



## Model 730 FSEA Full Stream Elemental Analyzer



The Model 730 Full Stream Elemental Analyzer is a registered nuclear gauging device for measuring ash, moisture, and sulfur weight percent of material, heating value, and ash elemental weight percent of material. The measuring portion of the device, which consists of a source and detector enclosures, is mounted such that a conveyor belt passes through the enclosure. The detectors are connected to an electronics enclosure housing an industrial computer which processes the detector signals and displays them to the operator. Ash elements measured include  $Al_2O_3$ ,  $CaO$ ,  $Fe_2O_3$ ,  $K_2O$ ,  $MgO$ ,  $MnO_2$ ,  $Na_2O$ ,  $SiO_2$ ,  $SO_3$ , and  $TiO_2$  on a weight percent of material basis. All measurements are made every minute to make it useful in on-line process and control applications.

- **Sorting**  
Real-time measurement of material ash weight percent and a virtually unlimited flow capacity make the FSEA a valuable sorting instrument. Run of mine material – 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 material blending. Electronic control signals from the FSEA can be used to adjust feed rates from various material 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 material 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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## SERVICES

ETI offers an 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

### Rugged Belt Mounted Analyzer

- Assembly is dustproof and waterproof
- Assembly bolts onto existing belt structure without modification
- Minimizes installation time and cost

### Source Holder/Detector

- Gamma and Neutron sources are housed in a protective shield
- Gamma rays are collimated into a fan beam to maximize material interrogation zone (approximately 160 times that of other units)

### 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
- 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 ..... 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 for reporting material ash wt%/weight  
Digital ..... Twelve (12) 24 V digital outputs

### 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)