

SpectraFlow Online Analyzer

Crossbelt Application

SpectraFlow Analytics Ltd revolutionizes the process control of various mineral processes with its innovative application of the well known Near Infra Red (NIR) concept for the analysis of bulk material on a conveyor belt.

The analyzer is completely free of any radioactive components and therefore no licenses are needed.

Industries served include Cement, Iron Ore, Bauxite, Phosphor, Potash, Fertilizer (Urea), Gypsum, Limestone, Copper and Nickel.



Analyzer in a cement plant

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 material 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

- The heart of the system is the FTIR spectrometer.
- 8 spots are arranged on rails around the spectrometer and operate at 90% of their rating to extend lifecycle in minimum to a half a year. These provide white light and the full range of NIR radiation from 900 nanometers to 2600 nanometers.
- A metal “cone” protects the light path from stray light and dust.
- All information regarding the chemical composition of the material is gained by the reflected light. Therefore no interaction with the material happens.
- 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.

Benefits in analyzer operation

- No potentially hazardous radiation is used.
- No need for any permits and licenses to import or run the equipment.
- Allows online analysis of secondary materials.
- 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.
- Low analyzer maintenance.
- No recalibration of the analyzer due to the stable light source
- organic and anorganic material can be measured

Benefits in plant operation

- Better and longer use of the quarry/mine resp. raw materials.
- Less variation in the raw material feed.
- Permanent control of the quality at every process step
- Smoother operation

Helping you make better use of your raw material and achieving your quality targets

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 preblending or 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.

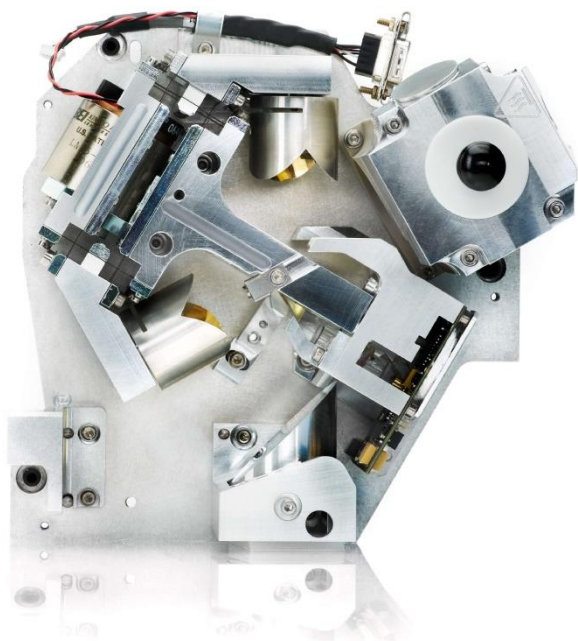


Inside view of illumination head showing spots and spectrometer entry

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ABBs FTIR spectrometer



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