



## STAC CL STAC CHLORINE ANALYZER

### CONTEXT

It is difficult today to measure chlorine whose concentrations fluctuate from 4 mg/L up to 3 g/L. The problem still becomes complicated if measurement must be automated.

The solutions which exist to measure chlorine are:

- The colorimetry using reagents and titrimetry. These methods are not easy to use on line and relate to only the small concentrations (1.5 mg/L).
- Potential "Redox" measurement. Although usable in process, the measurement carried out by probe makes dilution impossible during strong concentration.

SECOMAM offers a powerful and easy to use on line alternative by direct physical measurement in the UV of the chlorine concentration from 4 mg/L up to 3 000 mg/L. Much more SECOMAM Analyzer can simultaneously measure Dissolved Sulfide (H<sub>2</sub>S) in 5 – 50 mg/L range.

### MEASUREMENT PRINCIPLE

Measurement is based on the acquisition of UV spectrum (204 – 321nm) of the sample and its interpretation by a method of calculation called the "Deconvolution". The calculation of "Deconvolution" is based on two hypotheses:

- The spectrum of the sample is the sum of absorption spectra known as reference spectra;
- The combination of a small number of reference spectra makes it possible to reconstitute the shape of UV spectrum of an unknown sample.

This small number of spectra of reference is called "Model". After acquisition of the spectrum and its treatment by the "Deconvolution" method, measurement will give:

- Concentration of the sought parameters,
- Information on the quality of measurement (adequacy between the selected model and the measured sample)

### MEASURED PARAMETER

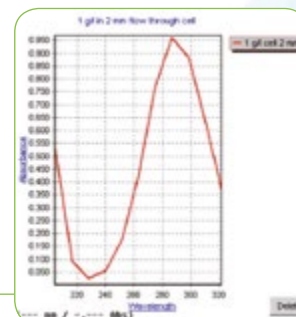
In this operation, H<sub>2</sub>S is dissolved at basic Ph, and then converted into Sulfate by Chlorine. The STAC CL is able to trace both Chlorine & Sulfide.

### MEASURING RANGE

It is possible to work on three ranges of measurement according to the size of the flow though cell used (2mm, 5mm)

Optical path of flow cell	Chlorine measuring range	Sulfide threshold detection
2 mm	From 100 to 3000 ppm	10 ppm
5 mm	From 40 to 1200 ppm	4 ppm

01/04/24 11:04 584	
Hour	Cl
11:00	0.35
11:10	0.36
11:20	0.36
11:30	0.37
+	PARA



Chlorine solution spectrum (concentration 1g/l)  
Measured by an STAC CHLORINE analyzer using  
a flow through cell of 2 mm optical path  
 $Cl_2$  (Free) =  $Cl_2$  (Aqueous) +  $HClO$   
(Hypochloric ion) +  $Cl$  (chloride)

## SOFTWARE

It is possible to use UV PRO software with STAC CHLORINE. With this software, it is possible to adapt a model to the measured parameters (Cl<sub>2</sub> – HS<sup>-</sup>), download the samples spectra and help the maintenance staff.

The stac chlorine analyzer includes:

- One channel for blank
- From 1 to 4 programmable channels for samples
- From 2 to 5 pinching electro valves to control the liquids
- A flow through cell to measure the samples
- One lcd display
- A keyboard
- Deuterium lamp

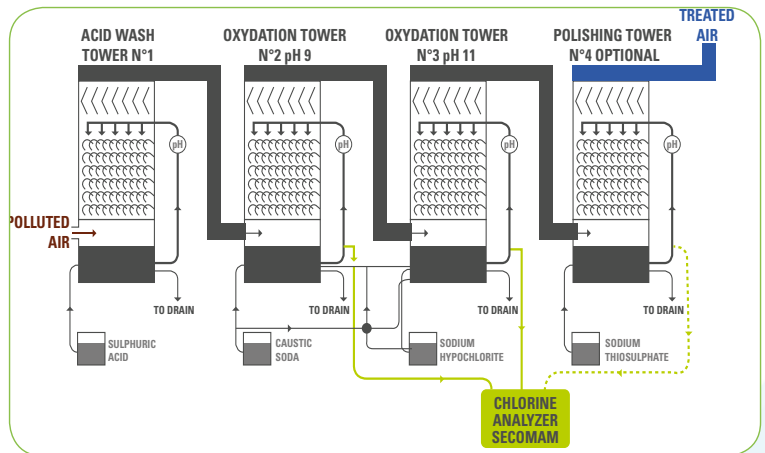
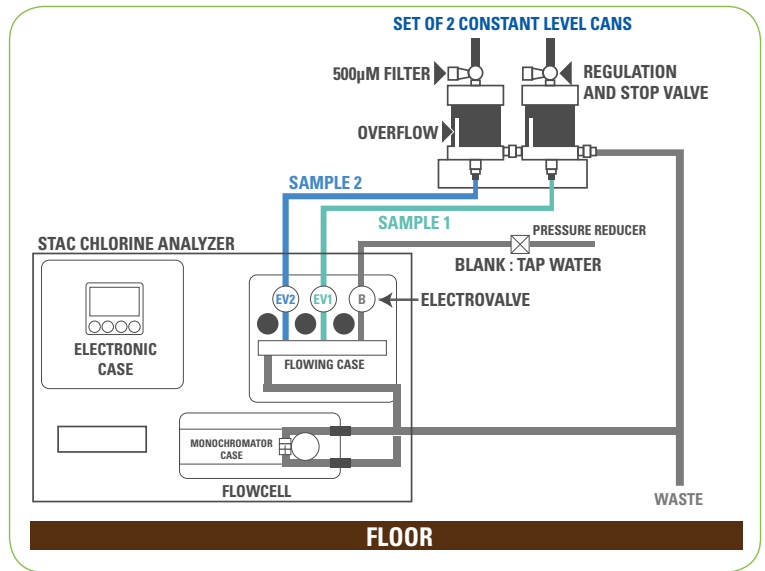
## APPLICATION EXAMPLE

H<sub>2</sub>S NEUTRALIZATION & DESODORIZATION in WWTP:

The presence of a water treatment plant in a sensitive place imposes a strict need for the checking of air quality exhaust outside of the building.

When the water treatment plant is completely closed, it is necessary to have an efficient ventilation of the stale air. The ventilation air (flow rate is around 100 000 Nm<sup>3</sup>/h) is introduced in different treatment rooms and it is filled with smelly compounds. Then, it is collected by an extraction network and sent towards an air treatment system. This treatment system is composed by one, two or three line according to the water treatment plant size. Every line is composed of three air chemical washing towers with 6 m<sup>2</sup> section and 6,70 m height for each one.

In these towers, the odorous air is successively treated using an acid wash (TOWER n°1) to eliminate nitrogenous compounds (NH<sub>3</sub>, Amines) and a second washing cycle in oxido-basic environment which eliminate sulphurous compounds such as H<sub>2</sub>S (TOWER n°2) and mercaptans (TOWER n°3). The necessary chlorine for oxidation is produced in situ by soda electrolysis.



## CARACTERISTICS

<b>Optic</b>	UV Polychromator (204-321nm)
<b>Samples circulation</b>	By gravity
<b>Maximum pressure for liquids</b>	1 bar
<b>Number of measuring channels</b>	1 for standard analyzer (maximum 4)
<b>Measurement frequency</b>	4 minutes per channel
<b>Memory</b>	4 models, 255 results
<b>Working temperature</b>	From 15 to 40°C
<b>Samples temperature</b>	40°C maximum
<b>Nature of the samples</b>	Natural or treated (tparticules size < 2mm)
<b>Outputs</b>	4 current loops (4-20mA) and RS 232C port
<b>Consumable</b>	Demineralized or distilled water (blank)
<b>Source</b>	Deuterium lamp (100 000 measures maximum)
<b>Power</b>	Supply 230V single phase - 50/60Hz - 300VA
<b>Size</b>	800 x 600 x 360
<b>Weight</b>	15 Kg

SECOMAM's STAC Chlorine allows at the same time to regulate chlorine production and control the sulfide rate coming from H<sub>2</sub>S oxydation. Therefore it offers the possibility to globally master the most sensitive part of this process.



Suite 77/278 Church Street  
 RICHMOND VICTORIA 3121  
 Ph 0421 474 658  
 Email [sales@ieands.com.au](mailto:sales@ieands.com.au)  
 Website [www.ieands.com.au](http://www.ieands.com.au)