

# CIFA

## MODEL 350

### Carbon In Fly Ash Monitor



#### CIFA Model 350 Applications

Real time measurement of unburnt Carbon in fly ash provides active process control in coal burning power stations. The CIFA Model 350 with online measurement of unburnt carbon in fly ash permits:

- Reduced carbon dioxide emissions per unit of electricity due to more efficient boiler operation.
- Immediate adjustment in boiler operation when variation in unburnt carbon in fly ash occurs.
- Improved boiler efficiency, especially when feed coal quality is variable.
- Improved fly ash quality – lower unburnt carbon is beneficial for end users of fly ash, such as the cement industry.

*\*Commonwealth Scientific and Industrial Research Organisation, Australia.*

#### CIFA Model 350 Advantages

The Scantech CIFA Model 350 offers a number of technical advantages over other methods of measuring unburnt carbon in fly ash. The measurement method uses the patented microwave resonant cavity technique originally developed by the CSIRO\*. The electronics and fly ash handling system have been designed to provide the following advantages:

- New microwave technology allows a very precise and stable measurement of the microwave cavity resonance. This allows a density compensated unburnt carbon measurement to be made. Density compensation allows improved accuracy for low unburnt carbon fly ash. It also allows improved accuracy where multiple coal types are fed to the boiler.
- An effective method of vibrating the sample tube eliminates build up and blockage in the sample tube.
- A powerful purge air heating system ensures that the purge air is heated to above 100 degrees Centigrade at all times. This ensures that moisture condensation can never occur in the fly ash pathway.
- A sampling valve and collection canister can be fitted to collect fly ash sample for laboratory analysis when required. When not required it can be removed for safe keeping.
- A single sampling valve and canister can be shared amongst several CIFA Model 350 monitors if simultaneous sampling is not required.
- Control of the CIFA Model 350 monitors is centralised in a control cabinet which can be located up to 1km away in a control room or switch room.
- Up to 16 CIFA Model 350 monitors can be connected to a single control cabinet.

\* Low maintenance requirement. Routine maintenance is limited to replacement of the sample tube and pinch valve tube. This can be accomplished in less than 30 minutes. Typical life of these components is three to six months.

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## Introducing the CIFA Model 350

The CIFA Model 350 provides on-line analysis of carbon in fly ash. A stream of hot gas containing fly ash is sampled from the boiler duct by an isokinetic sampling system (such as the Cegrit™ sampler). The fly ash is separated from the hot gas by a cyclone. The fly ash falls vertically down a tube into the CIFA measurement module. When the required quantity of fly ash has been collected the sample is analysed and is then purged back into the duct by a stream of preheated compressed air. Collection of the next sample then begins.

The complete analysis cycle typically takes 3 to 5 minutes. At the conclusion of analysis a new percent carbon result is produced.

An optional sampling valve allows the sample of fly ash to be saved in a sample canister rather than ejected back into the duct. The saved sample may be sent for laboratory analysis to check the calibration of the CIFA Model 350.

Calculation of results and interfacing to the plant is provided from the CIFA Model 350 control cabinet which is located in a control room or switch room.



## Scantech's Analysers

SCANTECH provides the energy, mining, coal and cement sectors with analysers for a wide range of situations and environments. We can deliver the online solutions that suit your process and reduce your operating costs. Whether you want to monitor moisture, ash, sulphur, or energy content we have the right application for your needs and budget.

Real time analysis during the various phases of resources production provides operators with significant opportunities for plant optimisation and quality control. Over the past two decades, online analysers have become a standard process control tool in the resources industry. Recent scientific and computing innovations now offer considerable performance and operational improvements in current generation analysers. SCANTECH is a leading provider of this technology and with our experienced R&D staff we make sure our customers will benefit from improvements and new developments.

This analyser has proprietary patented technology covered by patents and patent applications.



### ADELAIDE OFFICE

PO Box 64 Unley  
South Australia 5061  
AUSTRALIA  
Tel: +61 8 8350 0200  
Fax: +61 8 8350 0188

### BRISBANE OFFICE

PO Box 458 Salisbury  
Queensland 4107  
AUSTRALIA  
Tel: +61 7 3710 8400  
Fax: +61 7 3275 3964

## List of Scantech Products

- COALSCAN Model 1500 On-belt Natural Gamma Ash Monitor
- COALSCAN Model 2100 & 2800 On-belt Ash / On-belt Ash and Moisture Monitors
- COALSCAN Model 9500X On-belt Elemental Analyser for Coal
- GEOSCAN™ On-belt Elemental Analyser for Cement or Minerals
- TBM 200 Series On-belt Microwave Moisture Monitor
- CIFA Model 350 Carbon In Fly Ash Monitor
- CM Model 100 On-belt Conductive Material Moisture Monitor
- IRONSCAN Model 1500 On-belt Natural Gamma Iron Ore Monitor
- MINERALSCAN Model 1500 On-belt Natural Gamma Minerals Monitor

## Interfacing the CIFA Model 350 to your plant

The computer in the control cabinet is an industrial computer running Windows XP Professional. Available options include:

- Plant interface by Modbus protocol over serial link or ethernet.
- Remote access via dial-up line or via ethernet.

In additions a hard-wired interface is available where control signals are supplied by contact closures and results are provided on 4–20 mA current loops.

## REPRESENTATIVE

