

Newsline

NEW PRODUCTS

OPTIQUAD: FFA inline measurement in frying applications

The innovative OPTIQUAD is used to measure the free fatty acids (FFAs) in frying oil and opens up new possibilities in process optimisation.

Unlike conventional laboratory methods for measuring the FFA value, the OPTIQUAD continuously measures the FFA value in the pipe – without touching the product. Analysis is done through an optical window in a standard VARINLINE® measuring section. This enables the OPTIQUAD to deliver extremely precise readings in seconds, enabling much quicker intervention in production.

The advantages are obvious: OPTIQUAD helps minimize the need for fresh oil and maintain a high level of quality. It also helps reduce costs for sampling and sample transport as well as the associated sources of error. High long-term stability and no need for consumables mean a significant reduction in operating and maintenance costs. Best of all, the OPTIQUAD represents outstanding value for money.

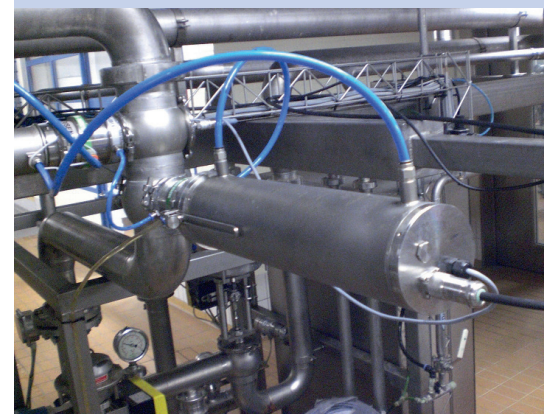
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Highlights

- Inline measurement of the FFA value in frying oil
- Non-contact analysis
- High precision and long-term stability
- For use in dynamic control loops
- Significantly reduces the need for sampling, sample transport and preparation
- Eliminates the need for daily cleaning
- No operating costs for chemicals, reagents and cleaning agents
- Impressive price/performance ratio



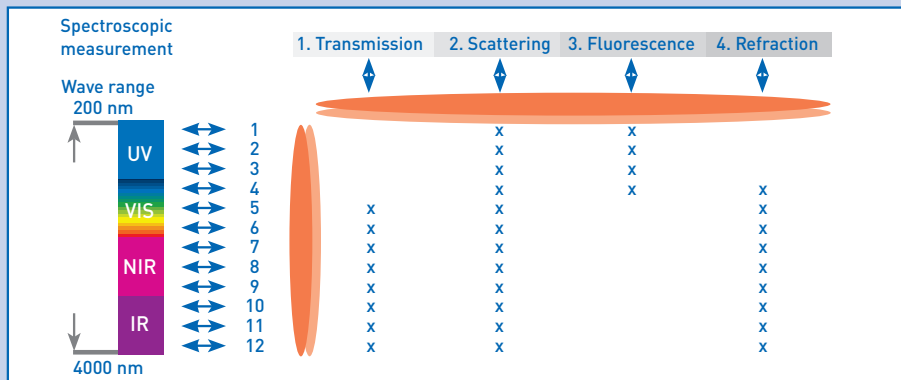
OPTIQUAD Analyzer Unit



OPTIQUAD-FFA analyzer unit in FFA application

OPTIQUAD brings light into the dark

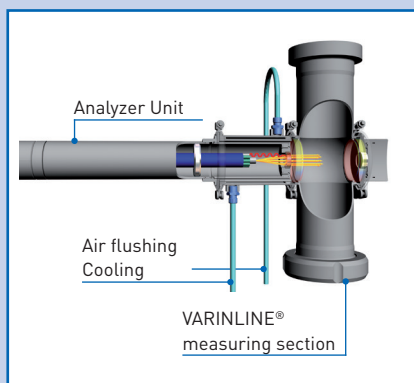
The OPTIQUAD uses several light sources for measurement. Depending on the measuring task, up to four optical methods and 12 wavelengths are used. The signals of up to 12 wavelengths are coupled into the medium in succession via the optical window and measured with appropriate sensor elements, depending on the analytical process. The raw data are fed into a mathematical model in order to determine the FFA value. The FFA value is transferred directly to the control system via a 4...20 mA signal.



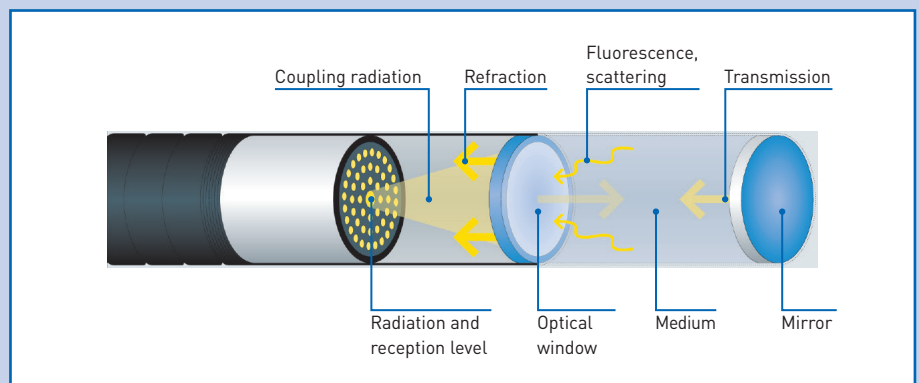
OPTIQUAD wave matrix

- Unique combination of four optical measuring methods in one system
- Synchronous measurement of transmission, scattering, fluorescence and refraction
- 12 different wavelengths of UV/VIS/NIR/IR, 200 to 4000 nm

OPTIQUAD design



The OPTIQUAD optical methods of analysis



OPTIQUAD means optimal

Hygienic process connection and easy cleaning

The OPTIQUAD Analyzer Unit is connected to the process without any contact via an optical window in the standard VARINLINE® housing. The VARINLINE® housing is certified to EHEDG and the optical window is certified to 3A. The wetted parts conform to the FDA. In addition, cleaning is easy using the SIP/CIP method.

Water cooling

Thanks to the effective water cooling concept, the OPTIQUAD boasts extremely precise and reliable measurements, even at high frying temperatures.

Less maintenance and more stability

Compared to typical laboratory devices, no daily recalibrations are necessary when operating the OPTIQUAD. As there are no moving parts, high long-term stability and thus minimal maintenance is achieved. In addition, the optical window remains free of any coatings as proven in the long-term test.

Recalibration

Should it be necessary to adjust the measurement, several samples are taken at the measuring point. The reference values determined in the laboratory are then input into the Operating Unit and recalibration is performed at the touch of a button or automatically.

Simple, time-saving functional test

Using a wide variety of diagnostic routines, the OPTIQUAD tests and monitors itself for the most part. All warnings and even errors are saved in a message list that can be read using the Operating Unit.

Compact and flexible Operating Unit

The compact Operating Unit is extremely flexible and can be installed anywhere thanks to a serial interface. The measured values and status information can be read off this unit.



OPTIQUAD operating unit

The OPTIQUAD in full use

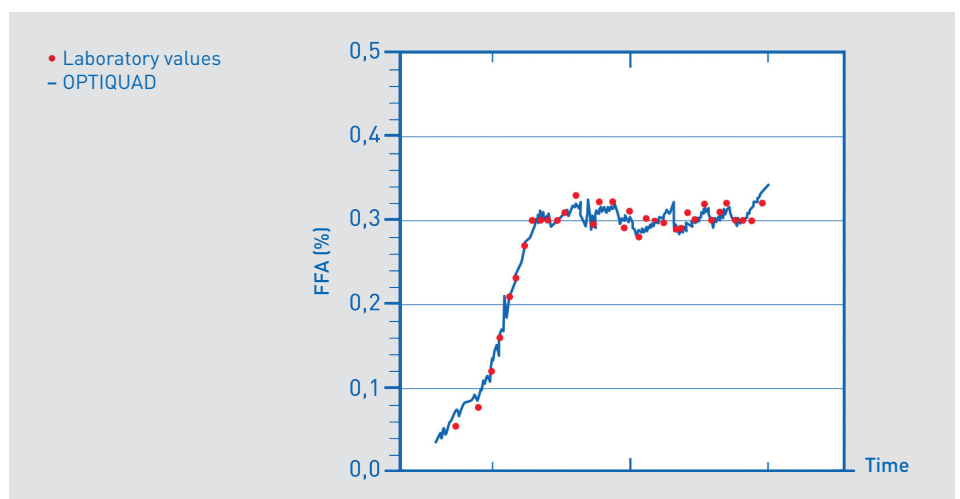
The OPTIQUAD is the perfect choice whenever you require continuous measurement and control during production.

The typical application:
Continuous measurement of FFA content in the frying oil, e.g. for frying snacks. By adding a specific amount of new oil, the FFA value can be kept below a defined limit.

Precision that impresses

Thanks to the elimination of moving parts, the measuring velocity, long-term accuracy and repeatability were significantly improved.

In addition, compared to laboratory measurements, using the OPTIQUAD eliminates potential error sources that may be caused by the taking, transporting and preparation of samples.



Technical data – OPTIQUAD-FFA 4050

Measuring accuracy (under reference conditions) Measuring accuracy Repeatability	Standard deviation: $\pm 0.03\%$ FFA Standard deviation: $\pm 0.01\%$ FFA
Analyzer Unit	
Measuring principle	Optical spectroscopy with up to four measuring methods (transmission, scattering, fluorescence and refraction) with up to twelve wavelengths from ultraviolet to infrared.
Application range	Measurement of the FFA value in oil
Cycle time	≥ 3 s
Max. product temperature	+190°C (higher temperatures on request)
Ambient temperature	0...+50°C
Wetted parts	1.4404, 1.4301, quartz or sapphire glass, PTFE, FKM
Protection category	IP65/NEMA4X; IP68/NEMA6
Signal outputs	Two current outputs: 4...20 mA / 12 bit resolution for the FFA value and the product temperature Four binary outputs for warning, system failure, service mode
Operating Unit	
Version	Industrial PC with touch screen display, parameterisation and calibration built into a stainless steel housing or into a switch cabinet.
Connection to Analyzer Unit	Standard cable length 2 m; other cable lengths optional
Power supply	24 VDC, 30 W
Protection category	IP65/NEMA4X
Process connection	
VARINLINE® measuring section	DN40...DN150 / PN10 acc. to DIN 11850, DIN 11866; 1 1/2", 2", 2 1/2", 3", 4" OD; SMS (38 mm, 51 mm, 63 mm, 76 mm, 101 mm)
Connections	Including Tri-Clamp, aseptic flange, welded ends, dairy pipe connection, SMS
Hygienic approvals	EHEDG, 3A for optical window, FDA conform

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