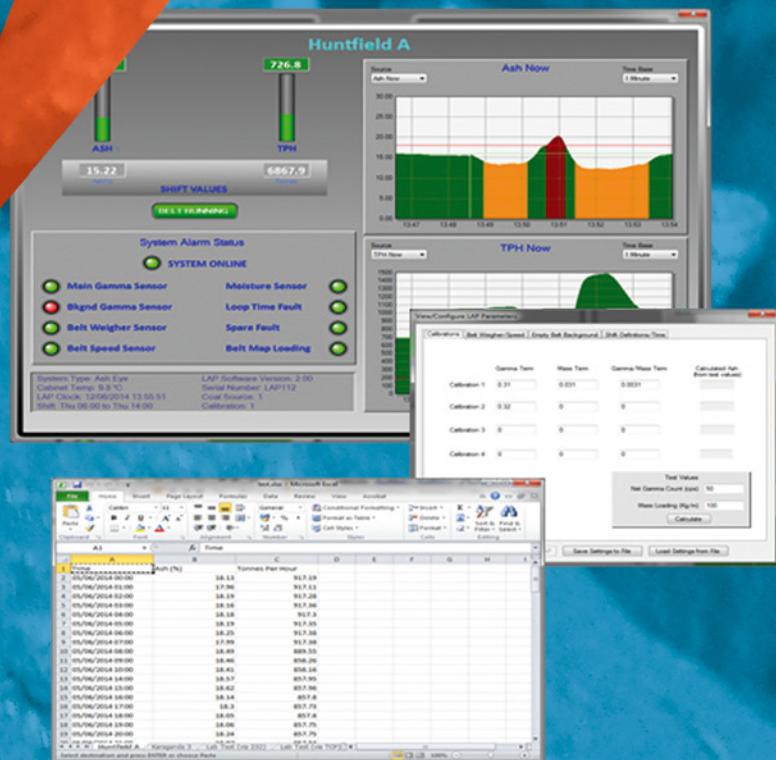


Ash Eye On-Line Ash Monitor



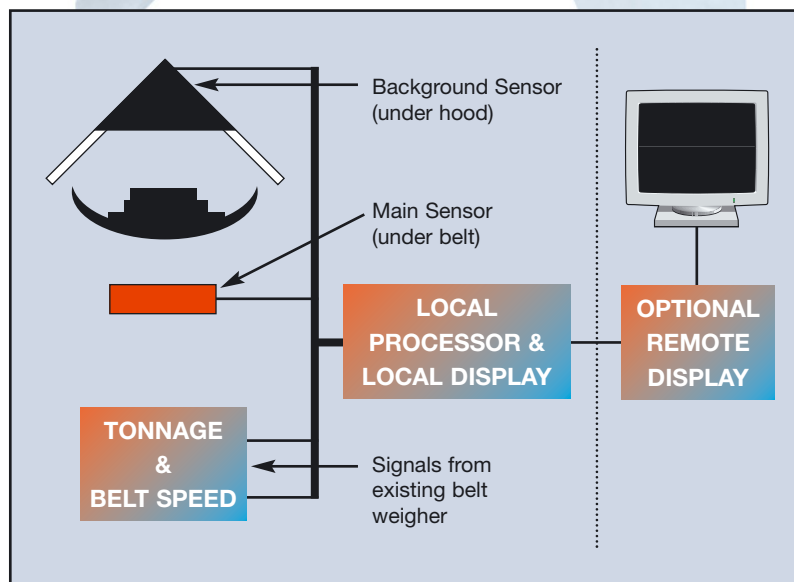
 **BRETBY
GAMMATECH**

BRETBY GAMMATECH

- Fully on-line non-contacting Ash Monitor using natural gamma technology.
- No radioactive sources.
- The new generation Ash Eye is fully modular. The basic Ash Eye is a conveyor mounted instrument that provides real-time ash data to an existing computer control system. An optional Remote Display Unit is available for customers requiring a fully stand-alone system.
- It can be installed on existing fabric or steel cored belts and feeders.
- The Ash Eye incorporates a unique background compensation algorithm that allows significantly improved consistency in ash measurement.



Local Ash Processor

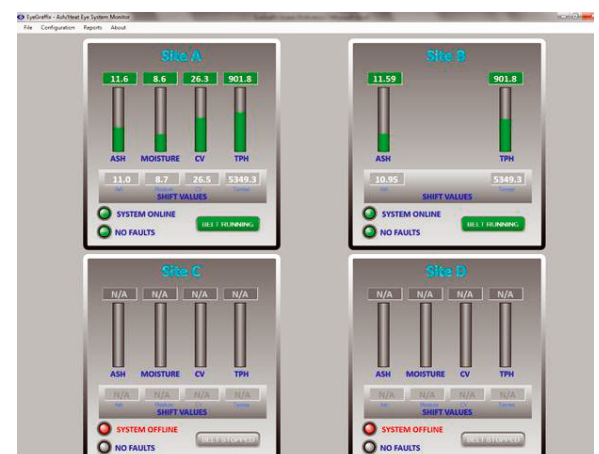


Principle of operation

The dirt associated with mined coal contains higher concentrations of radioactive material than the coal itself. The Ash Eye uses a sensitive detector placed under the conveyor belt. This detector senses the natural gamma variations from the conveyed load. There is also another small detector that senses the natural variations in the background gamma but is shielded from the load. The signals from these two detectors along with tonnes per hour and belt speed signals from a belt weigher are combined using special algorithms to obtain the ash measurement.

Main Features

- Simple, secure menu-driven operation, with automatic restart upon restoration of power.
- Real-time numerical displays of current ash content, the shift ash content, the current tonnes per hour flow rate and the total shift tonnes.
- Up to four calibrations to handle different coal types.
- Up to eight different coal types can be accommodated.
- User-definable shift pattern with comprehensive end-of-shift reporting.
- Archival and retrieval of shift reports.
- Two 4 to 20mA Analogue outputs which can be set to the current ash content, the shift ash content or the current tonnes per hour flow rate.
- Two Relay outputs (c/o contacts) which can be set to operate on a critical system fault, a non-critical system fault, the current ash content below a target band, within a target band or above a target band.
- User-definable quality parameters (target ash content and desired ash band).
- Downloading of information to Multi-Media-Card (MMC) or RS232 Serial port to allow more comprehensive user analysis (usually in conjunction with other user-supplied data).
- Serial output (RS232/RS485) of percentage ash, tonnage and various other house-keeping data for onward transmission to the customer's computer control system or the optional Bretby Gammatech Remote Display Unit.



Additional Features of Optional EyeGraffi x Software

- Connect to up to 25 Ash-Eye/Heat-Eye systems simultaneously
- Alerts user to levels outside of normal limits (ash content, calorific value, etc.)
- Shows a graphical representation of current and historical parameters
- Connects to systems over RS232/RS485 serial communications, Fibre-Optic or Ethernet
- Multiple EyeGraffi x terminals can be used in a system using a LAN/WAN network to link together (only one physical connection to each Ash-Eye/Heat-Eye system is required)
- Generation of reports in Microsoft™ Excel or generic spreadsheet format.
- Multiple reports can be configured to be generated automatically at regular intervals and emailed to recipients
- System alerts can be notified to users by email, with the ability to define how long an alert must be active for before being emailed out
- Remote viewing and setting of Ash-Eye/Heat-Eye system parameters and sensor status Settings of user defined limits for monitored parameters

Local Display



Benefits

- In run of mine (ROM) applications the Ash Eye is being used to identify the sources of dirty coal enabling managers to tackle the problem.
- In a large mining complex a network of Ash Eyes were successfully used to apportion the proceeds on the basis of ash content and tonnage.
- In blending control systems the good use of the Ash Eye information leads to a more consistent blend leading to higher financial proceeds for the coal producer.
- In final product applications the Ash Eye has, in many cases, eliminated the requirement for hourly control samples – significant Heat Error improvements have

been achieved – thereby reducing costs and increasing revenue to the user.

- In many in-plant applications the Ash Eye information can be used to give advance warning of problems e.g. changes in gravity levels, blocked chutes etc.
- In power station applications the Ash Eye is often used to identify dirty coal prior to it entering the boilers thus saving costly downtime and boiler cleaning.

Accuracy

The accuracy of the Ash Eye will depend upon the site and the belt weigher. Accuracies of (1 sigma) better than 0.5% ash on final product and between 1 and 3% ash with run of mine (ROM) have been achieved with production systems.

Precision

Precisions in the order of 0.5% are regularly being achieved with final product monitors (Measured to ISO 15239).

Applications

- Run of mine (ROM) or raw coal monitoring.
- Control of diverting system for high ash material.
- Washed coal - for input to washing plant control system.
- In blending control system.
- Final Product Monitoring.
- Monitoring of coal deliveries at Power Stations, Coking Plants and Cement works.



Over-the-belt Shield

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Email: info@bretbygammatech.com

Website: www.bretbygammatech.com

Site Specifications

Conveyor Speed:	No limit (usually 1 – 8 m/sec)
Conveyor Width:	No limit (usually 800 – 2400 m)
Tonnage rate:	No upper limit*
Bed Depth:	No upper limit*

*Mass loadings of <25kg/m should be avoided

Electrical Requirements

85 – 264 VAC, 47-440Hz single phase 5A at both the Conveyor site and the Optional Remote Display Unit site

Environmental Requirements

Operating Temperature:	-10 to 40°C
Moisture:	5 to 95% relative humidity (non-condensing)

System Inputs

Tonnage Rate:	4-20mA or 0.4-2.0V
Belt Speed:	4-20mA or 0.4-2.0V or <24V pulse per unit of travel or contact closure if constant speed

System Outputs

2 User configurable analogue outputs of any measured or calculated parameter (4 - 20mA)
2 User configurable alarms, for example High/Low ash (voltage free contacts)
Standard Serial output (RS232)

Shipping Details

Gross weight:	1500 kg (approximate, depends upon conveyor dimensions)
Gross Volume:	4.5m ³ (approximate, depends upon conveyor dimensions)

Specifications are subject to change without notice

