

# Choose the EAsy Way compEAct



Elemental Analysis

# compEAct Series

In times of limited lab resources and an increasing number of samples compEAct provides fast and cost-effective determination of sulfur and nitrogen in liquids, gases and LPG samples for refineries, QC and contract labs.

## Economic and efficient

- Footprint of less than 0.3m<sup>2</sup> incl. autosampler and control unit
- Short analysis times and high sample throughput
- Ideal for unattended operation

## User-friendly and functional

- Hardware and software are easy to use also by non-expert users
- Touchscreen operation with full access to an extensive method library
- LAN connection for remote access and LIMS integration

## Safe and compliant

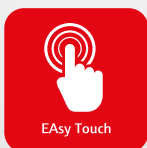
- Automatic monitoring and optimization of all process parameters
- Low maintenance and maximum service life of all components
- Compliance with ASTM, IP, EN, DIN and UOP standards

## Precise and sensitive

- Measurements across a broad concentration range
- Ultralow detection limits: 15 ppb for N, 5 ppb for S
- Analysis of compressed and liquefied pressurized gases, hydrocarbons and other organic liquids



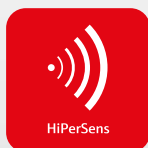
EAsy Fit



EAsy Touch



EAsy Protect



HiPerSens



compEAct with autoinjector (left) and autosampler LS 2 (right)



## Accessories

### **Autoinjector: automated injection without autosampler**

- Flexible filling volumes and dosing speeds
- Manual sampling, automated injection

### **Autosampler LS 1 for small sample series**

- 18 positions for dosing liquids using direct injection
- Flexible sample volumes and dosing speed

### **Autosampler LS 2 for maximum sample throughputs**

- 120 positions for dosing liquids using direct injection
- Flexible sample volumes and dosing speed

### **Autosampler LS-T for safe dosing of very volatile liquids**

- Cooled syringe and tray
- 112 positions for dosing of liquids by direct injections

### **LPG 2.0 module for safe automatic dosing of LPGs**

- Sampling is done directly from the liquid phase
- Complete transfer of all sample components
- Precise dosing of flexible volumes

### **GSS module for matrix-optimized gas dosing**

- Suited for pressurized and unpressurized gases
- Optimum analysis results by adjustable dosing speed and volume

### **GSS/LPG combi module for flexible gas analysis**

- Separate gas and LPG branches prevent cross-contamination
- Flexible sample volumes

compEAct is available in three versions:

#### **compEAct N**

Elemental analyzer for total nitrogen (TN) determination

#### **compEAct S**

Elemental analyzer for total sulfur (TS) determination

#### **compEAct S<sup>MPO</sup>**

Elemental analyzer for interference-free sulfur (TS) determination in fuels and other refinery products

## Saving on Time, Space and Complexity

compEAct is small in size but big in performance. High throughput, fast analysis times and an easy-to-use software help you reduce costs and increase productivity.

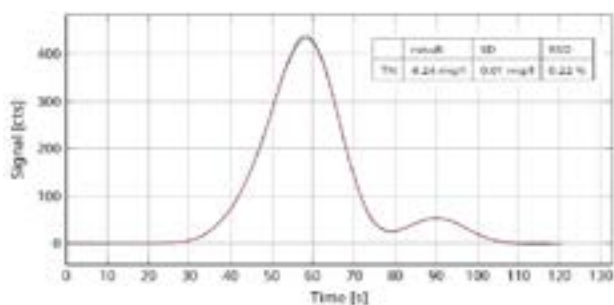


### Smallest overall footprint on the market

compEAct combines all relevant system components in a single module, saving valuable lab space. With a **footprint of less than 0.3 m<sup>2</sup>** including autosampler and a control and evaluation unit it saves around 60 % of bench space compared to other vertical systems.

### Time-saving analysis

Save time and money with **analysis times of 2 to 5 minutes and high sample throughput**. compEAct offers field-approved, **ready-to-use standard methods** compliant to the relevant international regulations, eliminating time-consuming development and optimization of methods. The analyzers are ideal for unattended 24/7 operation.



Typical TN analysis curve

### User-friendly and functional

The EAvolution **software sets standards in simplicity and functionality**. It easily guides expert and non-expert users in their daily routine. The integrated high-contrast touch screen is easily operated even with gloves. Nano coating ensures a high resistance to chemicals and mechanical stress.

### Easy data management

**Flexible data export, customized reporting** and excellent data integrity as well as an integrated method library are indispensable features. Also included is remote access through a **direct LAN connection** and easy integration into existing LIMS.



## Making Lab Life Easier and Safer

With compEAct's self-monitoring system you don't need to worry about cumbersome maintenance cycles or manual system checks. Low detection limits ensure compliance with industry standards.



### Minimum maintenance, maximum safety

The EAsy Protect safety system monitors and optimizes all relevant process parameters in real time. The software assistant notifies the user of upcoming maintenance requirements, **keeping maintenance cycles and costs to a minimum**. The integrated Auto-Protection and Self Check Systems **ensure maximum service life of consumables** and operational safety.

### Meeting international standards

With compEAct you will **keep up with tightening regulations**. A built-in method library as well as a module for legal limit checking **compliant with ASTM, ISO, UOP and IP** simplify analysis enormously.

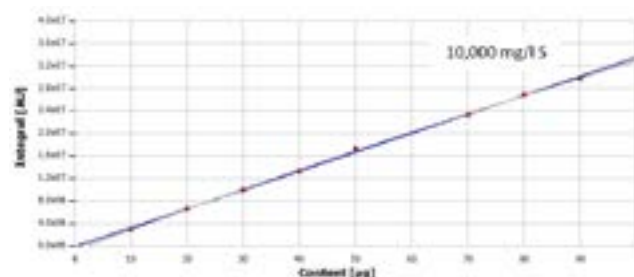
| Total Sulfur                   | Total Nitrogen     |
|--------------------------------|--------------------|
| ASTM D: 5453, 6667, 7183, 7551 | ASTM D: 4629, 7184 |
| IP 490                         | IP 379             |
| EN 15486, EN ISO 20846         | DIN 51444          |
| UOP 987 method A               | UOP: 936, 971, 981 |

Standard compliance of the compEAct series.

### Precise and sensitive

Requiring no manual or electronic adjustment, Analytik Jena's HiPerSens detection combines **highest sensitivity in ultratrace analysis** with a **broad measurement range** from 0 to 10,000 mg/L. High and low element contents can be processed together, requiring only one method.

**Ultralow detection limits** of 15 ppb for N / 5 ppb for S help you meet quality and regulation requirements. Time-consuming strategies like trap-and-release or injection of large sample quantities become redundant. **Samples with high concentrations can be analyzed directly** without dilution. Applications include analysis of compressed and liquefied pressurized gases, hydrocarbons and liquids.



Typical S calibration curve

## Meeting Industry Needs

Saving time and simplifying workflows compEAct meets the requirements of the oil and gas industry facing tightening regulations and skills shortage. Suitable applications also include quality control for chemistry and polymers.

### Petrochemical industry and refineries

#### Ideal when time matters

To ensure product quality and process optimization, the determination of sulfur and nitrogen impurities is important for control labs in refineries and in the production of alternative fuels. The compEAct series enables short processing times at maximum sample throughput. The detector covers a wide concentration range, from high contents in process streams to ultratraces in the pure end products without the need for dilution or enrichment steps.

#### Reliable results for all matrices

During combustion of fuels hazardous sulfur oxides are formed. Compliance with international emission standards is crucial to protect the environment and prevent serious damages. Monitoring of adherence to legal limit values for sulfur in fuels is essential for refineries, contract labs, and state authorities. Analysis of fuels containing interfering compounds such as nitrogen-containing cetane improvers (2-EHN) poses a challenge as they falsify the test result. compEAct's patented MPO technology enables reliable interference-free analysis of such samples as quickly as in a standard analysis. This simplifies routine work considerably, often avoiding a costly post-treatment of the fuel.

#### Liquids analysis

- Saturated/unsaturated aliphatic, cyclic and aromatic hydrocarbons and their derivatives (methanol, petrolether, ethanol, toluene, naphtha, etc.)
- Fuels, additives, other refinery samples (kerosene, gasoline, diesel, bio diesel, bio ethanol)

#### Gas analysis

- Gas samples up to 200 bar
- LPG samples up to 35 bar
- Hydrocarbons and their mixtures (natural gas, butane, propane, ethylene, methane, calibration gas mixes, etc.) and combustibles (LPG, butane, propane, LNG, etc.)

### Chemistry and polymers production

Besides liquid hydrocarbons, gaseous and liquefied pressurized materials are important source materials for synthesis processes (e.g. polypropylene) and as auxiliary materials in cosmetics and pharmaceuticals (e.g. propellant). To avoid catalyst poisoning, generation of undesired byproducts and increased production costs, a strict monitoring of the feed materials is a must. compEAct detects smallest nitrogen or sulfur contaminations with its powerful metering technology, quantitative combustion and highly sensitive detection. The matrix-optimized sampling systems of the compEAct series ensure high-precision and pressure-independent metering of any gas or LPG matrix as well as quantitative combustion of all matrix component.





## Technical Specifications

|                                | compEAct N  | compEAct S             |
|--------------------------------|---|------------------------|
| Detection principle            | chemiluminescence (CLD)   | UV fluorescence (UVFD) |
| Operation range*               | 0–10,000 mg/L   | 0–10,000 mg/L          |
| Detection limit<br>relative**  | 15 µg/L N   | 5 µg/L S               |
| absolute**                     | 0.6 ng N  | 0.2 ng S               |
| Sample quantity***             | max. 100 µL (liquids), max. 100 mL (gases), max. 50 µL (LPG)  |                        |
| Analysis times*                | 2–5 min   |                        |
| Furnace temperature            | max. 1100 °C  |                        |
| Gas supply                     | argon 99.996 % (4.6), oxygen 99.995 % (4.5)   |                        |
| Power supply                   | 100–240 VAC, 50/60 Hz, max. 16 A  |                        |
| Power consumption              | max. 1100 VA, average 500 VA  |                        |
| Space requirements (H x W x D) | Basic unit (without sampler): 54 cm x 51 cm x 53 cm<br>Basic unit incl. autoinjector AI-SC: 82 cm x 51 cm x 53 cm<br>Basic unit incl. autosampler LS 1 resp. LS 2: 95 cm x 53 cm x 53 cm<br>Gas sampler (without basic unit): 47 cm x 30 cm x 55 cm |                        |

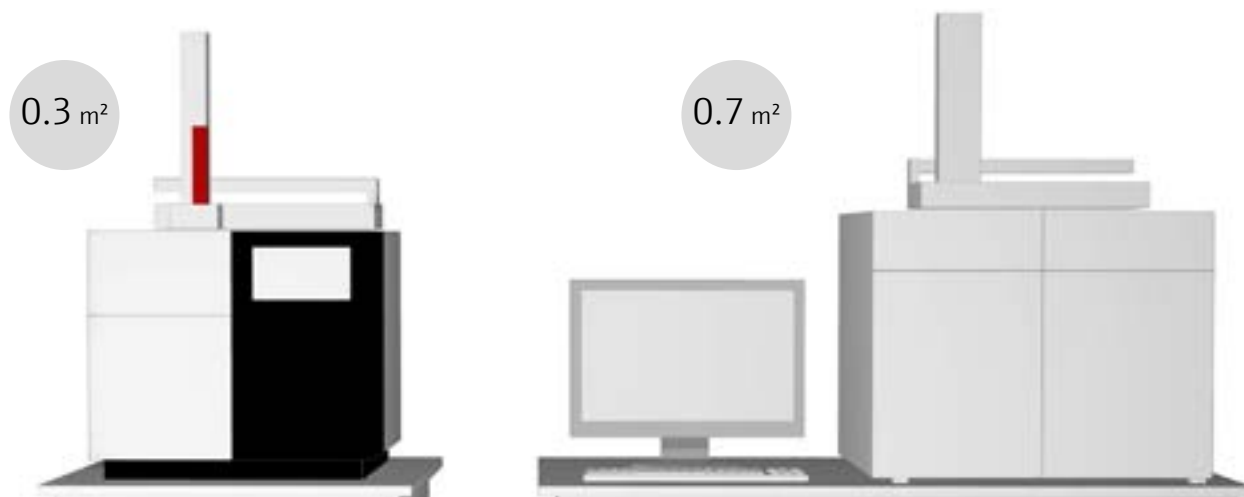
\* depending on configuration, method parameters, sample quantity and element content

\*\* depending on sample quantity, sample matrix, purity of reagents and gases and cleanliness of used device and tools

\*\*\* depending on element content and sample matrix

### Space requirements – saving up to 60 % of bench space

With its integrated control and evaluation unit and touchscreen operation, **compEAct (left)** has a footprint of less than 0.3 m<sup>2</sup>. Without the need for an extra PC or laptop, only one socket is required for operation. As the autosampler is stackable on top of the device it doesn't require any additional space. While other **comparable analyzers (right)** might also have a relatively small footprint of the base unit, they all require an additional control unit (PC or laptop) taking up extra space and needing extra sockets. For some models, sample supply modules can't be stacked on top of the combustion module and require further space.



Space requirements for compEAct with autosampler LS compared to common S/N analyzer systems

#### Headquarters

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Pictures: Analytik Jena GmbH  
Subjects to changes in design and scope of delivery as well as further technical development!