



**INERCO** 

---

***ABACO-LOI***

**Monitoring Technology for Advanced LOI  
Measurement**

---

[www.inercoetech.com](http://www.inercoetech.com)

[www.inerco.com](http://www.inerco.com)



## General overview

- Technology for on-line carbon-in-ash measurement based on Loss On Ignition (LOI) determination
- Designed as modular equipment in order to assure easy assembly in small spaces and effortless performance of maintenance tasks:

### Sampling module

- Capable of collecting representative samples from the process and conveying them to the analysis module
- Extraction points are located in accordance with unit characteristics and requirements (hoppers, transport pipes)

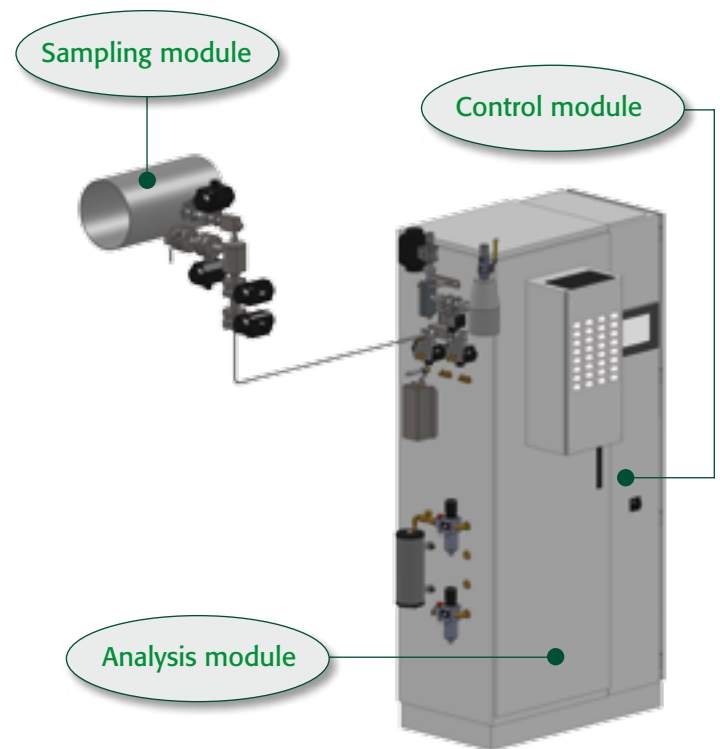
### Analysis module

- Aliquot is weighed on precise scale before and after calcination in a kiln at temperatures over 1,380 °F
- Sequential samples can be received from different sampling modules (multiplexing)

### Control module

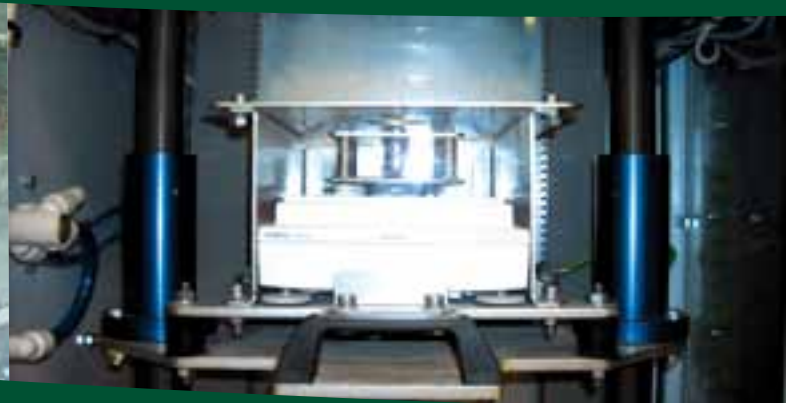
- Communication with Control Room
- Alarm and self-diagnosis management

- Maximum accuracy within the entire range of measurement
- Unaffected by variations in physical-chemical properties of particles or interferences (carbonates, hydroxides, ammonia compounds, etc.)
- Response time: typically 5-7 minutes
- No obstructions during the transport of fly-ash
- Cost-effective approach by multiplexing different samplers with a single analyzer
- Robust, simple and service-free monitor
- Modular design resulting in versatility to fulfill client needs
- Optimized control software



## Competitive advantages

- Reliable, even for the highest monitoring demands (over 8,000 measurements per month)
- Based on reference techniques (ASTM C311 Standard), avoiding recalibrations required by other systems (microwaves, infrared, etc.)



## Applications

- Reliable automated LOI measurement with maximum accuracy
- Fuel savings through an accurate measurement of combustion efficiency
- Control of combustion tuning and burner operation in low NO<sub>x</sub> scenarios
- Control of activated carbon injection for mercury abatement
- Savings on technician and laboratory costs
- Ensure fly-ash saleability
- Ensure LOI consistency for fly-ash dealers
- Calculation of CO<sub>2</sub> emissions
- On-line characterization of coal (ash and volatile matter contents)

**Selected by SEPARATION TECHNOLOGIES, LLC for their fly-ash beneficiation plants after extensive evaluations of all UBC technologies**

## Technical data

DESCRIPTION	VALUE
Resolution	0.01% (absolute)
Precision	< ± 0.1% (absolute)
Accuracy	< ±0.1% (absolute)
Electrical consumption	Typical average consumption: I <sub>nom</sub> : 11 A, 230 Vac, 50/60 Hz, I <sub>peak</sub> : 21 A. Different voltage under request
Instrument air consumption (whole system)	Average consumption: 15 Nm <sup>3</sup> /h (6 bar) Peak consumption: 80 Nm <sup>3</sup> /h (6 bar)
Output	PROFIBUS, MODBUS, ETHERNET LOI value, warnings and alarms
Maintenance	Periodical substitution of compressed air filters, depending on the quality of the air



## Executive summary

- ABACO-LOI: on-line monitoring system for continuous measurement of unburnt matter (LOI) in fly-ash and coal properties (ash, volatile matter)
- Based on reference techniques (thermogravimetric analysis) similar to those used for laboratory analysis
- Unique advantages of ABACO-LOI (relative to microwave and other types of monitors):
  - Assured and proven reliability (only monitor based on laboratory reference techniques)
  - Maximum accuracy
  - No drift, no calibration required
  - Unaffected by changes in coal/fly-ash properties
  - Unaffected by interferences
  - Cost-effective by multiplexing samplers
  - No flow obstructions





## Our clients

### GAS AND ELECTRICITY

Abelló Linde - AGA - Air Liquide - Alstom - BP Solar - CENER - CFE - Colbún - E.ON - EDF - EDP - Elcogas - Emgesa - Enagas - Endesa - Endesa Ireland - EnergieKontor - E.ON France - E.ON Italia - EVN - Gas Natural - GDF Suez - HidroCantábrico - Iberdrola - Intergen - Linde Gas - MedGaz - Pegop - Praxair - Promigas - PKE Polska - Reganosa - Saggas - Scottish Power - Viesgo

### HYDROCARBONS

Agencia Nacional de Hidrocarburos de Colombia - Asociación Colombiana del Petróleo - Atofina - Baker Hughes - Bhp Billiton - BP - Cepsa - CLH - Conoco Philips - Ecopetrol - Exxon Mobil - Mansarovar Energy Colombia - Petro Santander Colombia - Petróleos de Venezuela - Petrolifera Petroleum - Petronor - Repsol - Sonatrach

### CHEMICAL AND PETROCHEMICAL

BASF - Biofilm - Brenntag - Brinsa - Dow Chemical - ENCE - Ercros - Erkol - Ferial - FMC Foret - Huntsman Tioxide - MAXAM - Mexichem - Oiltanking - Propilco - Rhodia - Solvay - UBE - Vordian

### MINING

Bhp Billiton - Boliden - Catalina Huanca Sociedad Minera - Cerro Matoso - CLC - Glencore - Los Quenuales - Matsa - Perubar

### CEMENT AND STEEL

Aceralia - Acerinox - Argos - Atlantic Copper - Cementos Portland - Cemex - Cimpor - EADS - Holcim - IZAR - Lafarge Asland - Malpesa - Titan America / Separation Technologies - UNESID - Xstrata Zinc - Zinsa

### ENGINEERING COMPANIES AND INFRASTRUCTURES

Abengoa - Acciona - Conalvías - Duro Felguera - Elecnor - FCC - Fluor - Foster Wheeler - Gamesa - General Electric - Inabensa - Intecsa-Inarsa - Isolux Corsán - Lima Ingeniería y Construcción - OHL - Opain - Sener - Soluziona - Technip - Técnicas Reunidas - Vicon

## Main Offices



## In Partnership with GP Strategies

### USA and Canada

INERCO Energy Technologies, Inc.

25 Northpointe Parkway, Suite 100, Amherst, NY 14228

Phone: +1 716 799 1063

Mobile: +1 610 442 5930

Fax: +1 716 799 1081

- Enrique Bosch - [EnriqueBosch@inercoetech.com](mailto:EnriqueBosch@inercoetech.com)
- John Sale - [JohnSale@inercoetech.com](mailto:JohnSale@inercoetech.com)
- Barton Hoffman - [BHoffman@gpstrategies.com](mailto:BHoffman@gpstrategies.com)

### Latin America

#### INERCO

Carrera 47ª No. 91-92 La Castellana, Bogotá D.C. Colombia

Phone: +571 236 26 00 - Fax: +571 236 26 00

C/ Julio Verne 114-118, Urbanización Bartolomé Herrera, San Miguel, Lima. Perú

Phone: +511 628 40 00 - Fax: +511 628 94 17

- Francisco Hoces - [fjhocesmoral@inerco.com](mailto:fjhocesmoral@inerco.com)
- Miguel Morales - [mmorales@inerco.com](mailto:mmorales@inerco.com)

### Europe and other territories

#### INERCO

PT Isla de la Cartuja, C/ Tomas Alba Edison, 2, 41092 Sevilla. Spain

Phone: +34 954 468 100

Fax: +34 954 461 329

- Francisco Rodríguez - [frdriguez@inerco.com](mailto:frdriguez@inerco.com)
- Miguel Morales - [mmorales@inerco.com](mailto:mmorales@inerco.com)