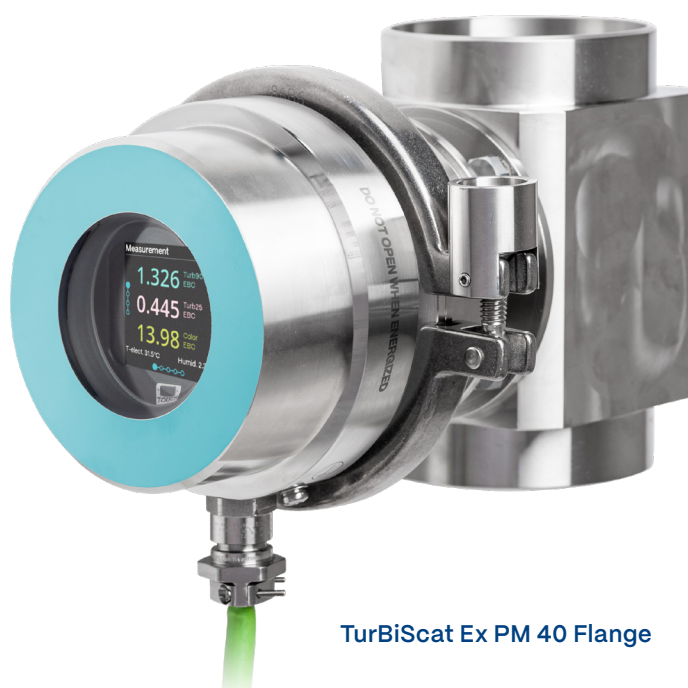


Turbidity measurement for phase separation

Separators are devices used in industrial processes to separate different phases of a mixture, typically liquid-liquid or gas-liquid systems. They are indispensable for applications ranging from oil and gas production to chemical processing and wastewater treatment. For this reason, measurements such as conductivity or turbidity are often used to monitor and control the performance of separators.



TurBiScat Ex PM 40 Flange

Operators want to distinguish between liquid components (e.g. washing solution and sample). For this reason, measurements such as conductivity or turbidity are often used to monitor and control the performance of separators. Let's take the washing cycles as an example. After completing the process, operators use either CIP (Cleaning in Process) or SIP (Sterilisation in Process) to clean the sample lines before starting a new product batch.

Even in the 21st century, certain chemical plants still employ workers to monitor phase separations. This is very risky and can cost thousands of pounds, because some phase changes are difficult to detect with the naked eye.

The solution

The TurBiScat Ex PM 40 is a reliable inline process turbidity meter. It can be used for various tasks in a separator, such as:

- Interface detection between the different phases
- Process control for real-time feedback on the separation process and adjustment of parameters such as flow rate
- Quality assurance to provide information about the degree of contamination of a particular product



The TurBiScat Ex PM 40 allows the phase separation process to be monitored efficiently. Unlike conductivity probes, our turbidity meter has a response time that is at least 10 times faster! This allows the separated phases to be detected and product waste to be reduced to a minimum. Our turbidity meter can use either a 25° or 90° angle to distinguish between liquids by means of light scattering. In addition, colour compensation can be applied if required. Depending on the configuration of the system, all signals are transmitted either analogue or digitally. Limit values are easily set directly on the device or in the control system.

The customer benefit

- More efficient process automation leads to higher sales
- Cross-sensitivities are less problematic as colour can be compensated for, resulting in reliable process monitoring.

Excerpt from Technical Details

Wavelength turbidity	LED 650 nm
Wavelength colour (optional)	LED 430 nm
Measuring principle	90° / 25° scattered light measurement
Measuring range turbidity	0 ... 4,000 NTU
Ex protection class	Ex db IIC T3/T4/T5/T6/ Ga/Gb
Operation	Proximity sensor

Typical application

A separator is used, for example, at the start of crude oil distillation. Sediments and water in the incoming crude oil are removed, leaving organic product for the distillation column. The water either goes into a special tank or directly into wastewater treatment.

Practical measurement tasks (examples)

The TurBiScat Ex PM 40 is also used to monitor turbidity in the production of whisky or cognac. Typical measuring points are found after filtration, before the spirit is stored in wooden tanks.

Did you know?

Scientists suspect that protective droplets in the primordial soup enabled the formation of the first building blocks of life. Without protection, they would have quickly disintegrated. The mechanism of phase separation may have provided the molecules with the necessary protection – until the first cells took over this function. Such phase separation occurs, for example, when salad dressing made from vinegar and oil is left to stand: the oil forms a layer on top of the watery components.

Source: <https://www.scinexx.de/news/geowissen/phasentrennung-in-der-ursuppe/>