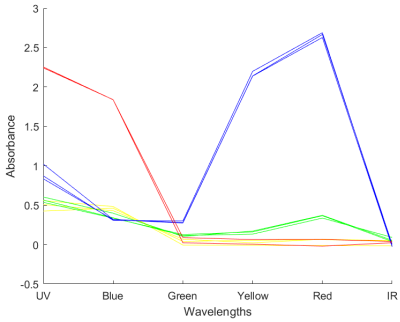

Figure 3: Transmission absorbance spectra of the detergents

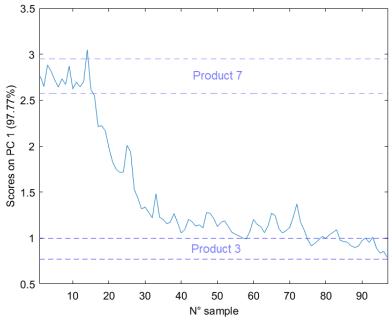

Figure 4: Monitoring of transition between two products (7 to 3) by means of the absorbance spectra

Figure 4 shows transition phase monitoring.

The transition phase can be clearly identified and rejected; when product 3 reaches its color target for quality, the product can be used for filling.

Advantages of Spot4Line

Thanks to its design optimized for industrial environments, Spot4Line enables immediate in-line product qualification.
It can also be used in continuous production systems to optimize the transition phases between two product ranges. The color can be based on an RGB scale or another scale more specific to the sector by means of chemometric modeling.

The teams at INDATECH will be delighted to answer your questions by telephone: +33 4 80 78 01 40.

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