

LANCOM200

PORTABLE ACID DEWPOINT
TEMPERATURE MONITORING



● Acid Dewpoint • SO_3 • H_2SO_4



LAND
AMETEK[®]
PROCESS & ANALYTICAL INSTRUMENTS



QUALITY CUSTOMER SOLUTIONS

LANCOM200

AMETEK LAND HAS BEEN MANUFACTURING PRECISION MEASURING EQUIPMENT SINCE 1947.

WE ARE SPECIALISTS IN NON-CONTACT TEMPERATURE MEASUREMENT AND COMBUSTION MONITORING WITH APPLICATIONS ACROSS DIVERSE INDUSTRIES SUCH AS STEEL AND GLASS MAKING, POWER GENERATION AND CEMENT MANUFACTURE.

As part of AMETEK Process & Analytical Instruments Division since 2006, our customers benefit from the worldwide AMETEK sales and service team.

LANCOM 200 CAN HELP YOU REDUCE POLLUTION EMISSIONS AND IMPROVE THERMAL EFFICIENCY.

Direct measurement gives accurate and reliable measurement of acid dewpoint temperatures.

VITAL INFORMATION FOR COMBUSTION CONTROL AND OPTIMIZATION



FEATURES ▼

- Measure acid dewpoint temperature
- Understand where acid condensation occurs
- Calculate SO_3 and H_2SO_4 concentrations
- Reduce sulfate aerosol formation
- Fully portable - just requires compressed air supply
- Data logging
- Built-in printer
- Easy to maintain

BENEFITS ▼

- Optimize flue temperature and improve efficiency
- Avoid cold-end corrosion
- Manage fuel additive use
- Reduce opacity caused by "blue plume"
- Can measure throughout the flue gas path
- Store readings for later analysis
- Hard copy at the measurement point
- Cell can be replaced in the field



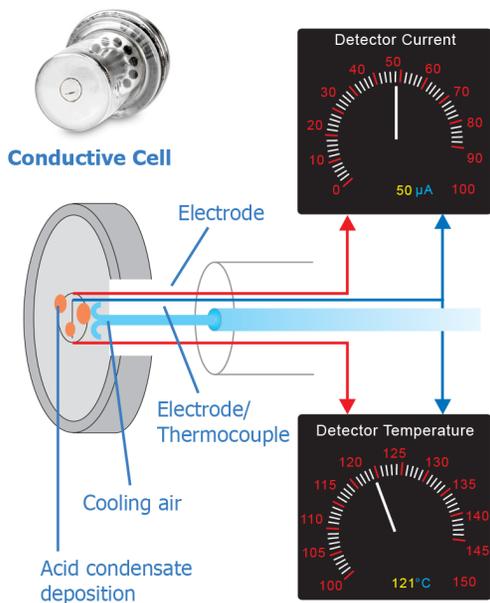
**KNOWLEDGE OF ACID
DEWPOINT IS ESSENTIAL
FOR ALL COAL AND OIL
FIRED BOILERS**

LANCOM 200 IN ACTION ▼



LANCOM200

HOW THE ANALYSER WORKS



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.

THE CONDUCTIVE CELL TECHNIQUE

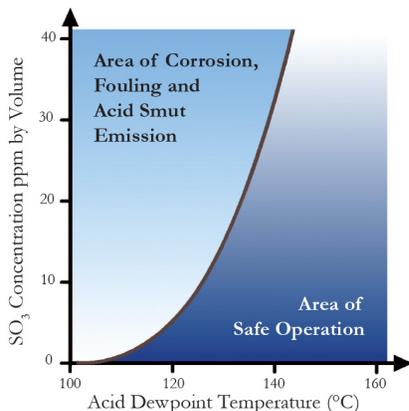
An acid film, such as sulfuric acid, is a good conductor of electricity. If a surface bearing two electrodes is introduced into a gas containing sulfuric acid vapor, any condensate forming on the surface would soon be detected by a current flowing between the electrodes.

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. 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 sulfuric 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.

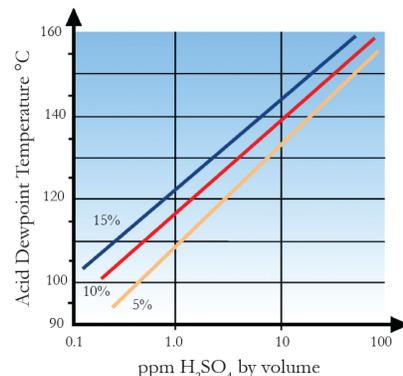
USING THE LANCOM 200

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

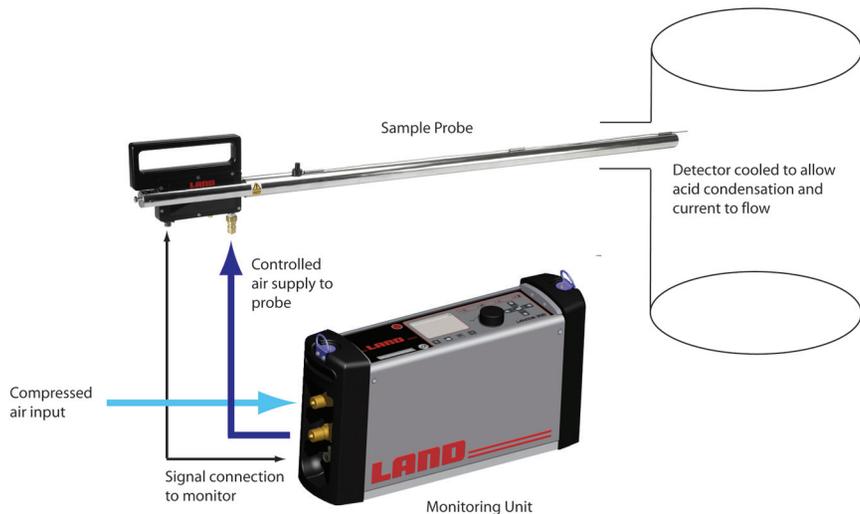
The relationship between SO_3 and Acid Dewpoint Temperature



The relationship between H_2SO_4 and Acid Dewpoint Temperature with varying moisture contents



SPECIFICATION & DESIGN



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.

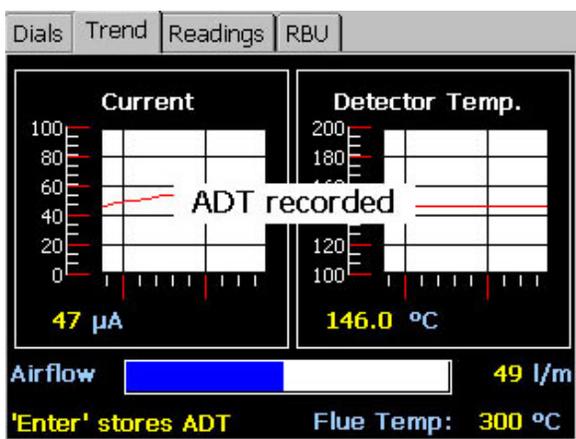
Complete measurement data is available in a few minutes. The vital data it provides is essential for process control, thermal efficiency and emissions control applications.

Standard Features

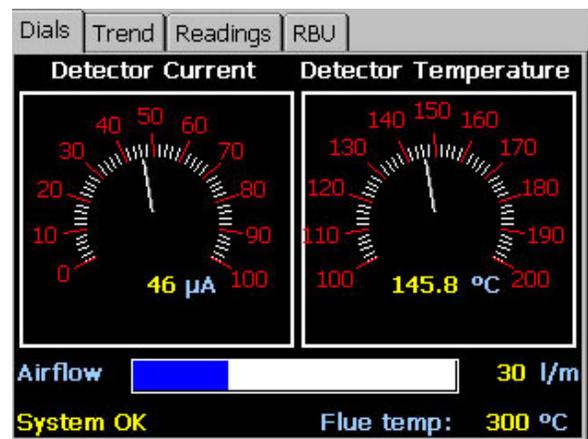
- Lancom 200 analyser & carrying case
- Sample Probe & carrying case (1.2 m, 2.1 m and 3.0 m available)
- Built-in Thermal Printer
- Data Logging
- RS232, RS485 and USB ports
- Interconnecting signal cables and air hoses (3 m / 10 ft)



The acid dewpoint temperature has been recorded.



Manual control of the airflow - seeking the acid dewpoint temperature.



APPLICATIONS

THERMAL EFFICIENCY

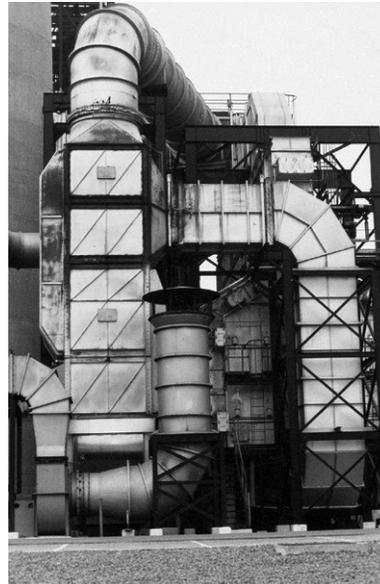
Operating above the acid dewpoint temperature

Identifying the lowest metal temperature required to minimize or eliminate corrosion, allows the operator to reduce the flue gas temperature, which minimizes heat loss and improves overall efficiency.

Additionally, the pre-heating of the combustion air to increase efficiency will drop the exit gas temperature often below the acid dewpoint temperature.

Minimize cold-end corrosion by maintaining the exit gas above the dewpoint temperature

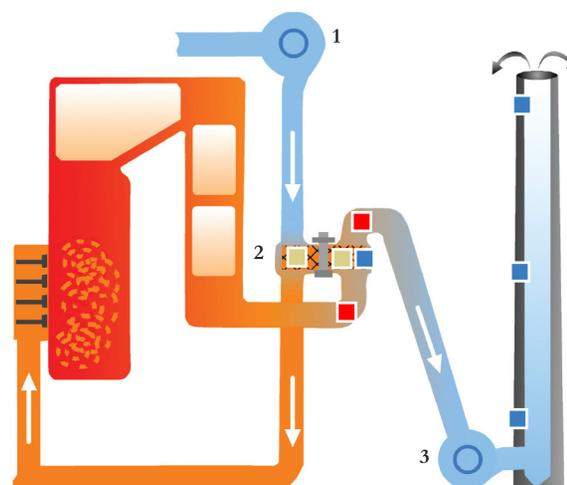
Sulfuric acid will condense on any surface below the dewpoint temperature. These surfaces, typically include economizers, air pre-heaters, ID fans and stack walls. The corrosion of process equipment such as these can involve complete process shut down and involve costly repair.



The economic costs of failing to take proactive steps against the formation of acid can be high.

ACID DEWPOINT TEMPERATURE DETERMINATION ▼

Load, oxygen levels, sulfur in fuel and boiler dirtiness are many of the parameters which will affect the acid dewpoint temperature. Direct measurement of the acid dewpoint temperature will assist with the on-line control of the process, minimize costs and improve total efficiency.



Key

- Air Heater Fouling
- Acid Corrosion
- ADT Measurement Point
- 1 Forced Draught Fan
- 2 Air Heater
- 3 Induced Draft Fan

MONITOR ACID AEROSOL EMISSIONS (CONDENSABLES)

SO₃ AND TOXIC RELEASE INVENTORY (TRI)

Many countries are beginning to quantify Acid Aerosol Emissions. These are normally defined as sulfuric acid emissions in a vapor or liquid state, since the acid absorbed in the fly ash is assumed to be removed by the dust collectors. US EPA SARA Rule 313, Toxic Release Inventory (TRI), defines emissions as the quantitative amount of sulfuric acid mist emitted from coal fired boilers over a one year period.

The emission of blue and white smoke is the best indicator of the presence of SO₃, as fine droplets of sulfuric acid. This type of smoke carries over great airborne distances, creating increased pollution problems. This could cause public and legislative actions or restrictions in operation.

The concentration of SO₃ in the gas stream can be accurately determined from the acid dewpoint temperature measurement. ADT monitors display the SO₃ concentration as standard.

BLACK SMOKE INDICATES INCOMPLETE COMBUSTION BUT BLUE AND WHITE SMOKE MEANS THE PRESENCE OF SO₃, AS CONDENSED SULFURIC ACID - POTENTIALLY A BIGGER PROBLEM TO SOLVE



Blue and white smoke is evidence of SO₃ present in the stack gas as condensed sulfuric acid. Monitoring of opacity (while useful) will not reveal the underlying problem.

WHO SHOULD MEASURE ADT?

Combustion plants burning:

- Coal
- Oil
- High Sulfur Diesel
- Petcoke

LANCOM200

ACID DEWPOINT TEMPERATURE MONITORING

SPECIFICATIONS

Measuring Technique:	Conductive Cell Technique
Acid Dewpoint Temperature:	120 - 200 °C (248 - 390 °F) Displayed in °C or °F.
Flue Gas Temperature:	0 - 450 °C (32 - 840 °F) Displayed in °C or °F.
Calculated Values:	H ₂ SO ₄ , SO ₃ Minimum Metal Temperature (MMT)
Uncertainty:	± 0.5 °C dewpoint temperature
Resolution:	0.1 °C
Detection Limit:	Application dependent, typically 125 °C (257 °F) or 5 ppm SO ₃
CONTROL UNIT	
Display:	1/4 VGA Color LCD
Data Logging:	All data values logged. Log interval 1 sec. to 10 min.. Storage for > 10000 records. Rechargeable battery 2 x 6 V 4 Amp. hour. Typical 8 hr. operation
COMPLIANCE AND ENVIRONMENTAL	
Power Supply:	95-265 V a.c. ±10%, 50-60 Hz, 30 Watts
Electrical Safety:	EN 61010-2
EMC:	EN 61326 (industrial)
Protection from Dust & Water:	Instrument in bag; IP42 of BS EN 60529, Probe: IP65 of BS EN 60529
Vibration (probe only):	BS EN60068-2-6 (10 Hz to 150 Hz at 19.6 ms ⁻¹)
Operating Temperature:	-20 to +50 °C (-4 to 122 °F)
INPUTS/OUTPUTS	
Modbus Communications:	RS232/RS485 Isolated 2-wire, RTU mode, 19200 baud, 8 data bits, even parity, 1 stop bit
4-20 mA Outputs:	8 channels (4 - 20 mA) ±0.1 mA non-isolated, 300 Ω max
USB Interfaces:	USB master for Flash Memory devices. USB function ActiveSync for connection to a PC
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
MECHANICAL	
Overall size in carry bag:	500 x 225 x 300 mm (20 x 9 x 12 in.)
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
Probe Access Port:	Minimum requirement 50 mm / 2 inches diameter
Insertion Length:	1.2 m (4 ft.) standard; Optional 2.1, 3.0 m (7, 10 ft.)
Weight (in bag):	6.2 kg (14 lb.), 8.6 kg (19 lb.), 11 kg (24 lb.)

SEE OUR OTHER COMBUSTION AND ENVIRONMENTAL MONITORING LITERATURE:



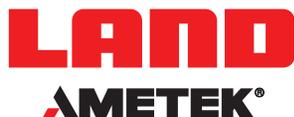
LANCOM 4
PORTABLE GAS
ANALYZER
4500 MkIII



COMPLIANCE
OPACITY MONITOR

DISCOVER HOW OUR BROAD RANGE
OF NON-CONTACT TEMPERATURE
MEASUREMENT AND COMBUSTION &
EMISSIONS PRODUCTS OFFER A
SOLUTION FOR YOUR PROCESS

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