Full Stream Elemental Analyzer

Real-Time Online Coal Analysis

- **Sorting**
- **Blending**
- **Process Control**

DESCRIPTION

The ASYS/ETI Model FSEA Elemental Analyzer (FSEA) is a registered nuclear gauging device for measuring ash, moisture, and sulfur weight percent, heating value, and ash elemental weight percent of coal. The measuring portion of the device, which consists of a source and detector enclosure, is mounted such that a conveyor belt passes through the enclosure. The detector is connected to an electronics enclosure housing an industrial computer which processes the detector signals and displays the measured results to the operator. The FSEA Elemental Analyzer generates elemental weight percent of coal ash (Al_2O_3, CaO, Fe_2O_3, K_2O, MgO, MnO_2, Na_2O, SiO_2, SO_3, and TiO_2), ash, sulfur, and weight/density measurements every minute making it useful in online process and control applications.

APPLICATIONS AND USES

Sorting

Real-time measurement of coal ash weight percent and a virtually unlimited flow capacity make the FSEA a valuable sorting instrument. Run of mine coal- especially within seams of highly variable composition – can be efficiently sorted into specific market products, thereby reducing good product waste and improving profit margins.

Blending

Use of the FSEA as the control element in either feed-forward or feed-back control topologies makes the FSEA a valuable tool for coal blending. Electronic control signals from the FSEA can be used to adjust feed rates from various coal sources thereby improving blend quality and efficiency.

Process Control

Use of the FSEA on the output of a prep plant allows for closed-loop feedback to control heavy media density in the coal circuit. Use of the FSEA on a plant bunker feed belt allows for boiler operation adjustments to reduce boiler fouling and slagging and can lead to improvements in long-term heat rate.

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DESIGN FEATURES

Rugged Belt Mounted Analyzer
- Assembly is dustproof and waterproof
- Requires no routine maintenance

Source Holder/Detector
- Sources are housed in a protective shield

Auto-Standardization
- Automatic software compensation for electronic drift, source decay, and temperature variations performed every three seconds

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
- Graphical displays
- Automatic Report Generation
- Automated Calibration
- 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 control

TECHNICAL SPECIFICATIONS

Performance	
Accuracy	Meets or exceeds ASTM D6543
Response Time	1 Minute (typ)
Operational Material	
Material Top Size	6 in (160 mm), inclination same as belt limitation
Material Depth	4-16 in (100-406 mm), depending on material density
Environmental Conditions	
Operating Temperature	-22°-122°F (-30°-50°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	120/230 VAC, 50/60 Hz, single phase, 3KVA
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 (6500 kg)

SERVICE

ETI offers an annual service contract for all analyzer customers. Coverage includes radiation safety surveys, leak tests, calibration of electronics and nucleonics, cleaning, and routine maintenance.

Please contact ETI for performance data, additional information, or application evaluation.

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