



## High-precision nutrient analysis at critical control points

Liquiline System analyzers and sample preparation systems

The colorimetric analyzers for ammonium and phosphate is the user-friendly package for regulation-compliant nutrient monitoring in water and wastewater.

- Fast commissioning thanks to Memosens technology and intuitive Liquiline operating concept
- Cost savings through low reagent consumption and virtually tool-free maintenance
- Advanced diagnostics and process documentation with remote access for analyzer and sample preparation systems
- Reliable, regulation-compliant measurement by using standard methods following ISO and DIN directives
- Easy upgrade to a complete measuring station connecting Memosens sensors
- Proper sample preparation by selecting one of three filter systems, based on the specific application conditions



## Nutrient monitoring under control



### Comply with limit values, reduce fees

The primary focus in wastewater treatment plants is to protect downstream waters. This is why the limit values for ammonium and orthophosphate are becoming stricter every year. Phosphate load is particularly important as phosphorus is the decisive factor for excessive algae and plant growth in water bodies. To keep discharge fees at reasonable levels and to avoid penalties, managers of wastewater treatment plants need nutrient monitoring they can rely on.

Liquiline System analyzers for ammonium and phosphate give you the security of precise and reliable measurements because these analyzers use standard colorimetric measuring methods:

- Indophenol blue method following ISO 7150-1, DIN 38406-5, GB 7181-87 for ammonium
- Molybdenum blue method following DIN EN 1189 for low orthophosphate concentrations
- Molybdate vanadate method (yellow method) for higher orthophosphate concentrations

In addition, the analyzers feature the logbooks to provide continuous documentation of the measured values to the water authorities.

### Save energy and costs in the aeration basin

- The biological stage uses up to 70% of a plant's total energy requirements. This is due mainly to the oxygen blowers in the aeration process. Accurate ammonium and oxygen measurement allows a precise, load-dependent control of the blowers reducing energy costs considerably. Liquiline System CA80AM is the first analyzer that can be combined with a suitable Memosens oxygen sensor providing the required measurements by just one device.
- Precipitants are a further expense factor in the biological stage. Here the reliable orthophosphate measurement of Liquiline System CA80PH supports you in optimizing the precipitant dosing which results in lower purchase costs for precipitants and reduces the sewage sludge volume.

### React quickly at the inlet

Liquiline System CA80AM and CA80PH monitor the incoming nitrogen and phosphorus load, providing you a detailed view of the process and the possibility to handle peaks or disturbances promptly.



*Our customer was very unhappy with his previous measurement due to very high deviation of the measuring value compared to lab. After installation and startup of our Liquiline System CA80AM + CAT820, the customer did cuvette tests in the lab as a comparison to the value measured by CA80. And, they were exactly the same (difference <math><0.1\text{ mg/l}</math>). Therefore, the customer immediately decided to use our 4...20 mA signal to control his process. It's now been running for one month and the customer has not even spent one minute on the analyzer and it's still running accurately and without any problems."*

Bart Küpers, Product Manager Analytics  
Endress+Hauser Netherlands

## Decrease operating costs, simplify maintenance

### Uniform, intuitive operation of fewer devices

- Operation of the Liquiline System will be familiar because it is identical to the concept of other online analysis parameters, such as pH or oxygen. Operating errors are virtually eliminated.
- Connect up to 4 Memosens sensors to the analyzer and thus reduce the number of transmitters in your plant.
- Commissioning becomes a fast and easy task thanks to the Memosens technology of the sample preparation.
- Integrate the analyzers seamlessly into your process control systems via Modbus RS485, Modbus TCP or web server communication.

### Liquiline System makes life easier for operators.

- The integrated web server allows comfortable remote access to the analyzer and the sample preparation. This enables you to analyze possible process disturbances and decide on required measures quickly.
- The analyzer's automatic cleaning and calibration functions ensure that it works accurately and reliably over a long period without any manual intervention.
- If the Liquiline System needs manual maintenance, you can access and replace parts easily with minimal tools.

### Operating costs of a colorimetric analyzer rise and fall with the reagent consumption.

- Liquiline System CA80 uses dispensers that enable ultra-precise reagent dosing, thereby reducing reagent consumption.
- The lifetime of reagents is increased by the analyzer's intelligent and energy-efficient cooling:
  - Three months for ammonium
  - Six months for phosphate blue
  - Reagents for the phosphate yellow method do not need cooling but have an average lifetime of three months.



*"Installation and commissioning of the CA80PH analyzer went fast and smoothly and operating the transmitter is easy as usual. The measured values match laboratory results very well and data logging for documentation to the authorities also works perfectly."*

Ernst Dürlinger, Plant manager of WTE RHV Zellerbecken  
Zell am See, Austria



## Sample preparation right to the point



**Highly precise measurement at all critical control points for ammonium or phosphate demands suitable sample preparation. Liquiline System CAT810, CAT820, and CAT860 are perfectly adapted to the respective sampling points.**

- Liquiline System CAT860 is the perfect choice for demanding conditions in the inlet. Its automatic backflush function with cleaning solution and automatic air cleaning removes fat and proteins and prevents blocking of the ceramic filter.
- Liquiline System CAT820 is the flexible solution for bacteria-free sample preparation in the aeration basin or the outlet. It can be equipped with various filters and cleaning options to fit a variety of sampling situations.

- Liquiline System CAT810 prepares samples in the outlet or in bypass pipes. Thanks to its low dead volume, it reflects process changes promptly and shortens the response time of your downstream measuring devices. The system is equipped with a self-cleaning cross-flow filter and backflush to reduce blocking.

All sample preparations are fully controlled by the Liquiline System CA80 analyzer to guarantee a perfect synchronization of the measuring point. The filters of Liquiline System CAT860 and CAT820 can be combined with the Flexdip CYH112 holder system to adapt them to any installation situation.



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