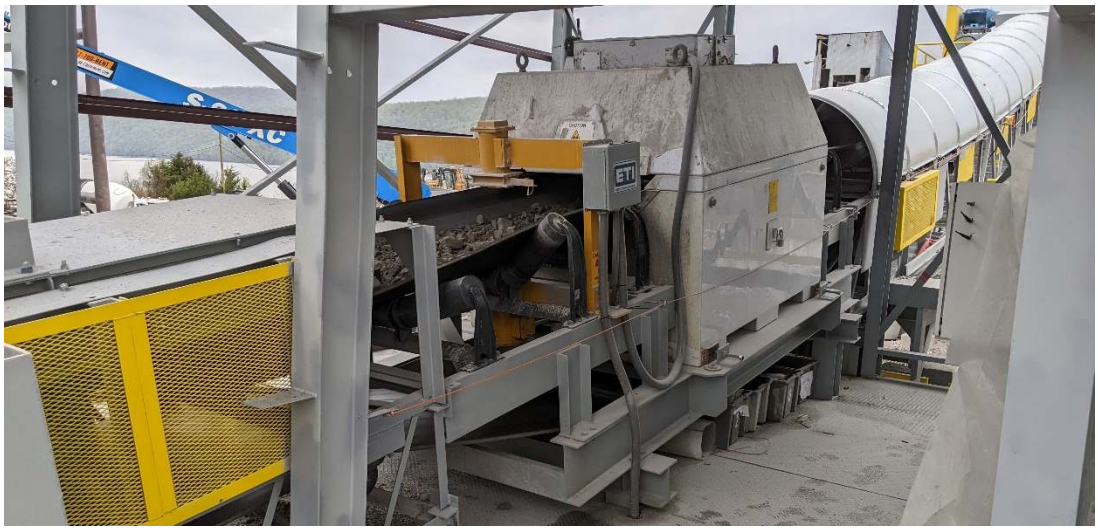
Energy Technologies Inc.

Cement & Minerals

Model 730-CM FSEA
Full Stream Elemental Analyzer



The ETI Model 730-CM is an Online Bulk Material Analyzer utilizing prompt-gamma neutron activation (PGNA) elemental analysis combined with single-gamma density measurement to produce continuous process information. First in its class to directly measure variation of flowrate within the analyzer, it creates best-in-class accuracy.

The FSEA utilizes no-contact non-destructive technology to measure the elemental content of 100% of the material in real time while it is in motion on the conveyor. The device provides analytical data to operators and plant control systems on a minute-by-minute basis.
The analyzer's real-time measurement and reporting allows plant operators to react to and correct chemistry problems, enables quarry managers to build consistent stockpiles of material, and can generate reports on material quality for batches, stockpiles, or particular time periods.

Typically installed after the quarry crusher or before the Raw Mill, the FSEA allows operators to maintain tight control over cement raw mix chemistry dynamically. Analyzer data is used by automated plant systems to control additive feeders, thereby maintaining homogeneatiy. The analyzer is critical in controlling the quality and consistency of the clinker product.

The FSEA calculates the phase composition proportions of Alite (C_3S), Belite (C_2S), Tricalcium Aluminate (C_3A), and Tetracalcium Aluminoferrite (C_4AF). It providesx $CaCO_3$, Loss On Ignition (LOI), Lime Saturation Factor (LSF), Silica Ratio (SR), and Alumina Ratio (AR) values, and it directly measures and reports the analytes listed below.

- SiO_2
- Al_2O_3
- Fe_2O_3
- CaO
- MgO
- SO_3
- K_2O
- Na_2O
- TiO_2
- MnO_2
- H_2O
- Cl

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For more information on any of our products or services please visit us on the web at www.energytechinc.com.

SERVICES

ETI offers flexible service contracts for all analyzer customers. Coverage includes radiation safety surveys, leak testing, calibration of all electronics and nucleonics, cleaning, and routine software/hardware maintenance

Technical Support
Installation and Setup
Maintenance
Application Support
Hardware Support
Guaranteed Warranty

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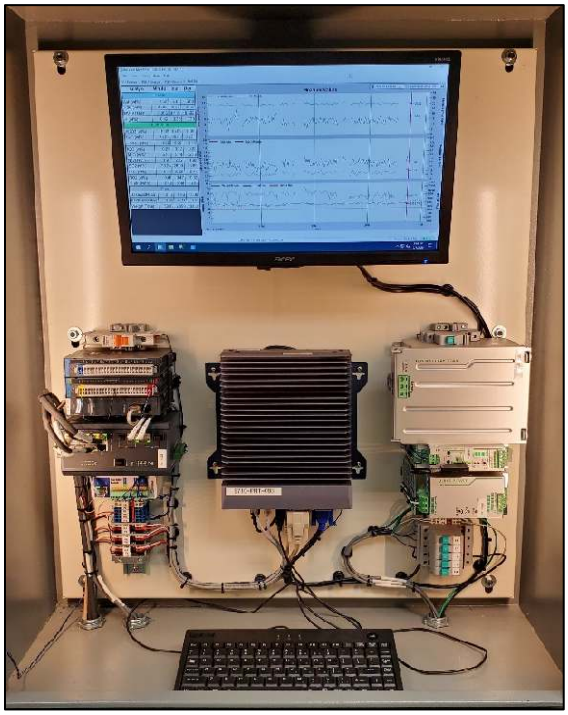

Design Features

Integrated Nuclear Belt Scale

- Weight is directly measured at the analyzer.
- Uniform belt-loading not required.
- Accurate analysis is provided no matter the belt loading or variation in belt loading.
- No mechanical drift or periodic recalibration needed.

Moisture Detection

- Moisture is directly measured by integrated single or dual-gamma analyzer.

Auto-Standardization

- Automatic software compensation for electronic drift, source decay, and temperature variations performed every three seconds
- Ensures system precision and accuracy

Detector Temperature Control

- Eliminates drift due to ambient temperature variations
- Ensures system precision and accuracy

Advanced Data Acquisition and Control

- Intuitive and easy to use operator interface
- Remote client software provides data at user workstations.
- Graphical and Tabular Displays
- Automatic Report Generation
- Manual and Automatic control of process control devices (sort gate, feeder, etc.)
- Analog outputs for connection to other process equipment
- Digital outputs for alarm or sort controls

Technical Specifications

Performance	
Accuracy	0.3-1.0 wt. % (typ) for washed or raw materials
Response Time	60 seconds (typ)
Operational Material	
Material Top Size	24-60 in (600-1525 mm) (typ), inclination same as belt limitation
Material Depth	4-16 in (100-406 mm) depending on material density
System Inputs	
Belt Running	A pair of voltage free contacts indicating that the belt is running
System Outputs	
Analog	Eight (8) isolated 0-20mA or 4-20 mA analog outputs
Digital	Four (4) 24 VDC digital outputs Four (4) 24 VDC digital inputs
Environmental Conditions	
Operating Temperature	Analyzer: -22˚-122˚F (-30-50˚C) Enclosure: 40˚-120˚F (5-40˚C)
Humidity	Analyzer: 0-100% Enclosure: 0-90%, non-condensing
Environment	Class II, Div.1 group F (G optionally available). All units are protected against dust and moisture (NEMA 4).
Electrical Requirements	
Power Requirement	120/240 VAC, 50/60 Hz, 3 KVA
Radiation Levels	
Surface	1.0 mREM/hr maximum radiation dose rate at all points on the surface of the equipment except in the direct beam.
Vicinity	Less than 0.1 mREM/hr maximum radiation rate at all points outside 3 ft. of the source housing.
Shipping Weight	
Weight	14,300 lbs (6,500 kg)