

The logo for FCT, consisting of the letters 'FCT' in a bold, white, sans-serif font. The 'F' and 'C' are connected, and the 'T' is separate. The background of the entire page is a dark blue technical drawing of a mineral processing plant, showing various stages of material flow, funnels, and pipes. The drawing is semi-transparent and serves as a background for the text.

FCT

/ACTech

AT LAST,
REAL TIME MINERAL ANALYSIS IS HERE.

FCT, FIRST WITH
COSMA DP

CONTINUOUS ON-STREAM
MINERAL ANALYSER
FOR DRY POWDER MATERIAL

CONTINUOUS ON-STREAM MINERAL ANALYSIS BY X-RAY DIFFRACTION

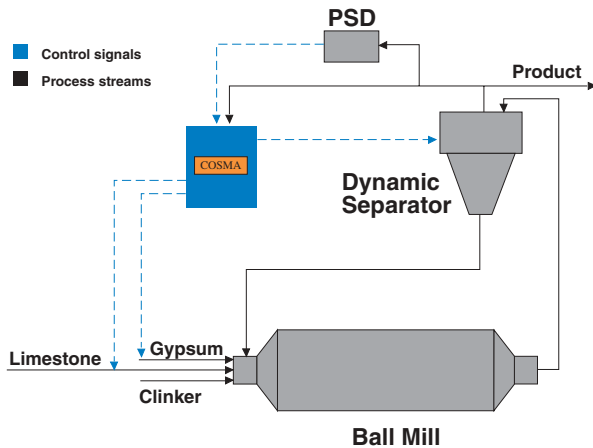
THE CHALLENGE

High value batch or continuous processing of dry powder materials has always provided a challenge for process control where measurement of mineralogical or crystalline composition is required.

For the most part, indirect analyses are conducted off-line and related back to the material being processed. An inaccurate method that is too infrequent for dynamic process control.

THE SOLUTION - COSMA

Now, for the first time, there is a direct means of monitoring the mineralogical and crystalline components of dry powder materials, in real-time, enabling true process control. FCT-ACTech supplies and supports the COSMA family of on-line mineral analysers, set to revolutionize many industrial processes, where chemical information alone is insufficient for process and quality control.



Typical dry powder application in a cement mill circuit.

REAL-TIME PROCESS CONTROL

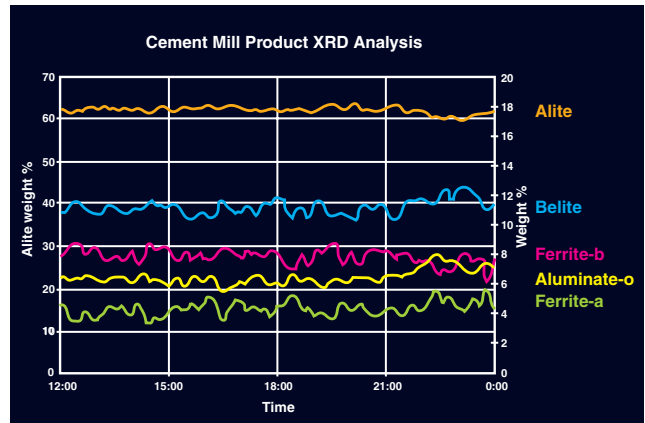
COSMA is an on-line X-ray diffraction analyser, which reports the quantitative composition of selected crystalline phases in the material continuously passing through the instrument. Results are reported from COSMA in real-time as a moving trend to the plant control room for manual action or may be integrated into the plant control system for automatic correction.

PROCESS CONTROL DEVELOPMENT

FCT's unique experience in process control of powder materials is also available to assist customers to derive and implement process control regimes based on information produced by a COSMA installation, thereby guaranteeing the best return on the investment.

PREDICTIVE CONTROL

It is no longer necessary to be in a reactive mode of operation. Where accurate live data is available, correlations between historical plant data and COSMA measurements enable models to be developed to predict product performance and quality.



COSMA trend output of cement minerals

RELIABILITY

State of the art x-ray optics and computing provide the highest reliability from COSMA, essential for equipment in critical dependency process control situations.

After factory calibration on a suite of representative samples provided by the customer, a COSMA installation needs no further calibration in the field. On-site maintenance requirement is simple and minor.

SERVICE AND SUPPORT

FCT-ACTech provides comprehensive support to ensure maximum availability of the equipment. On-site service and remote performance monitoring of the COSMA installation are part of the customer support program.

MATERIAL CAPABILITY

Most free-flowing dry powder materials with 50% passing 45µm may be analysed for crystalline content e.g. cement, gypsum, lime, chemicals, pharmaceuticals etc. Coarse materials such as clinker require pre-grinding, which is integrated into the sampling system.

SAMPLING

Providing a continuous representative sample to the analyser is of paramount importance to the quality of results. FCT-ACTech has extensive experience in sampling and sample transport, working with clients to design, engineer and supply suitable systems.

THE BENEFITS

Real-time monitoring enables tighter control of the process, which means a plant operating at optimum performance giving maximum returns. Production costs will be lower whilst producing a consistently higher quality product.

COMPETITIVE EDGE

All of the practical benefits that flow from a COSMA installation, as the nucleus of a process control system, provide a competitive edge for the manufacturer, boosting the all important bottom line.



COSMA DP Dry Powder configuration

- Pre-aligned XRD Mounting
- “Curve” Position Sensitive Detector collects complete XRD pattern
- Monochromator optimizes XRD pattern
- XRD Tube control integrated into cabinet safety interlocks
- High Voltage X-ray Tube supply
- Detector HV supply and signal processing
- Sample prepared on rotating table
- Sample preparation controller
- System controller and plant interface
- Analysis and quantification computer

WHAT COSMA CAN DO FOR YOU

FEATURES

- Real-time monitoring
- Continuous measurement
- Bulk sample presented
- Direct analysis of minerals
- Total composition identified
- Standardless quantification

BENEFITS

- Process changes shown as they happen, remedial action can be taken immediately.
- Trends clearly show success of control actions to maintain target levels.
- Provides confidence that results reflect actual changes in the process.
- No assumptions, no back calculation, no guess work. Just accurate result.
- Process disturbances from rogue minerals quickly identified and dealt with.
- No re-calibration on-site, reducing maintenance requirements.

SPECIFICATIONS AND PERFORMANCE

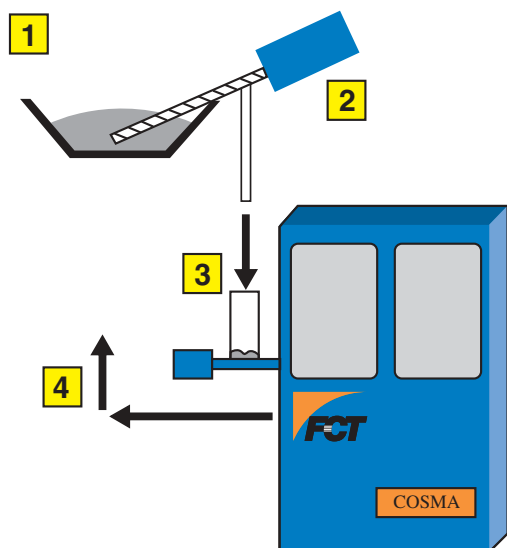
X-ray generator	60kV, 50mA
X-ray tube	1800 W
PSD count rate	30,000 cps (max)
Pattern range	0 to 120° 2-theta
Monochromator	Flat graphite or optional multilayer mirror

Quantitative software	Rietveld
Concentration Range	0.2% to 100 %
*Accuracy	+/-0.1 at 0.5%, +/-0.5 at 100%
Analysis time	continuous
Analytical update time	1 minute

* depending on sample composition

INSTALLATION LAYOUT AND REQUIREMENTS

TYPICAL INSTRUMENT LAYOUT



SAMPLE ACQUISITION, DELIVERY & RETURN

- 1 & 2 Sample acquisition and transfer system (optional supply) to receive hopper: 12 to 25 kg/h, 50% passing 45µm, top size, 100µm.
- 3 Standard integrated sample receive hopper
- 4 Analysed sample returned pneumatically to the process. No spent sample to dispose of.

INSTALLATION REQUIREMENTS

- Electrical supply 230/110VAC 50/60 Hz single phase +/- 20V, 15/35 Amps. Terminal connection.
- Industrial compressed air 6 bar +/- 2 bar, oil-free. Consumption 15m³/h. Particulate filter (<5 µm) and water trap required.
- Cooling water, via external closed circuit refrigerated system.
- Detector gas, 15% Ethane in Argon, instrument grade "G" size cylinder, regulated to 6.2 bar. Consumption approximately 1 cylinder per year.
- Signal connection to plant, Modbus via RS485 or Ethernet.
- Dedicated telephone connection for remote access.
- Dust free, air conditioned analyser room (optional supply) 20 to 25°C (rate of change <1°C/h)

DIMENSIONS & WEIGHT

- COSMA dimensions & weight uncrated 1200 (w) x 800(d) x 2010 (h) mm, 510 kg
- Clearance required 900mm front and sides

FCT-ACTech LOCATIONS

AUSTRALIA: 20 Stirling Street, Thebarton SA 5031

Tel: +61 8 8352 9999 Fax: +61 8 8352 9988

E-mail: info@fctinternational.com

USA: 5 Great Valley Parkway, Malvern PA 19355

Tel: +1 610 725 8840 Fax: +1 610 725 8846

Website: www.fctinternational.com