For monitoring of

Cold-end Corrosion
Combustion Efficiency
Fuel Additive Optimization
ESP Efficiency
Acid Smut & Aerosol Emissions
Toxic Release Inventory

LAND

Combustion & Environmental Monitoring

An AMETEK® Company

LANCOM 200

portable sulphuric acid dewpoint temperature monitor

The **new** LANCOM 200 is the latest dewpoint monitor from LAND - an unrivalled history which now extends over 40 years of design and manufacture of portable sulphuric acid dewpoint temperature instruments. Over 40 years of application know-how have been integrated into this new monitor, making it the most accurate and easy-to-use ever. It is now an essential tool for all process and combustion engineers, to meet the demands for environmentally friendly and cost-conscious operation required by boiler and power plant operators.
The LANCOM name is synonymous with high quality portable analysers from LAND - the new LANCOM 200 being the latest addition.

Benefits of sulphuric acid dewpoint temperature (ADT) monitoring

There are 3 main areas where acid dewpoint temperature measurement can have major benefit.

Process Control

- Manage the use of high cost fuel additives such as MgO
- Monitor SO_3 slip within an ESP to improve ash collection efficiency whilst minimising acid aerosol emissions

Thermal Efficiency

- Prevent Air Heater Fouling
- Reduce maintenance caused by cold-end corrosion in maintaining the exit gas above the dewpoint temperature

Emissions Control

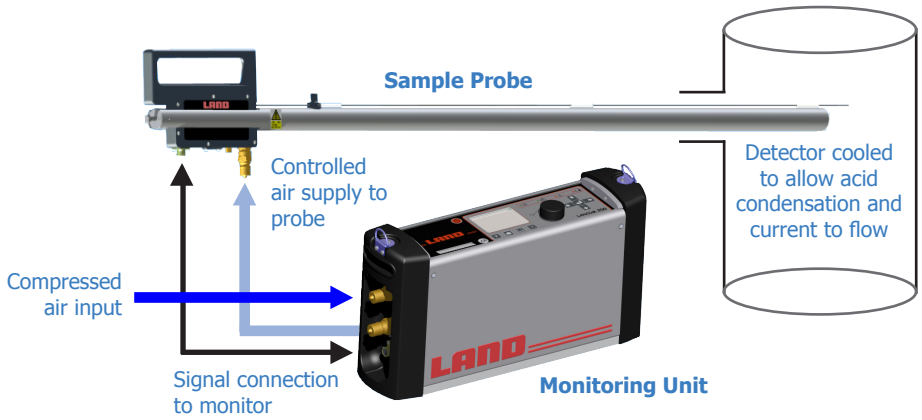
- Monitor acid aerosol emissions (H_2SO_4 / SO_3)
- Monitor and reduce acid smut emissions

Features & Benefits

- **Measure Sulphuric Acid Dewpoint Temperature -** A unique but vital measurement
- **Key process parameters measured and calculated -** Essential operator information including SO_3
- **Easy to use precise control -** Obtain a reading in minutes
- **Weighs only 10kg (22lb) -** Easily carried around plant
- **Robust, industrial design -** For daily use in the harshest plant environments
- **Data logging -** Capture and store over 10,000 readings
- **Simple field maintenance -** Easy-fit measurement cell - replace in minutes
- **Traceable Calibration -** To national standards in our own UKAS approved lab

Simple setup - Measurement data in minutes

The Monitoring unit is normally operated inside its carry bag. All that is required is a local compressed air supply, and a suitable sampling point for probe access. It requires only one person and no special skill to take the readings. The operator has to adjust the air supply and obtain a steady current flow on the display. Complete measurement data is available in a few minutes. The vital data it provides is essential for process control, thermal efficiency and emissions control applications.

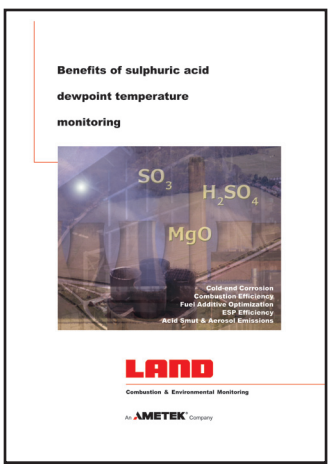


Standard Features

The following features are standard on all instruments:

- **Lancom 200 analyzer & carrying case**
- **1.2 m / 4 ft Sample Probe & carrying case**
- **Built-in Thermal Printer**
- **Data Logging**
- **RS232, RS485 and USB ports**
- **Interconnecting signal cables and air hoses (3 m / 10 ft)**

What other information is available?



Most plants firing fuels containing sulphur (in varying quantities) should consider the benefits of sulphuric acid dewpoint temperature monitoring. The plants or processes which would benefit most include those burning

Fuel Oil, Petcoke, Coal, Oremulsion and Diesel Fuel Oil.

In addition, plants using fuel additives or SO_3 injection into ESPs can see significant benefit from acid dewpoint temperature monitoring.

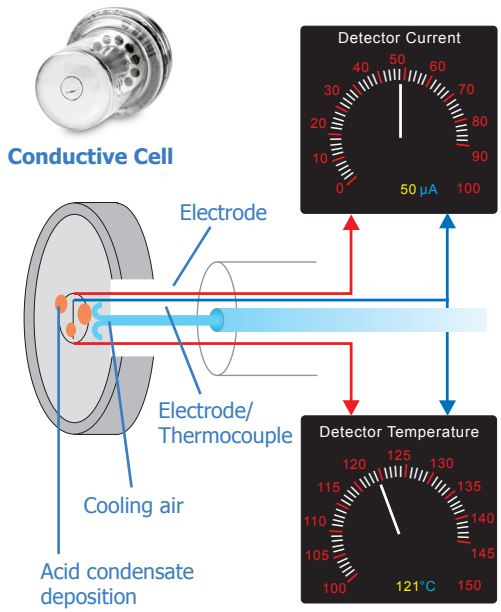
Comprehensive information on the benefits of sulphuric acid dewpoint temperature monitoring can be found in the Application Brochure (ref. PDS 177):
'Benefits of Sulphuric Acid Dewpoint Monitoring'

Measurement Information

The following information can be displayed, logged, printed and output via a current loop

Parameter	How it is measured/determined
Sulphuric Acid Dewpoint temperature	Sensor temperature at constant current
Flue Gas temperature	Measured using a probe-mounted thermocouple
Ambient temperature	Measured using a temperature sensor in the probe handle
SO_3 concentration concentration* and flue gas temperature	Calculated from the H_2SO_4 concentration, water vapour
H_2SO_4 concentration	Calculated from the Acid Dewpoint Temperature and the water vapour concentration*
Toxic Release Inventory (TRI)	Mass flow rate of H_2SO_4 emissions
Minimum Metal temperature (MMT)	Acid dewpoint temperature plus a user-adjustable offset
Rate of Acid build-up (RBU)	Corrosive potential of the flue gas at temperatures below the acid dewpoint temperature, plotted on a graph
*Manual user entry or via current loop input	

How the LANCOM 200 works? - the Conductive Cell technique



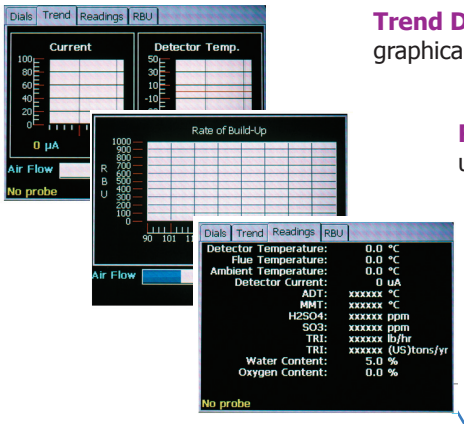
An acid film, such as sulphuric acid, is a good conductor of electricity. If a surface bearing two electrodes is introduced into a gas containing sulphuric acid vapour, any condensate forming on the surface would soon be detected by a current flowing between the electrodes.

The LANCOM 200 comprises a stainless steel probe (to withstand acid corrosion) with a conductive cell (shown left) mounted at the tip. The detector contains two electrodes which detect any acid deposition. The temperature of the detector is controlled by a flow of cooling air directed onto its inner surface. The flow of air is controlled manually (using the panel-mounted regulator - photo right). When the probe is inserted in the gas stream and the cooling air applied, the detector temperature falls until a point is reached where a thin film of sulphuric acid begins to condense on its surface. The condensed acid causes a current to flow across the electrodes, which is monitored by the LANCOM 200.

Acid Dewpoint Temperature

The acid dewpoint temperature is the point at which the rates of evaporation and condensation are equal. The LANCOM 200 makes a direct measurement - requiring no calibration or reference.

Key Features

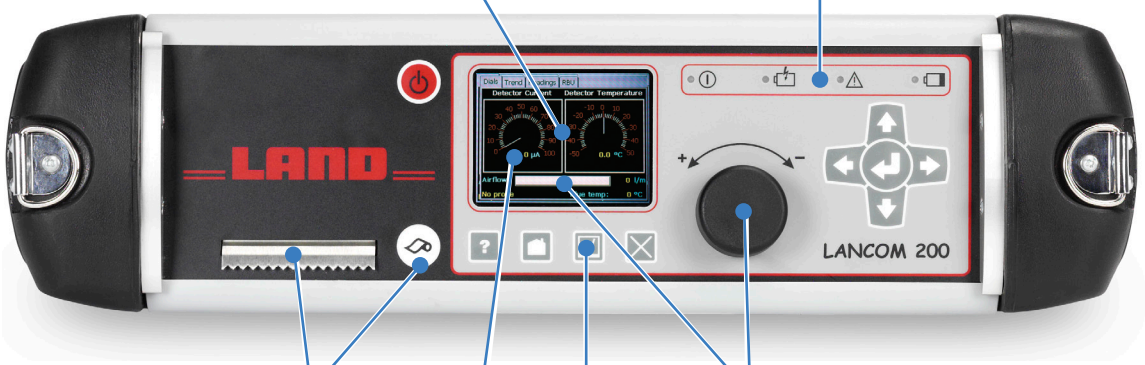


Trend Display - Shows detector current and temperature on a rolling graphical display.

Rate of Build-up Display - The speed the sulphuric acid is building up (vs temperature) on the detector, as rolling graphical analysis.

Readings Display - Text display of all the key measurement parameters.

Status LEDs - Indication of battery status and system faults.



Printer - Instant record of measurement parameters. Prints all data contained on the 'Readings' display.

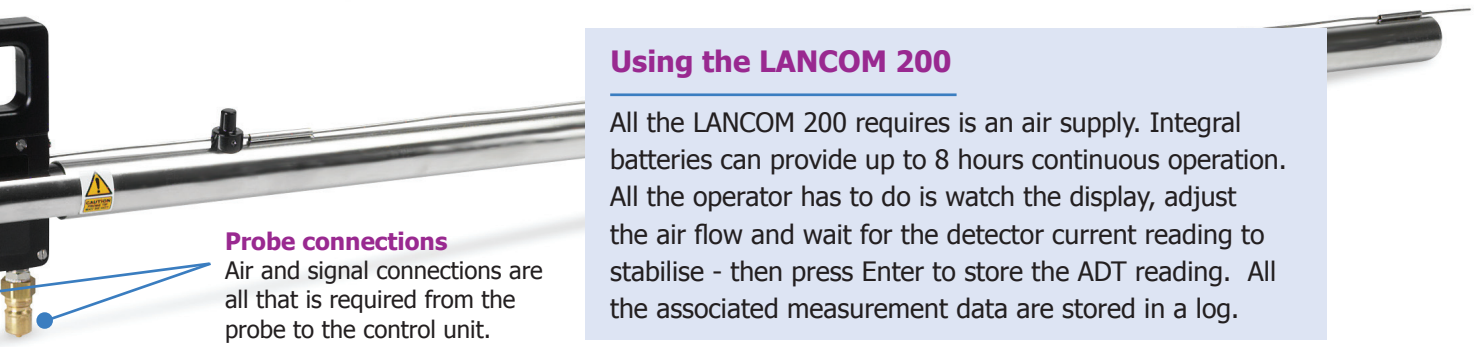
Air Regulator - controls the flow of cooling air to the probe.

Display format - Toggles between the four display formats - Dials,Trend, Readings and Rate of Build-up.

Main User Display (Dials) - The air flow, detector current and temperature respond to the 'Air Control'. The detector current is stablised (at around 50 µA) before the ADT is captured.

Power and Output Connections - Mains power is an alternative to the battery. USB Ports, Modbus Ports and current loop I/Os are located under a protective cover.

Retractable Thermocouple - It slides back to prevent damage when not in use.



Probe connections
Air and signal connections are all that is required from the probe to the control unit.

Using the LANCOM 200

All the LANCOM 200 requires is an air supply. Integral batteries can provide up to 8 hours continuous operation. All the operator has to do is watch the display, adjust the air flow and wait for the detector current reading to stabilise - then press Enter to store the ADT reading. All the associated measurement data are stored in a log.

Specifications		
Measuring Technique	Conductive cell technique	
Measurement Parameters	Range	Units
Acid Dewpoint Temperature	100 - 200 °C (210 - 390 °F)	Displayed in °C or °F
Flue Gas Temperature	0 - 450 °C (32 - 840 °F)	Displayed in °C or °F
Minimum Metal Temperature*	100 - 250 °C (210 - 480 °F)	Displayed in °C or °F
SO_3 / H_2SO_4 concentration*	0.1 - 9999 ppm	ppm, mg/m^3, or lb/mmBTU
Toxic Release Inventory*	0 - 200,000	kg/hr, tonnes/yr, lb/hr,tons(US)/yr
Accuracy	±0.5 °C dewpoint temperature	
Resolution	0.1 °C	
Control Unit		
Display	¼ VGA Colour LCD	
Data Logging	All data values logged. Log interval 1 sec. to 10 min. Storage for > 10000 records.	
Compliance		
Electrical Safety	EN 61010-2	
EMC	EN 61326 (Industrial)	
Protection from dust and water:	Instrument in bag: IP42 of BS EN 60529, Probe: IP65 of BS EN 60529	
Vibration (probe only)	BS EN 60068-2-6 (10Hz to 150Hz at 19.6ms^{-1})	
Inputs/Outputs		
Modbus Communications	RS232/RS485 Isolated 2-wire. RTU mode, 19200baud, 8 data bits, even parity, 1 stop bit	
Current Loop Outputs	8 channels (4 - 20 mA) ±0.1 mA non-isolated, 300 Ω max	
Current loop Inputs	2 channels (4 - 20 mA) ±0.1 mA non-isolated, powered	
USB interfaces	USB master for Flash Memory devices. USB function ActiveSync for connection to a PC	
Electrical		
Power Supply	95-265 V a.c. ±10%, 50-60 Hz, 30 Watts. Rechargeable battery 2 x 6 V 4 Amp. hour. Typical 8 hr. operation	
Battery charging time	6 hours maximum	
Air Requirements		
Air Supply	Clean, dry, oil-free air, 4 - 10 bar (60 – 150) psi	
Flow rate	1 to 150 l/min (0.05 to 5 cfm) at 4 bar (60 psi). Max. 600 l/min (20 cfm)	
Air connection	ISO G3/8 (3/8 BSPP) male thread supplied	
Environmental		
Operating Temperature	-20 to +50 °C (-4 to 122 °F)	
Max. flue gas temperature	450 °C / 840 °F	
Mechanical		
Overall size in carry bag	500 x 225 x 300 mm (20 x 9 x 12 ins)	
Weight (incl. bag and hoses)	9.8 kg (22 lb)	
Cables and hoses	2 air hoses, signal and power cables supplied, all 3 m (10 ft)	
Sample Probe		
Material	Stainless Steel	
Detector	Pyrex glass with platinum electrodes	
Calibration	Option for UKAS calibration	
Probe Access Port	Minimum requirement 50 mm / 2 inches diameter	
Maximum temperature	Shaft 450 °C (840 °F) ; Handle 75 °C (170 °F)	
Minimum temperature	-20 °C (-5 °F)	
Length	1.2 m (4 ft) standard; Length Options 2.1, 3.0 m (7, 10 ft)	
Overall size in carry bag	1600, 2500 or 3400 x 320 x 80 mm (5' 4", 8' 4", or 11' 4" x 13" x 3.5")	
Weight (in bag)	6.2 kg (14 lb), 8.6 kg (19 lb), 11 kg (24 lb)	

*calculated values

Continuous product development may make it necessary to change these details without notice

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UKAS CALIBRATION 0034 — Applies in the UK

UKAS MANAGEMENT SYSTEMS 001 — Applies in the UK

LABORATORY ACCREDITATION BUREAU ACCREDITED ISO/IEC 17025:2005 — Applies in the USA

REGISTERED ISO 9001 MANAGEMENT SYSTEM — Applies in the USA