

APPLICATION NOTE - NIR ANALYSIS of MILK POWDER *with ZEISS Corona extreme*

Target Industry:
Dairy Industry

INTRODUCTION:

NIR-Analysis can deliver results **very quickly and cost efficient** for organic parameters e.g. **moisture, protein, fat, lactose** and many more. Wet chemistry analysis is time and cost intensive when it comes to large numbers of samples. The non-destructive NIR measurement allows rapid measurement and can determine multiple components at the same. With the ZEISS Corona Spectrometer range this can be done even in the running process. The outstanding performance and quality of the **Carl ZEISS Spectroscopy** analyzer and the application expertise of **Noack & Co GmbH**, guarantee our customers the most reliable results.

THE ANALYZER:

Few other spectrometer systems from **Carl ZEISS Spectroscopy** incorporate as much application-related experience as the new **Corona extreme**.

The spectrometers feature fiber free, high energy illumination with outstanding optical properties and internal referencing.

Very robust design – dedicated for extreme conditions.



THE ONLINE MEASUREMENT:

The analyzer is integrated into the production line right after the drying process. This is easily done via special flanges. The measurement is running continuously (one measurement takes only about 15ms).

The results are stored in the internal software database or are transferred to a system control. The drying process is adjusted according to the measured values. The results and spectra can be easily extracted for further use or analysis.

Example: Milk powder



Target:
optimization of moisture content, 24h real time process control

Figure 1: Corona extreme

YOUR ADVANTAGES:

- **24h real time process control (15 ms integration time)**
- **Full signal integration to process control systems (analog or digital)**
- **Extreme robust design for all applications**
- **Very low cost of ownership**
- **Easy installation to the production line (e.g. with special flanges)**
- **Cost saving and increase in profit due to process optimization**

CALIBRATION PERFORMANCE:

The table shows examples for possible parameters. The minimum and maximum values indicate the prediction range for the parameters available. SECV (Standard Error of Cross Validation) indicates the prediction performance.

Parameters for milk powder	Unit	Calibration Range		SECV
		MIN	MAX	
Protein	%	35,1	36,9	0,1
Fat	%	0,60	0,80	0,05
Moisture	%	3,2	4,0	0,1
Lactose	%	50,6	52,4	0,1

Figure 2: Calibration file details

SOFTWARE:

ZEISS InProcess Software is designed to meet the customers need in every possible application. Its modular design is perfect for the creation of customized views and procedures. You can smoothly change the setup from Laboratory Mode to Online Mode without great adjustments.

The graphic user interface is comprised of icon menus giving it a familiar feel of operation at first sight. In addition, users may configure sequences, calculations and display formats based on their individual requirements.

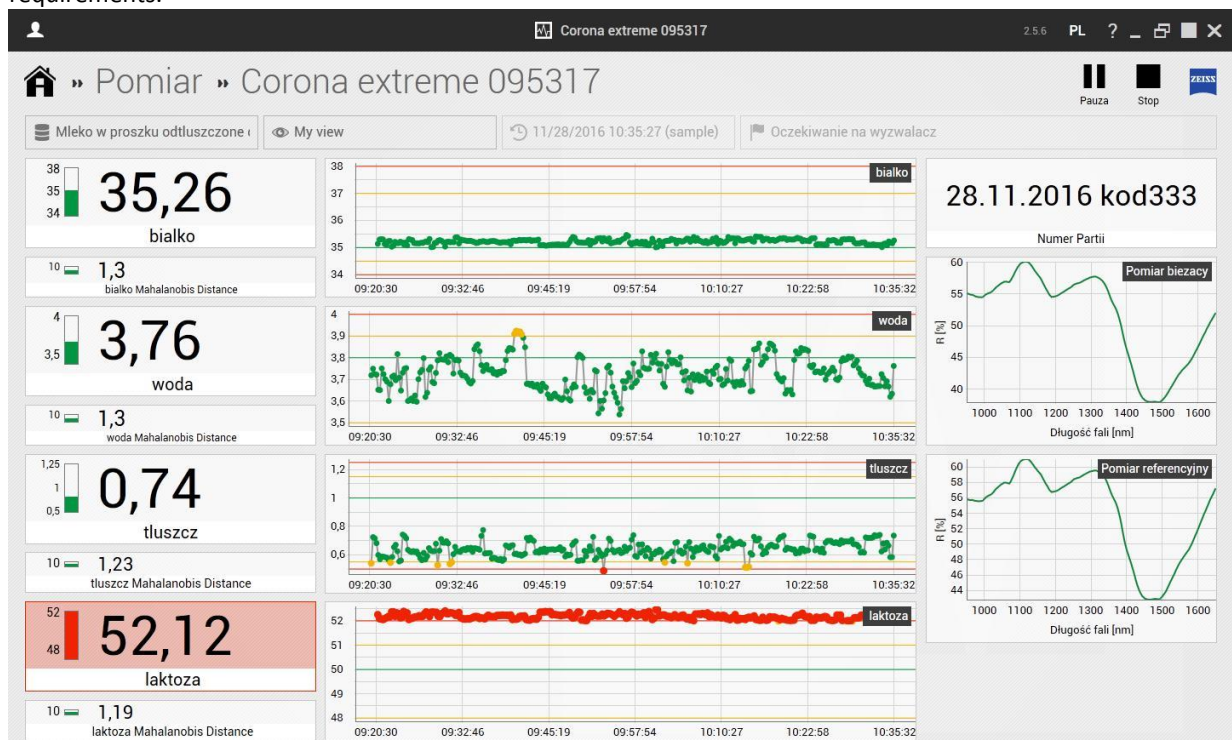


Figure 3: ZEISS InProcess Software shows measurement results – Example milk powder