

New Product:

MECONTROL UBC Single-Channel Version

When using one or more MECONTROL UBC Single-Channel Systems, the main advantages are listed below:

- The UBC SC Control Box, which replaces the measuring cabinet of the 1-channel UBC system, fulfills a higher protection class with IP 66 instead of IP 55 and can be installed near the measuring point.
- The smaller dimensions of the UBC SC Control Box enable installation even under difficult space conditions.
- By laying the signal reception unit in the sensor box, there is no need to lay a second RF cable harness to the control box.

System overview

System

MECONTROL UBC SC

Technical Specifications

MECONTROL UBC SC is an online analyzer for unburned carbon in fly ash at coal and biomass fueled power stations. The patented hundredfold field proven system uses microwave technology for non-extractive measurement of a key combustion parameter.

MECONTROL UBC SC requires only minimum maintenance, is highly available and has only one moving part. The fast bulk sample collection guarantees representative results and a short response time. For the standard measuring range MECONTROL UBC SC is the system of choice. For very low ranges or increased accuracy requirements the MECONTROL UBCXT SC system based on hyphenated-techniques is available.

Typical applications

- Online sorting of fly ash according to EN-450, ASTM-C618 or similar standards
- Measurement of a key combustion parameter
- Combustion optimization (O₂, burners, pulverizer, classifier)
- Tool for combustion and grinding optimization when using different coal types
- Indicator for mill condition

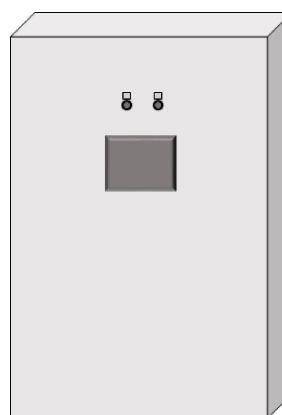
Characteristics

- High accuracy
- In-situ measurement, no ash extraction
- Highly representative due to measurement of bulk fly ash (not at flue gas duct)
- Sensor extremely robust, low maintenance demand
- System state can be determined remotely

System data

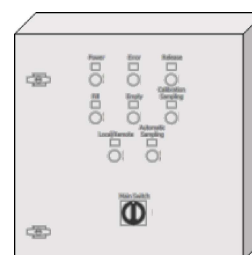
Measurement principle	Microwave
Measuring points	1
Typical accuracy 1σ	< 0.6% (0 - 10% unburned carbon in fly ash)
Measurement range	0 – 20 % unburned carbon in fly ash

Control Box data



ambient temperature	0 – 55 °C
degree of protection	IP 66, NEMA 4
power supply	1 ~ 230 VAC, 50/60 Hz (Phase, Neutral, Earth), 10 A, max. 900 VA
dimensions (w/h/d)	800 x 1200 x 300 mm3
type of mounting	wall-mounted
material	sheet steel, powder coated RAL 7035
weight	110 kg

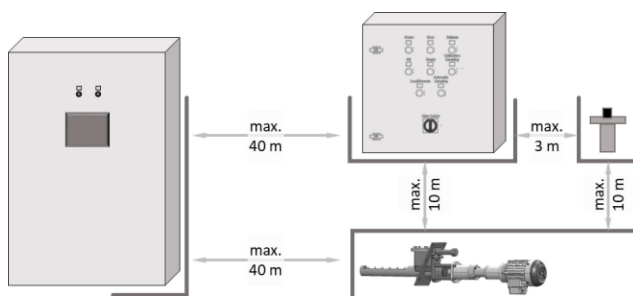
Sensor Box data



ambient temperature	0 – 55 °C
degree of protection	IP 66, NEMA 4
dimensions (w/h/d)	600 x 600 x 350 mm3
type of mounting	wall-mounted
material	sheet steel, powder coated RAL 7035
weight	40 kg
power supply	from Control Box

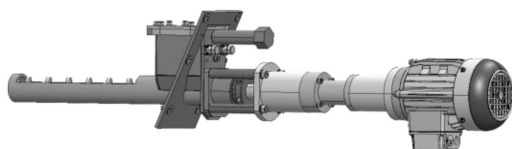
Cable length distances

Control Box – Sensor Box - signal cable - power supply Sensor Box	max. 40 m
Control Box – Sensor - HF Cable	max. 40 m
Sensor Box – Sensor	max. 10 m
Sensor Box – Filter Unit	max. 3 m



maximum cable lengths between components

Sensor data



ash temperature	0 – 150 °C (option: 0 – 225 °C)
sample size	500 cm ³
automatic sampling	Optionally available, extraction of a 50 cm ³ sample at each measuring cycle in a bottle
degree of protection	IP 55, NEMA 12
life time sensor	up to 8 years, depending on measurement intervals and ash
life time auger	approx. 1 year, depending on measurement intervals and ash
sensor insertion depth	approx. 285 mm - 385 mm
sensor outside length (shaft, gear and Motor)	approx. 585 mm
flange width	approx. 150 mm
sensor width	approx. 200 mm
air supply pressure	minimum 3000 hPa at 60 l/min
power supply	from Sensor Box

I/O's

signal outputs	1x galvanically isolated current output 0/4 – 20 mA, 1x status output: SPDT relay contact
signal input	Release signal measurement point: 24 VDC signal
digital interfaces to DCS (optionally)	Modbus TCP/IP
communication	Modem or VPN connection

Usage of UBC reading at the power station

The online UBC reading is used as additional information about the quality of the combustion in addition to the online O₂, CO and NO_x measurement. By having the Online UBC reading available the pulverizer / classifier can be optimized during operation together with optimum settings for the excess air.

The second purpose is the automatic online sorting of the fly ash to the good or bad ash silo according to QS requirements. By utilizing MECONTROL UBC SC labor cost for continuous and rapid fly ash analysis can be reduced and fly ash can be sorted with sharper interfaces for the good/ bad ash which leads to more fly ash sales versus cost for disposal of bad ash.

Function

The MECONTROL UBC SC Control Box controls the sensor.

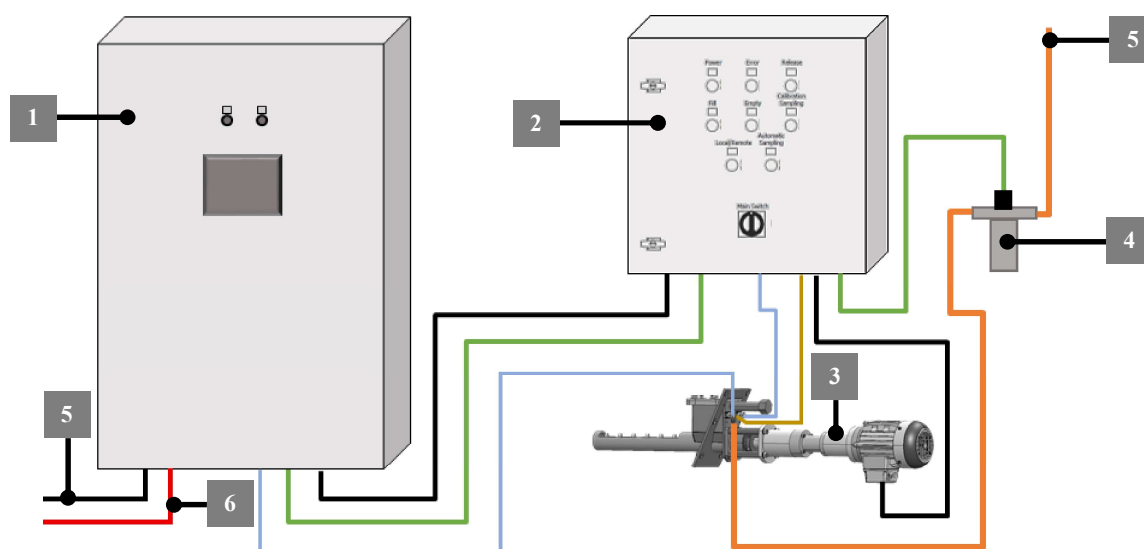
The sensor is collecting the fly ash out of the process in a dense phase e.g. of precipitator hopper, intermediate ash bunkers or similar by an ash auger. The ash sample will be collected and compressed into the measuring chamber with a constant force so that density effects will be mostly eliminated. The carbon content in the big volume ash sample is measured via a patented microwave principle. The ash auger will be reversed to push the ash back into the process. After air purging of the measurement chamber an empty chamber test is conducted to make sure that each time a fresh sample will be measured.

The whole sensor has only one moving part which makes the system so reliable and reduces necessary maintenance. Compared to other systems there are no heated sampling pipes, valves, separators and so on. The Ash sample keeps warm and does not leave the process. The MECONTROL UBCXT SC utilizes a combined method where radiometry is used in addition to the microwave principle to further enhance the accuracy for customers with very low carbon ashes.

The local sensor box has local controls for automatic and manual operation and for taking manual samples for laboratory comparison purpose.

The Control Box is equipped with a touch screen user interface in order to configure the system and to access measurement and other logged data. The Control Box governs the local sensor operation.

General system arrangement



[1]- Control Box, [2]- Sensor Box, [3]- Sensor, [4]- Filter Unit (compressed air), [5]- from plant, [6]- to DCS
[black]- power supply, [green]- signal cable, [blue]- HF-cable, [orange]- compressed air, [red]- measured value