

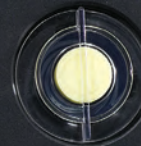
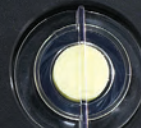
testo 350

We measure it.

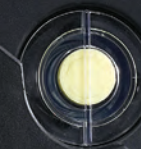


testo 350

Testo AG/Gas engine	
Natural gas	
Flue gas	
Measurement	
204	ppm NOx
167	ppm NO
37	ppm NO <sub>2</sub>
35	ppm CO
Options	



1/X



**testo 350.**  
For emission testing  
and combustion analysis.

Portable  
Emission  
Analyzer

# The testo 350 Portable Emission Analyzer

## The Standard for Emission Testing and Combustion Analysis

Whether you are testing for compliance, or troubleshooting and tuning your combustion process, the testo 350 has everything you need. The **ultra-rugged construction**, coupled with a simple **intuitive operation**, and **innovative measurement technology**, sets the standard in emission testing and combustion analysis.

The testo 350's **exclusive sensor design**, **patented gas paths**, **active sample conditioning**, **intelligent automatic data logging**, and **testing programs**, work together seamlessly providing a lightweight and simple-to-use emission monitoring solution.

The 350's **housing, bump protection, and industrial connectors** enable it to **stand up to any field condition**. Simply click on the application icon and the analyzer automatically begins its setup process. The proper parameters, correct calculations, and real diagnostics are displayed in HD color.

### Control Unit

Docked or remote wireless operation to 300 feet (or wired up to 3,000 feet)



The testo 350 is built with rugged cam-lock connections and a simple USB interface.

### Analyzer Box

Superior rugged construction



## Use it for testing:

State and Local Protocols • EPA methods • CTM 030, 034 • ASTM D6522 • SCAQMD 1110.2 +1146



## Unmatched Capability and Superior Testing Performance

### Control Unit

#### Small in size, but big in capabilities

Measurement interface provides a multitude of field configurations so testing is faster to set up and easier to perform.

- Long-range (300 ft.) Bluetooth eliminates the need for long sample lines
- Real-time color graphics
- Intuitive operation lets you view collected data in a graph or numeric values
- Use the control unit as your data storage device and download data to your computer at your convenience
- Push the fresh air button to purge instead of climbing a ladder to pull the probe
- Integrated magnets for mounting to steel surfaces



Use the control unit of the testo 350 remotely from a comfortable location up to 300 feet away (with Bluetooth), instead of up on the stack.

### Analyzer Box

#### Where the measurement action begins

Contains up to six sensors, the pumps, and Testo's know-how for high accuracy.

- Continuous sensor temperature monitoring for superior accuracy
- Thermoelectric (peltier) chiller (optional) removes the moisture, as required by regulatory agencies
- Automatic flow controlled pump keeps rate within regulatory guidelines
- Protection in many forms, from rubber bumpers to components mounted in shock-resistant material

#### Measurement capabilities:

• O <sub>2</sub>	• NO	• HC
• CO	• NO <sub>low</sub>	• Velocity
• CO <sub>low</sub>	• NO <sub>2</sub>	• Pressure
• NOx	• SO <sub>2</sub>	• And more...
• CO <sub>2</sub>	• H <sub>2</sub> S	



Control unit turned over and docked for safe transport.

## Built for Superior Job Site Performance...

### Proven technologies provide more testing versatility.

- Sensing technologies, such as electrochemical and infrared, combined to offer **long-term measurement stability** and superior response.
- Digital sensors provide numerous site benefits, including:
  - Calibration history
  - Continuous temperature compensation (every second)
  - Interference filter (with electronic lifespan indicator)
- **Advanced temperature monitoring** combined with new thermal control strategies result in unwavering temperature stability and confidence in the measurement.
- **Smarter diagnostics** provide more information. When testing conditions are not correct, detailed messages explain the reason and corrective action.



### Designed for the job site with features to make testing easier.

- The **flow-controlled pump** and gas paths (built with non-reactive materials) **set the standard in sampling**. No need to fumble with valves and flow meters because the 350 automatically corrects for positive or negative pressure. Combine these with Teflon-lined sample hoses that utilize high-velocity sample transport and you get faster response and better sample integrity.
- The **thermoelectric (Peltier-type) sample conditioner** and peristaltic pump automatically removes moisture and provides a dry sample for more accurate results for **EPA testing & compliance**.
- The **dilution system** has proven to be essential in many applications where high concentrations are encountered. The system increases sensor life by reducing the concentrations and it automatically displays corrected values. It essentially eliminates problems with cross sensitivity. For example, the system ensures that CO measurements on rich burn engines are accurate and account for cross sensitive gases (H<sub>2</sub>).

## And Simple Field Service

The 350's design lets you perform routine service with plug and play convenience - no tools are needed. Simply click out the sensors, battery, or pumps - it's that simple.

### Pump with Automatic Flow Control

High capacity sampling pump gives you more power to maintain constant sample flow. No need to adjust valves and gauges. The pump will maintain flow rate for best sensor response and accuracy. (sample to 50 ft. away)

### Fresh Air and Dilution Pump

Draws fresh air to purge sensors and to dilute high concentration gas samples. (up to 400,000 ppm CO)

### Plug and Play Sensors

The digital platform provides easy swapping and sensor change-outs. Field replaceable in seconds and no calibration needed, the sensor electronics maintain the calibration and other critical information. Quick change interference filters assure the highest accuracy.

### Condensate Trap

### Enhanced Temperature Control

### Cooling Loop

Enhances thermal control and analyzer efficiencies and is designed to isolate the electronics and sensors from harsh ambient conditions.

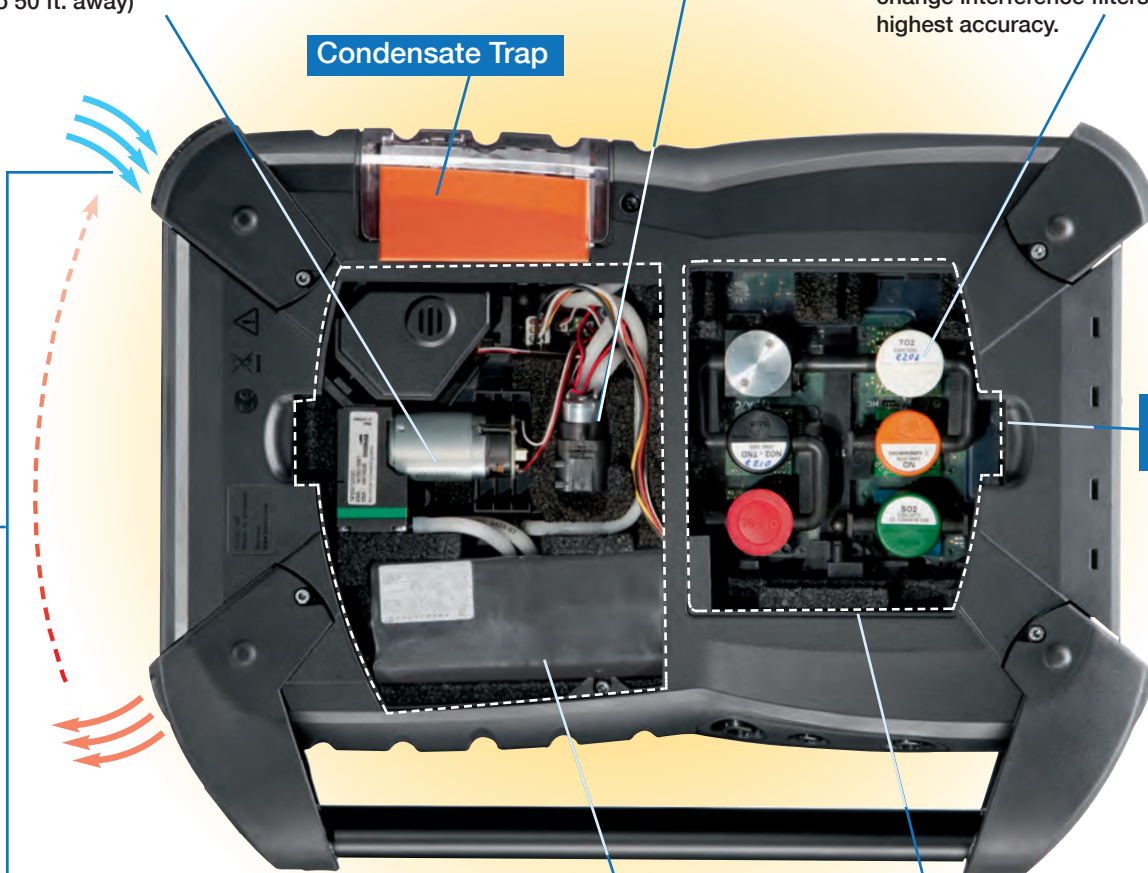
### Li-Ion battery

### Easy-Access Panels

Allows for quick servicing.

### Separate Sensor Chamber

Ensures thermal stability and the highest accuracy. Minimizes temperature drift due to thermal changes.



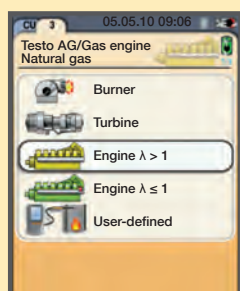


## Built for the Most Important Application – Yours...

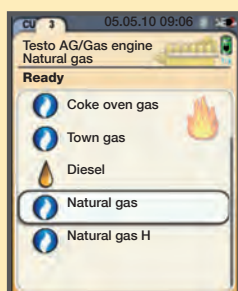
Knowing what you need, and what to expect, can challenge even the most experienced professional. But the **testo 350** removes much of the guess work with its intuitive application setup.

To start testing, simply select the icon for your application and the analyzer will automatically set up the dilution system and the measurement parameters that you need. **The 350 makes testing easier in just four simple steps!**

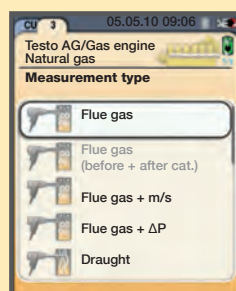
### Four simple steps to testing...



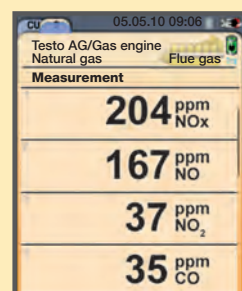
Select an Application



Select a Fuel



Select Test Type



Start Measurement

## Engine testing



Rich-burn engine exhaust, when uncontrolled, can have wide concentration ranges and both CO and NO<sub>x</sub> can fluctuate significantly. **The on-board CO dilution system will automatically set-up for optimum testing, perfect for a rich burn engine.** Lean-burn engines have different exhaust characteristics, but NO<sub>2</sub> can make up a significant portion of the total NO<sub>x</sub> measurement. **The 350 measures both NO and NO<sub>2</sub> for proper lean-burn engine set-up.**

Due to high concentration, replaceable interference filters keep the sensors stable and your readings accurate. Heavy particulate loads are easily controlled with the **optional sintered filter for diesel testing.**



## Boiler and burner tuning



Industrial boilers and burners have their own unique characteristics. When an unexpectedly high CO is detected, **the testo 350 will automatically adjust to the situation**, keeping the sensor protected at all times.

Don't worry about climbing and removing the probe from the stack, just hit the fresh air button to purge the sensor for longer life. The measurements of O<sub>2</sub>, CO, NO and SO<sub>2</sub>, combined with automatic calculations (CO<sub>2</sub>, efficiency, excess air), provide fast tuning solutions. The 350's **compact design is better for working on a platform or small space.** The automatic zero pressure measurement is **ideal to monitor flow or draft induction.** With a pitot tube you can quickly measure velocity and determine mass flow even during long term testing.



## Emission and Combustion Testing... Made Easier

### Industrial processes testing



Combustion analyses in industrial processes vary widely.  $O_2$  and CO measurements are critical for proper combustion;  $NO_x$  or  $SO_2$  measurements are important for today's pollution control devices. Sometimes extreme concentrations are also encountered and unexpected. The testo 350's dilution system provides the protection and accuracy to continue working.

High temperature sampling in kilns can be easily achieved with the wide array of probes and hose options for the testo 350.

For the most accurate  $CO_2$  measurements, the optional  $CO_2$  sensor using infrared technology is wide ranging for nearly any source.

For additional flexibility, a six channel analog output box can be looped in the system to provide a (user selected) 4-20 mA output.



### Turbine testing



High output and low emissions are typical of turbines and as a result, you need an analyzer that is **especially equipped to handle low thresholds and still deliver the highest accuracy**. When you need to make critical control or warranty decisions, the 0.1 ppm resolution will provide the highest accuracy. The low  $NO_x$  and low CO sensors are ideal for the accuracy today's turbines demand.



### Multiport pre- and post-catalyst testing

Sometimes a single sample location is just not enough. Sometimes you need more information to give you better SCR performance, or even more data to help you design or troubleshoot a system. Whatever the requirement, **the unique multi-unit capability provides many testing configurations**.

Select the "before and after CAT" test application to display simultaneous measurements from both locations. It makes it easy to see catalyst performance side-by-side in real time.

**Connect multiple analyzer boxes (up to 16 total) through the testo BUS connection.** The graphing display of real time  $NO_x$  or CO gives you information from the multiple probe locations in real-time.

Testo/Gas Engine Natural Gas Flue Gas (before + after)	
Ready	
2.9 % $O_2$	3.1
7.6 ppm CO	5.2
562.3 ppm $NO_x$	50.9
258 ppm NO	23
Options	

With the testo 350, you have the ability to see pre- and post-test results simultaneously.

