Gas Analysis

Rethinking Gas Analytics

Across Process Industries

ELSCOLAB

METTLER TOLEDO

Gas Analysis from METTLER TOLEDO
Simplicity and Performance by Design

Safety, quality, productivity: that's what's most important to you. And that's why our approach to designing analyzers and sensors is based around a simple challenge – how can the design, handling, and maintenance of our products help you reach your goals? This led to us rethinking gas analytics and the development of a unique portfolio of gas instruments that offers you faster measurements, greater process availability, and unequalled ease of use.

Through our long-standing field experience in analytical solutions for liquid measurement, we have developed a keen understanding of customer needs across the process industries.

This has allowed us to design gas instrumentation from your point of view. We know that flexibility in sensor placement, easy commissioning, and low maintenance are prime considerations, so that's what we've provided. As for measurement accuracy? Well, we're METTLER TOLEDO.

Versatility
in monitoring your process

In situ or on-line: whatever interfaces best with your process

- Broad coverage of installation locations
- Place your measurement where it needs to be

Simplicity
to ease field operations

Powerful analyzers that handle like field instruments

- Hassle-free commissioning
- Low inventory costs
- Self-monitoring instruments

Performance
that gives you a leading edge

Your key to realising process efficiency gains

- Intervention-free instruments
- Long-term accuracy
- Resilient to process variations

Visit the competence center
www.mt.com/gas

In Situ and On-line: Measure Where It Matters
With METTLER TOLEDO's Gas Instruments

In the planning phase, gas analysis instruments often come with technical limitations that dictate the location and type of installation point. With the GPro 500 series of gas analyzers and InPro series of polarographic sensors, interfacing with your process is never an issue.

Why in situ should be your first choice

- Fast process control allows you to optimize feedstock and boost yield
- Short response times avoid dangerous conditions developing
- True, representative values of target gas concentrations without compomising sample integrity
- No need for sample conditioning, the most frequent cause of process measurement loss

From large vessels to small pipes

- Laser source and detectors in one unit
- No alignment required
- Lower installation costs and easy commissioning
- Low purge gas consumption

Small pipe installation

- DN 50 (2") pipes
- No flow restriction
- Innovative filter option eliminates purge gas requirement

Tolerant of high-dust gas streams

- Ideal for combustion applications: O_2 and CO
- Blow-back option for longer lifetime
- Stable measurements, even in high dust loads

On-line GPro 500 series

- Same platform can be used with sampling and conditioning systems
- Easy conditioning leads to lower sampling costs
- Short (< 1 s) response time increases safety
- At-line intervention if required

Compact and easily accessible

- 12 mm diameter polarographic sensors with retractable safety housings
- Suitable for very wet and dusty environments
- Designed for static inertization applications
- Retractable housing means no process interruption during sensor maintenance

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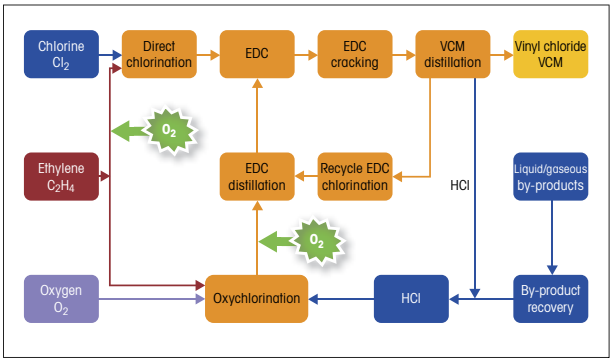
Reliable Gas Analysis Across Your Plant
From One Unique Instrument Platform

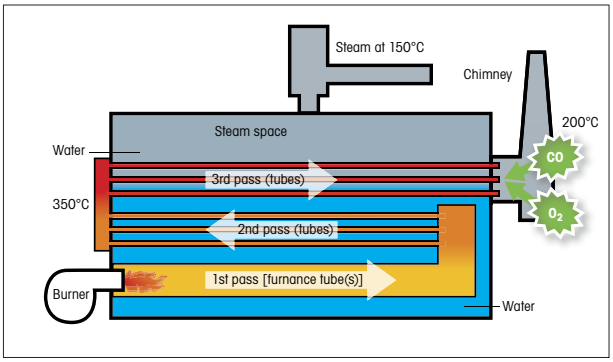
Using the same instrument platform throughout your facility reduces training and simplifies maintenance. If you need gas analysis for process applications, combustion monitoring and storage, GPro 500 analyzers will provide dependable, hassle-free performance.

EDC direct and oxy-chlorination



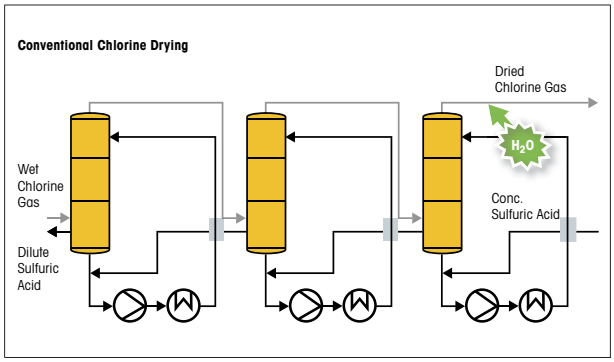
Fast response time compared to extractive paramagnetic analyzers improves product yield without compromising safety.

Package boilers



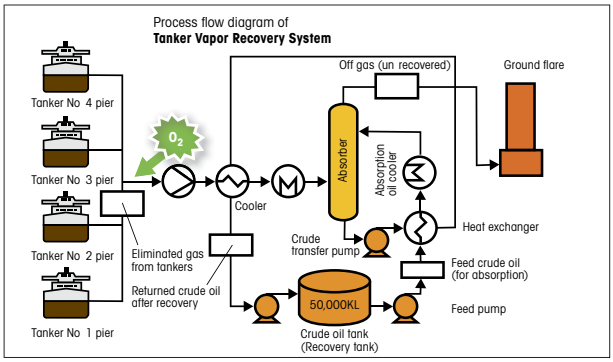
CO and oxygen measurements allow more efficient boiler trim control, leading to higher combustion efficiency and lower energy costs.

Tower dryer exhaust



Reduce unscheduled downtimes caused by wet chlorine excursions in the chlorinator.

Vapor recovery



Increase safety with interference-free oxygen measurements that guarantee operation below LOC levels.

Download the eBook for Free!
www.mt.com/GPro500-ebook

GPro Series for Gas Analytics
Complex Measurements Made Easy

Very tough process conditions can lead to the development of over-engineered measuring instruments that can only be used by skilled operators. METTLER TOLEDO's tunable diode laser (TDL) analyzers have eliminated this complexity.

Simplicity – the ultimate sophistication

One flange installation

- Folded optical path unites diode laser source and detectors in one head
- Window seals electronics from process gas and allows on-the-fly access to the analyzer
- Unit verification can be performed on the spot

Purge-free operation

- Unique innovation: process side purging unnecessary thanks to filter option
- Innovative blow-back function for automated probe cleaning

Small pipe adaptability

- Folded path doubles measurement accuracy
- Flexibility in measurement location with the smallest footprint
- Extremely robust
- No flow restriction, no pressure drops

Fast, simple maintenance

Analyzers that handle like field instruments

- At-line verification without process interruption
- Compliance to QA standards

Sensor maintenance at measurement point

- Two-minute maintenance of polarographic sensors
- One-point air calibration without calibration gases

What users say

"Since installation, performance of the GPro 500 has been flawless. Production is safer and we've been able to increase throughput."

Formaldehyde producer, US

"The GPro 500 has required no maintenance and suffered no failures, and is providing accurate oxygen measurement for safeguarding organic vapor extraction."

Metal treatment plant, Brazil

"The GPro 500 is operating successfully in an application where all other solutions we tried, failed."

Petrochemical facility, China

"After installing and commisioning the GPro 500, our team could not believe this was a TDL. It has been their easiest installation."

Specialty chemicals plant, Germany

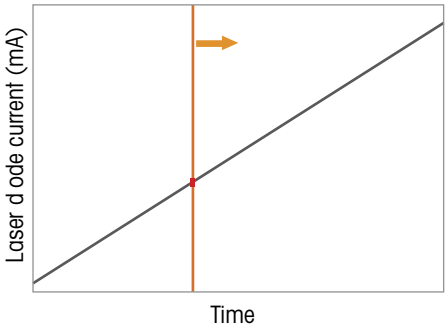
Tunable Diode Laser Spectroscopy
Technology That Delivers Tangible Performance

Absorption spectroscopy with tunable diode laser analyzers is rapidly replacing established technologies in process plants. Why? Because it offers increased productivity, capacity upgrades, and higher safety.

Spectra ID™ from METTLER TOLEDO: leading-edge spectroscopy

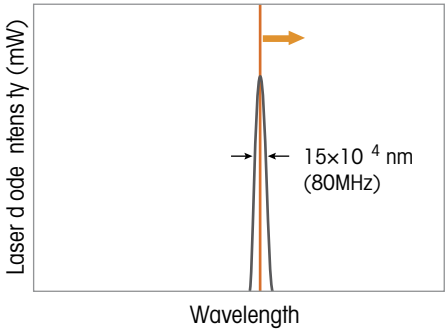
The means

A diode laser is tuned to emit light at a specific frequency and over a pre-determined range. Controlling the diode's temperature to ±0.01 °C sets the starting frequency: an excitation current ramp sweeps the emission wavelength.



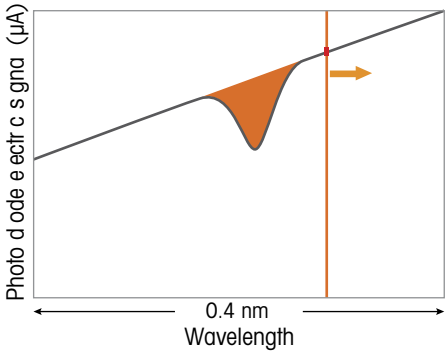
The effect

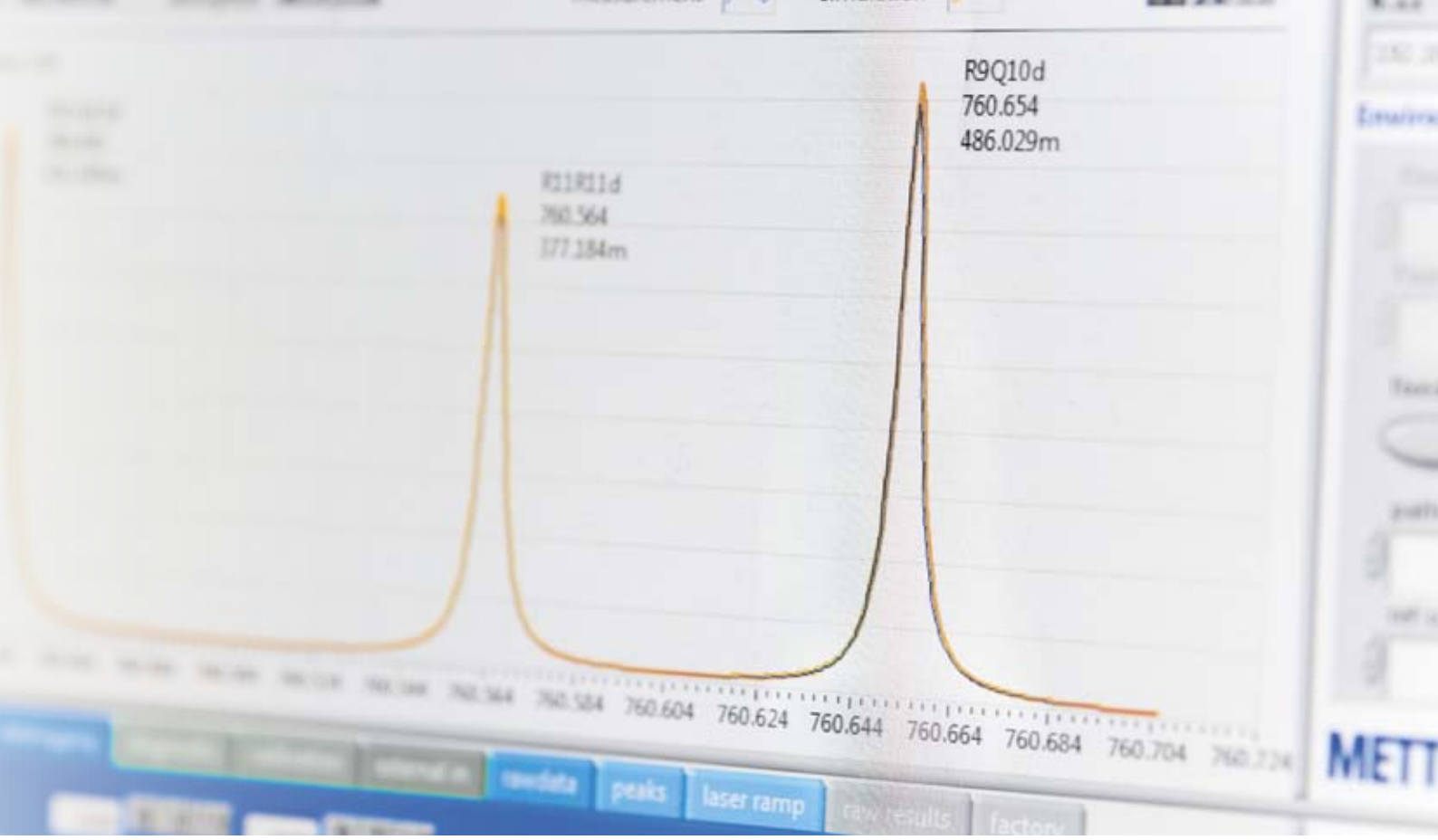
The emission light scans the pre-set wavelength range of approx. 0.4 nm, 100 times a second. Enough to resolve single absorption bands of the target gas in the process matrix.



The result

The photodiode measures light intensity and detects absorption peaks. The analyzer deducts these from the baseline signal, and the result is a peak surface that can be related to the gas species concentration for a given temperature and pressure using the HITRAN database.





Benefits that impact the bottom line

With many conventional analyzers, best performance is attained only with strings attached such as tedious verification and maintenance. With the GPro 500 TDL series, the trade-off between performance and high cost of ownership, vanishes.

KEY TAKEAWAYS

Drift-free technology

Based on light absorption, high-resolution laser TDLs are insensitive to drift

Insensitive to cross-interference

Because the laser source can resolve single absorption lines, interference from background gases is not present – no chemometrics needed

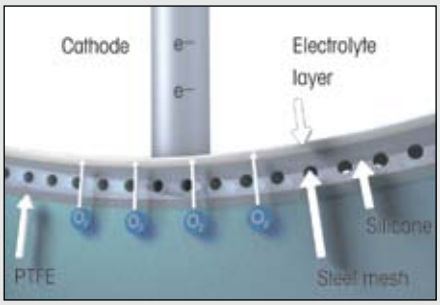
Resilient to harsh process conditions

The high tolerance for dust combined with short pathlength makes it more tolerant to dusty environments

Get more info:
www.mt.com/GPro500

Polarographic sensors: how they work

The oxygen sensor is separated from the sample gas by a membrane. This membrane is permeable to oxygen, but prevents detrimental components influencing the measurement. At the cathode, oxygen is electrochemically measured as a current to calculate the oxygen partial pressure.



Based on this electrochemical anode/cathode assembly, the InPro 6850i G, 6900i G, and 6950i G sensors have been developed to meet the highest inerting standards in the process industries.

Gas Analytics Competence Center

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CE

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