MultiSpec Spectrometer System for the In-Line Color Measurement of Fatty Alcohols

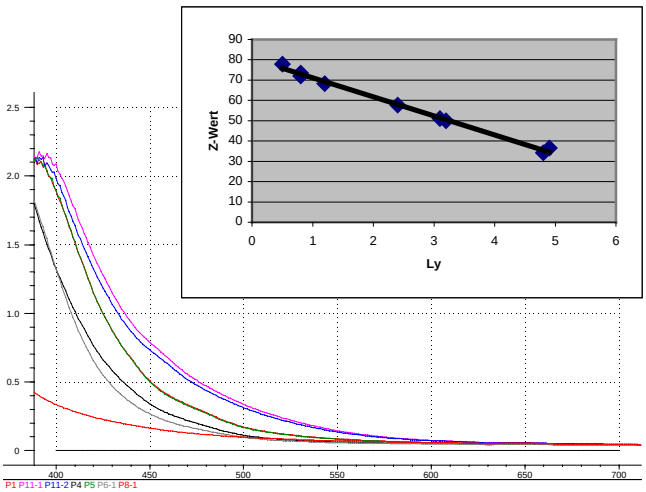
Customer

Cognis – we know how

Cognis is a leading company in specialty chemicals. Utilizing its 160 years of experience in oleochemicals, Cognis develops innovative products and solutions for personal care, home care, and modern nutrition, as well as high-performance products for numerous industrial markets. The superior quality of Cognis natural-sourced products is the key to their success. They spent great effort to maintain this quality, from careful selection of raw materials to state-of-the-art process technology.

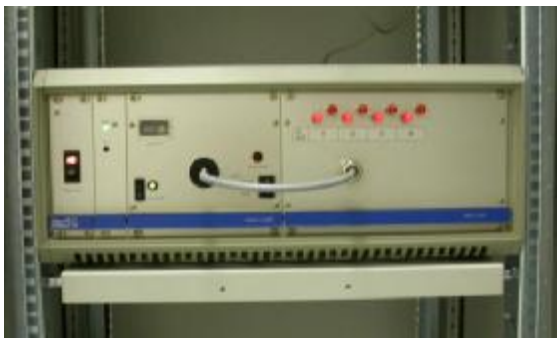
Application

The color of the fatty alcohols is a major quality criteria. In the past, for analysis samples were taken from the process stream and measured in the lab. To reduce this time consuming and cost-intensive procedure the plant applied an inline spectrometer system.
The color is determined as Lovibond number. The graphic (right) shows spectra of different Lovibond numbers (Ly) ranging from 0.5 to 4.9.



System Solution

The MultiSpec system is equipped with high quality spectrometer modules from Carl Zeiss and a longlife Halogen light source, covering the spectral range from 380 to 780nm. The tec5 electronic multiplexer allows the simultaneous measurement of four sample channels. A separate reference channel compensates for variations and drifts of the light source and guarantees long term stability. The flow through cells with a path length of 50mm are connected with the instrument via fiber optics. Sample temperature is 60°C. To eliminate the effect of soiled windows an offset correction is done before colorimetric data evaluation. For process communication the Profibus DP protocol is used.



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MultiSpec® is a modular instrument family of fast and process capable simultaneous readout spectrometer systems for the UV/VIS/NIR, based on flexible 19“- chassis technology. Various spectral ranges, resolutions and PC-interfaces are available. The integrated spectrometer modules from Carl Zeiss are high-quality optical components without moving parts and with high reliability and long term stability. An electronic multiplexer makes multi-channel sampling possible. Lamp drift compensation with separate reference channel. The standardized SMA-connectors at the front side allow the connection of fibres and various probes.

Specifications:

Spectral sensor	Carl Zeiss MMS UV-VIS
Spectral range:	250 – 785 nm
Resolution (Rayleigh):	< 7 nm
Pixel dispersion:	2.2 nm
Wavelength accuracy:	0.2 nm
Wavelength reproducibility:	+- 0.05 nm
Temperature stability:	0.1 nm / 1°C
Number of pixels:	256

Operating Electronics

Resolution:	15 bit
PC interface:	USB 2.0

Other

Optical interface:	Standard SMA connectors
Process Communication:	Profibus (optional: Digital/Analog I/O)
Power supply:	110/220V, 50/60Hz
Dimensions (HxWxD) (Standard enclosure)	180 x 427 x 411 [mm]
Weight:	12 kg – 15 kg
Operating temperature:	5 °C – 40 °C

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