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VOC OR SULPHUR INDUSTRIAL APPLICATION AND CASE STUDIES

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CASE 1 : POLLUTED AIR DEODORISATION CONTROL AFTER STRIPPING PRETREATMENT IN WASTE WATER TREATMENT PLANT IN PARIS (PPB RANGE)

PROBLEM :
Process control optimisation of the deodorisation unit.
Correct amount of chemical products has to be managed. Verification of the treatment efficiency.

SOLUTION :
TRSMedor system with its main qualities : high alarm at 4 ppb, sensibility at 0.5 ppb for DMS, online monitoring. Results for H2S, MM, EM, DMS, DMDS and Total Reduced Sulphur.
Autocalibration.

RESULTS :
- Monitoring of odour reduction.
- Reduction of time needed to pilot the process.
- Less chemical agents used.
- Improvement of operating cost in relation with very big influent flow (2 000 000 m^3/day).

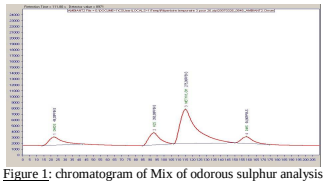


Figure 1: chromatogram of Mix of odorous sulphur analysis

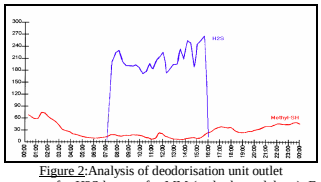


Figure 2:Analysis of deodorisation unit outlet

We can see the efficiency of the treatment for H2S but not for MM (and other sulphurs). Even if H2S is removed, it remains MM and there is still health accident risk. Big interest of measuring MM in order to prevent toxicity problems

CASE 2 : HYGIENE INSIDE WASTE WATER TREATMENT PLANT IN PARIS AT SCREENING STAGE BUILDING (PPM RANGE)

PROBLEM :
At different places in screening stage building, toxic and odorous components such as H_2S and MM remain in the influent by fermentation and are emitted in ambient air. Concentration may vary with time and from screen to screen in the range of toxic levels (PPM).

SOLUTION :
TRSMEDOR system with multiplexer for five streams. Visual and audible alarms (H2S and R-SH) are activated on supervision. Online and continuous measurements. Cycle time 2.5 to 5 minutes.
Autocalibration.

RESULTS :
- Increased safety of operatives.
- Complement of individual H2S monitors.
- Apart from H2S, other dangerous sulphurous compound as MM, EM, DMS, DMDS are detected.

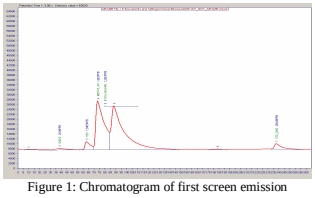


Figure 1: Chromatogram of first screen emission

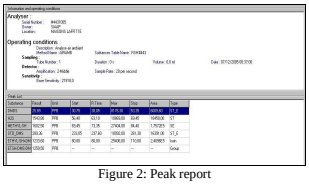


Figure 2: Peak report

CASE 3 : SOLVENT DETECTION AT WASTE WATER TREATMENT PLANT ENTRANCE PROTECTION OF POPULATION

PROBLEM :
Several solvents as benzene or toluene can be present in waste water at the WWTP entrance and are emitted in dangerous concentrations due to industrial problems upstream.

SOLUTION :
ChromaFID analyser who allows on-line and continuous measurement in ambient air from industrial effluents :
-specific compounds analysis in PPM range
-7/7D monitoring and data transfer
- autocalibration

RESULTS :
- Better knowledge of process and control.
- protection of employees and population.
- Protection of biological treatment downstream.

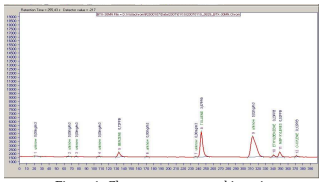


Figure 1: Chromatogram on ambient air

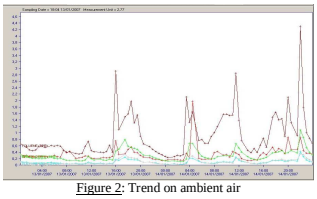


Figure 2: Trend on ambient air

CASE 4 : FENCELINE AND AMBIENT AIR MONITORING : PETROCHEMICAL INDUSTRY (SOUTH AFRICA, SCOTLAND) (PPB RANGE)

PROBLEM :
300 identified solvents have an impact on human health as Benzene and 1,3 butadiene that are carcinogenic compounds. A lot of them are emitted by Petrochemical Industry . Surroundings ambient air have to be measured and controlled.

SOLUTION :
Airmozone system without cylinder but in cabinet with analysers and gas generator.

RESULTS :
- Improved monitoring with a daily result validation.
- Analysis follow up with autocalibration. : TO 14 (Industrial solvent including chlorinated compounds) ; PAMS 56 VOC (or 31 for Europe), (ozone precursor).
- Identification from which mill comes the emission.

Ambient air : typical chromatogram near the mill

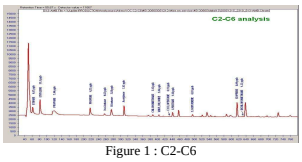


Figure 1 : C2-C6

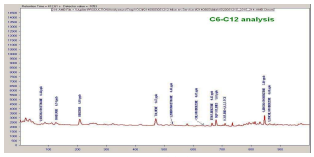
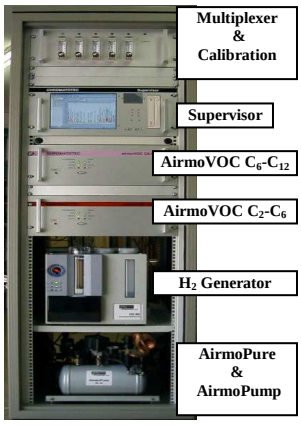


Figure 2: C6-C12



CONCLUSION

- Case study 1 and 2 are quite similar. The same site can have different problems monitored by analysers for H2S and others sulphides compounds.
  - Odours problem : PPB range
  - Hygiene and health problem (toxicity) or corrosion problems : PPM range
- Interest to measure not only H2S but other sulphurs as MM, EM, DMS, DMDS to prevent accident risk even if there is no H2S trace. Because they are now detected, toxicity studies can be performed on these compounds.
- Interest of fenceline monitoring for petrochemical industry or solvent detection at Waste Water Treatment Plant entrance is to permit to identify from which mill comes the problem (for example odours problems) in case of neighbouring complaint.
- Solvent and Sulphur can be analysed both in only one cabinet at screening stage in order to protect installations and employees.