

SpectraFlow Online Analyzer

Airslide Application

SpectraFlow Analytics Ltd revolutionizes the process control in cement plants with its innovative application of the well known Near Infra Red (NIR) concept for the analysis of powder material in an airslide online.

By controlling the Raw Meal, Kiln Feed and Cement chemical composition in real-time online exciting new possibilities of Raw Material usage arise, while reducing or eliminating the dependency on automatic laboratories.

Fast and accurate chemical analysis using Near Infra Red (NIR) i. e. the wavelength range from 900 to 2600 nanometers is a well established method in the petrochemical, food and pharmaceutical industry.

SpectraFlow is the extension of the NIR analysis concept applied to bulk and powder materials for the minerals industry. While NIR spectra had been extensively investigated in the 1970's its industrial use only became possible due to the availability of vastly improved computing power. With this, it became possible to obtain results from the received spectra within a useful timescale.

The key components for the airslide application

- The heart of the system is the FTIR spectrometer.
- 2 spots are arranged around the spectrometer and operate at 80% of their rating to extend lifecycle up to one year. These provide white light and the full range of NIR radiation from 900 nanometers to 2600 nanometers.
- With the pressure differences in the airslide and the analyser cone the material flow in the airslide is not disturbed and the cone remains practically dust free
- All information regarding the chemical composition of the material is gained by the reflected light. Therefore no interaction with the material happens and no detectors in the airslide have to be installed
- The reflected NIR radiation is directly received by the FTIR spectrometer which transmits its spectra to an industrial PC in the control panel.
- A separate PC outputs the analysis data to a control system and provides the user interface.



SpectraFlow Analyzer on an airslide in a cement plant

Benefits in analyzer operation

- No potentially hazardous radiation is used and therefore no import and storage permits are needed.
- Allows online analysis in airslides, as no detectors below the material are needed.
- Long lifetime of the source
- High stability of the FTIR so an external white reference only needs to be taken four times per year.
- Low cost of ownership.
- Very low analyzer maintenance.
- All Maintenance and Referencing can be done by the personal on site.

Benefits in plant operation

- Real Time Control of the Additive Input to the Raw or Cement Mills.
- Less variation of the raw meal, kiln feed or cement.
- Increased usage of highly variable raw materials due to very high measurement frequencies after the Raw and Cement Mills.
- Elimination or high reduction of the sampling after the Raw or Cement Mills.
- Increasing the lifetime of the XRF equipment in the laboratory.
- Decrease or Eliminate the usage of maintenance intense moving parts, robots and sampling devices.
- No Autolab is needed anymore for process control

The revolution in Process Control in a Cement Plant by helping you to make better use of your raw material and increasing the quality of the Raw Meal, Kiln Feed and Cement by eliminating the dependency on automatic laboratories

The control and monitoring functions

The industrial PC (IPC) inside the control panel has two independent tasks with different functions.

One task controls and monitors the complete analyzer.

- It holds the analyzer at a “ready” status in case of start up.
- It prevents incorrect manipulation by the operator.
- It monitors the complete analyzer.
- It provides detailed information for trouble shooting in case of an analyzer alarm.

The second task collects and prepares the data from the spectrometer and prepares them for the analysis.

- It permits graphical display of the chemical concentration of up to 12 different constituents.
- It permits administration of up to 40 analysis data.
- It saves the data in case of loss of communication with the analyzer.
- It allows the maintenance engineer to obtain information about which calibration model the analyzer is working with.

Interfaces

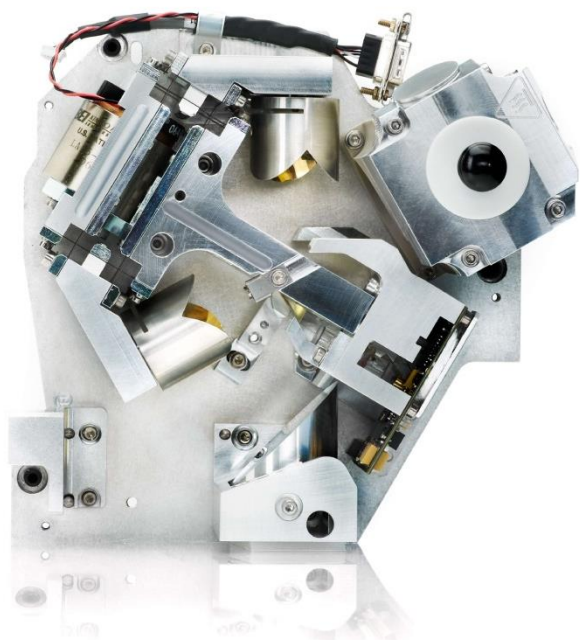
As well as via the user interface, the data are available as txt files to enable transfer via TCP/IP directly to the optimization software packages. On customer request the data can also be made available over Profibus-DP or as analog outputs of 4 to 20 mA in case a customer wants to collect the data via its process control system.



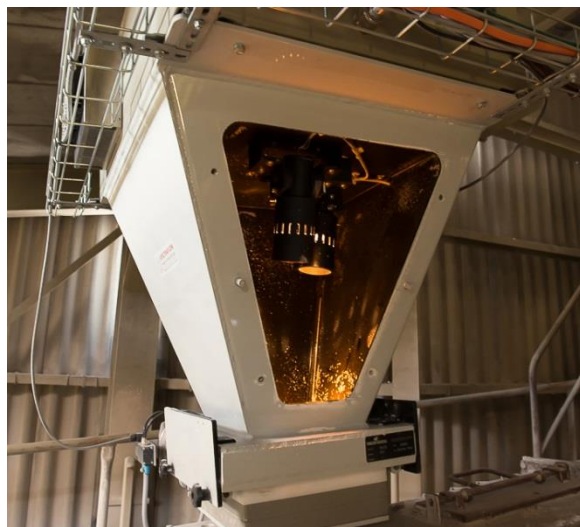
Inside view of illumination head showing lights and spectrometer entry

For more information, please contact:

SpectraFlow Analytics Ltd
Seestrasse 14b
CH-5432 Neuenhof
Switzerland
E-mail: info@spectraflow-analytics.com



ABBs FTIR spectrometer



View inside the SpectraFlow Airslide Analyzer