MRU INSTRUMENTS, INC.

MRU
INSTRUMENTS

PRODUCT PORTFOLIO
INDUSTRIAL UNITS

Combustion / Emission

NOVA*plus*

O2 CO CO2 NO NO2 NOX SO2 CxHy

Emissions Analyzer for industrial combustion / emissions tuning, compliance reporting or trouble-shooting.

Bluetooth communications between BASE unit and REMOTE control unit

Main features:

- Simultaneous measurement of up to 8 gases
- Automatic calculations and data logging
- Easy operation via intuitive Remote Control Unit
- Rugged design for extreme field conditions
- Accuracy and reliability on numerous applications
- Large condensate separator with PTFE coated filter
  OPTIONAL - Peltier gas cooler
- High energy Li-Ion battery
- Built-in speed printer with easy paper loading
- Compact and rugged transport case

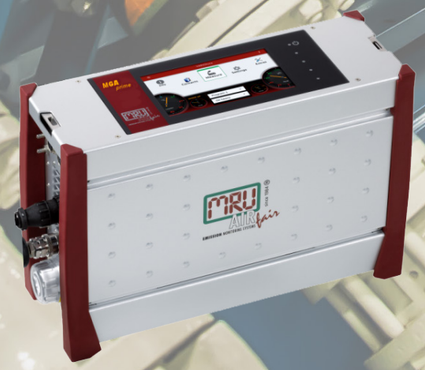
Emission

MGA*prime*

O2 CO CO2 NO NO2 NOX SO2 CH4 C3H8 H2S H2 N2O

HIGH END flue gas emission analyzer for long time measurements of industrial combustions, large boilers, gas engines and turbines, furnaces and many more…

CTM 30 / CTM 34 / ASTM A6522 compliance



Main features:

- Simultaneous measurement of up to 9 gases!
  CO, CO2, NO, NO2, SO2, CH4, C3H8, N2O using NDIR
  O2 using ECS or PM
- Using advanced technology for NDIR measurements with improved accuracy and w/o offset drifts
- Using single beam through sample cell for NDIR measurements
- Integrated, efficient dual heat exchanger gas cooler (Peltier type) with dual automatic condensate draining pumps

VARIO*luxx*

O2 CO CO2 NO NO2 NOX SO2 CH4 C3H8 H2S H2

PORTABLE EMISSIONS ANALYZER
semi-continuous monitoring of nearly any combustion / emission application

CTM 30 / CTM 34 / ASTM A6522 compliance

Main features:

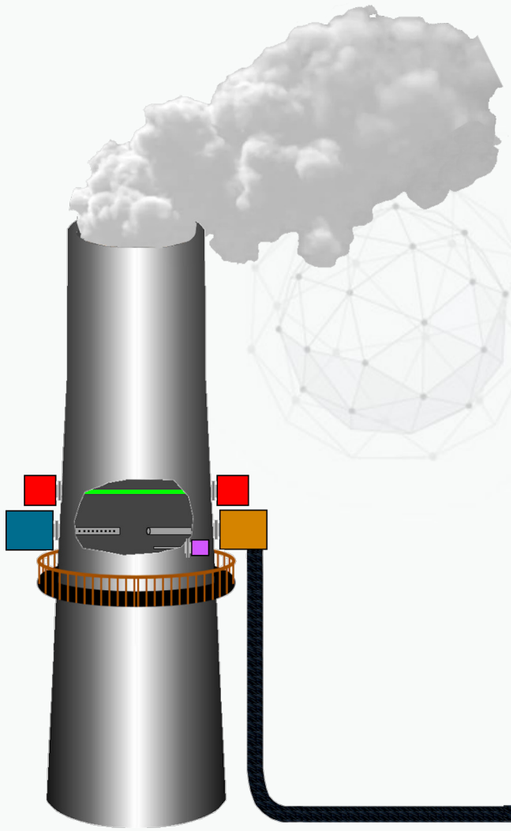
- Simultaneous measurement of up to 9 gases
- Linux operating system
- 7" high contrast, color touchscreen with graphical data display
- Emission calculations such as mass flow calculated or True NO(x), plus O2 ref. to user defined values
- Integrated Peltier cooler with automatic condensate drain pump
- Gas flow restrictor orifice and
- Internal sample flow monitoring
- Strong, regulated sample pump
- Data transfer over LAN Ethernet or USB
- AND MUCH MORE

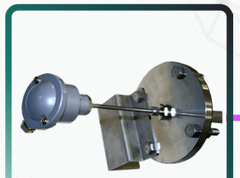
MGA*prime*

- Strong, regulated sample gas pump and easy replaceable, effective PTFE filter
- Internal sample flow monitoring with display and alarm
- Zero gas (ambient air) air inlet nozzle and passive VENT outlet of sample gas
- Large, 7" (840x480) color display with touch & swipe technique
- Linux operating system
- Data transfer over LAN Ethernet or USB
- AND MUCH MORE

Combustion / Emission

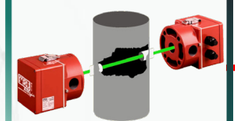
Emission





Temperature measurement

Compressed air



Dust/Opacity

Extraction probe

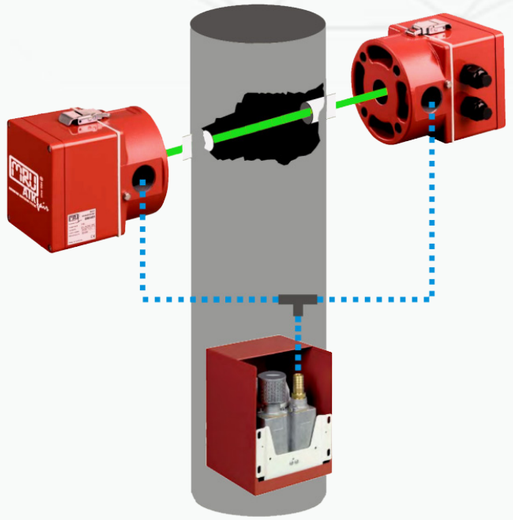
Flow velocity

Heated sampling line

DM *401*

DUST OPACITY

Dust Monitoring System
double pass transmission measurement



Main features:

- Continuous air purging required to protect optics from stack dust
- Small, light weight low power supply and operating costs
- Opacity or mg/m^3 (after on site calibration)
- Long-life green LED source
- No moving parts – minimal maintenance
- Simple installation, commissioning and operation
- High measuring accuracy
- PC based setup, control and data logging

Measures 0 to 100 % Opacity
or 10 to 1,000 mg/m3 Dust

DF *252*

°F hPa FLOW

Flow monitoring system
Pitot tube based flow rate monitor using gas flow dynamic pressure measuring method

Main features:

- 3 to 30 m/sec flow velocity
- Up to 1,112°F (600°C) stack gas temperature
  Differential pressure transmitter with 5mbar range, long time stability pressure sensor
- Integrated flue gas temperature (PT100) and static pressure measurement
- IP65 glass fiber enclosure, optional cabinet heater for low ambient temperatures
- Integrated control unit DF250, for flow volume calculation, with display and push-buttons, with 3x 4-20mA analog outputs for flow rate (wet or dry), gas temperature and gas pressure
- Including special mounting flange DN80-PN6 for welding on stack
- Probe tubes - 1.4571 stainless steel
  Standard 27.55" (700 mm) probe tube length (7.87" (200mm) passive and 19.68" (500mm) active part)
  Shortest 11.81" (300 mm) probe tube length (7.87" (200mm) passive and 3.94" (100mm) active part)
  Total probe tube maximum length 78.71" (2000mm) (as sum of passive and active tube length)

SWG *100* CEM

Stationary Analyzer for continuous emission monitoring

Main features:

- Measures up to 6 gases
  O2, CO, NO, NO2, SO2, using ECS
  & CO2 (NDIR)
- Advanced sample gas preparation
- Handles pressurized or low-pressure flue gas, even from a long distance
- Flexible platform various combustion applications
- Auto zero and optional auto calibration
- Simple installation - ready to run delivery
- Up to maximum 5 sampling points switching possible when using non-heated PTFE sampling line
- Up to maximum 3 sampling point switching possible when using heated sampling line
  (100W / meter power demand)

SWG *200* CEM

O2 CO CO2 NO NO2 NOX SO2 CH4 C3H8 H2S H2 N2O

Stationary Analyzer for continuous emission monitoring

Main features:

- Measures up to 9 gases
  CO, CO2, NO, NO2, SO2, CH4, C3H8, N2O using NDIR
  O2 using ECS or PM
- Advanced NDIR technology provides great performance, accuracy and stability
- Choice of 4 / 6 or 8 gas NDIR
- Integrated, efficient dual heat exchanger gas cooler (Peltier type) with dual automatic condensate draining pumps
- Internal flow monitoring
- Direct and continuous measurement with pressure and temperature compensation
- Heated or unheated sampling lines for up to 262 feet
- Multiple sample point monitoring - up to 3 sites with one analyzer

SWG *300* CEMS

O2 CO CO2 NO NO2 NOX SO2 CH4 C3H8 H2S H2 N2O

Stationary Analyzer for continuous emission monitoring

Main features:

- Measures up to 9 gases
  CO, CO2, NO, NO2, SO2, CH4, C3H8, N2O using NDIR
  O2 using ECS or PM
- Advanced NDIR technology provides great performance, accuracy and stability
- Choice of 4 / 6 or 8 gas NDIR
- Integrated, efficient dual heat exchanger gas cooler (Peltier type) with dual automatic condensate draining pumps
- Internal flow monitoring
- Direct and continuous measurement with pressure and temperature compensation
- Heated or unheated sampling lines for up to 262 feet
- Multiple sample point monitoring - up to 3 sites with one analyzer

SWG *300* CEMS

Measurement ranges:

O2	0 ... 25 %	EL / PM
NO	0 ... 200 / 4,000 ppm	NDIR
NO2	0 ... 150 / 500 ppm	NDIR
SO2	0 ... 200 / 4,000 ppm	NDIR
CO2	0 ... 40 %	NDIR
CO	0 ... 200 / 10,000 ppm	NDIR
N2O	0 ... 100 / 500 ppm	NDIR
CH4	0 ... 500 / 10,000 ppm	NDIR
C3H8	0 ... 200 / 5,000 ppm	NDIR
H2S	0 ... 2,000 / 5,000 ppm	EL
H2	0 ... 1,000 / 2,000 ppm	EL

Emission
Emission
Emission

SWG *100 / 200 / 300* overview

GENERAL Description	SWG 100CEM	SWG 200	SWG 300
Enclosure Material	Aluminum	Stainless Steel AISI-304	Steel / Glass fiber
Enclosure Dimensions (HxWxD)	700x600x210	700x600x210	1012x600x575 / 1250x1000x800
Gas Cooler (Peltier)	Single heat exchanger MRU	Double heat exchanger MRU	Double heat exchanger M&C
Number of unheated ports	4	4	n.a.
Auto Cal	2/3/4x auto.cal.	2/3/4x auto.cal.	2/3/4x auto.cal.
Number of heated ports	2	2	4 (1 for "Ex-pz" model)

APPLICATIONS	SWG 100CEM	SWG 200	SWG 300
Relatively clean / Low dust	YES	YES	YES
Dirty / High Dust & Acid mist	n.a.	n.a.	YES

MOUNTING & INSTALLATION	SWG 100CEM	SWG 200	SWG 300
Indoor	YES	YES	YES - "indoor" model #300320
Outdoor (* w. sun & rain shade)	YES (*)	YES (*)	YES - "outdoor" model #300520
Hazardous area Zone 2	n.a.	n.a.	YES - "Ex-pz" model #300820

GAS MEASUREMENTS	SWG 100CEM	SWG 200	SWG 300
O2	ECS / PM	ECS / PM	ECS / PM
CO	ECS / NDIR	NDIRplus	NDIRplus
CO2	NDIR	NDIRplus	NDIRplus
NO	ECS	NDIRplus	NDIRplus
NO2	ECS	NDIRplus	NDIRplus
SO2	ECS / NDIR	NDIRplus	NDIRplus
CH4	NDIR	NDIRplus	NDIRplus
C3H8	NDIR	NDIRplus	NDIRplus
N2O	n.a.	NDIRplus	NDIRplus
H2	n.a.	ECS	ECS
H2S	n.a.	ECS	ECS

OMS *420*

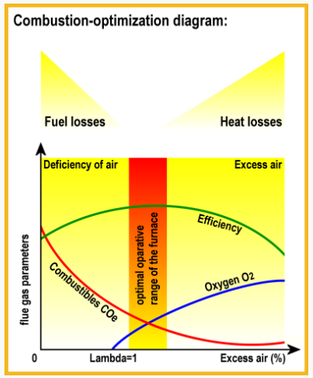
O2 COe

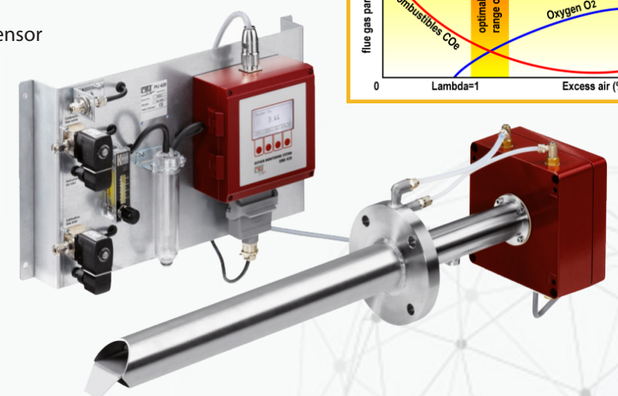
In-Situ Oxygen & Combustibles Monitor

Four different versions:
Compact, Remote, High Temp, & EX

Main features:

- Combination of O2 & COe for Real-time measurements
- Stable, long-life Zirconium Oxygen sensor
- Unique, heated solid electrolyte combustible sensor
- Easy access to sensor for fast and simple service
- Suitable for high-dust particulate applications
- High temperatures up to 3,000°F
- Probe lengths up to 6'
- Optional AUTO-CAL





OMS *420* EX

O2 COe

In-Situ Oxygen & Combustibles Monitor

Special IP65 pressurized cabinet and z-purge controller, complying to EX II 3G Ex pz II T3 Gc

Main features:

- Combination of O2 & COe for Real-time measurements
- Stable, long-life Zirconium Oxygen sensor
- Unique, heated solid electrolyte combustible sensor
- Easy access to sensor for fast and simple service
- Suitable for high-dust particulate applications
- For flue gas temperatures up to 1,832°F
- Probe lengths up to 6'
- Optional AUTO-CAL

VARIO*luxx* SYNGAS

O2 CO CO2 CH4 H2S H2

The potable SYNGAS analyzer
Long-term process gas analysis for specialty gases

PORTABLE / VERSATILE / RUGGED

Suitable for semi-continuous measurements of "syngas" including the following applications:

- Steel industry: coke oven gas, blast furnace gas
- Biomass or coal catalytic oxidation (gasification)
- Waste gasification process, plasma gasification process
- Steam reforming of liquid hydrocarbons (refinery gas etc.)
- Flare gases
- Research … and others

SWG *100* SYNGAS

O2 CO CO2 CH4 H2S H2

Continuous Syngas measuring system

Main features:

- Measuring CO2 / CH4 / CO using NDIR - 0 to 100% each
  O2 using ECS or PM - 0 to 25%
  H2 using TCD - 0 to 100%
- No dilution of sample gas is required
- Integrated gas cooler and condensate draining pump
- Direct continuous measurement, pressure / temperature compensated
- Multiple sample point monitoring up to 6 sites with one analyzer
- Flow restrictor orifice gas inlet for for high pressure sites
- Sample gas cut-off and power supply shut-off in case of system alarm
- Industry compatible, rugged design, easy and fast service design
- Ready to run delivery - minimum installation work

Syngas

MRU Representative:

MRU Instruments, Inc.
Humble, TEXAS 77396 USA
Tel.: +1 (832) 230-0155
Info@mru-instruments.com
www.mru-instruments.com