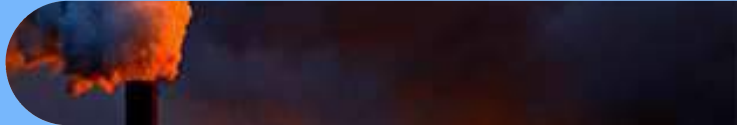


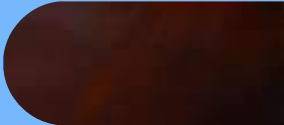
AIR ADVANCED



ACTILAYER



Innovative solution for
treatment of nuisance odours via photocatalysis



SUEZ SMART ENVIRONMENTAL SOLUTIONS - AIR ADVANCED

Comprehensive offer targeting 3 critical market segments

**Citizen Comfort &
Regional Attractiveness**



**Nuisance Odour
Impact**

(VOCs, H₂S ...)

**Air Quality &
Public Health**



**Atmospheric
Pollutants**

(PM₁₀, PM_{2.5}, NO_x, SO_x, O₃,
CO...)

**Climate Change &
Future Generations**



**Greenhouse Gas
Emissions**

(CO₂, CH₄, N₂O, ...)

SUEZ SES - AIR ADVANCED

Solutions integrator positioned along the entire value chain



Committed to the integration of industrial activities within the urban environment

INDUSTRIAL EMISSIONS MANAGEMENT

Project drivers & value proposition

Integration of industrial sites within urban environment

Assess and manage impact of site activities

Absence of perceived nuisances

Evolution of value proposition from pure risk management :

- Regulatory compliance & contractual guarantees
- Safe working environment
- Environmental footprint
- Corporate image & stakeholder relations
- Proactive communications strategy
- Enhanced quality of life



AIR ADVANCED – ACTILAYER

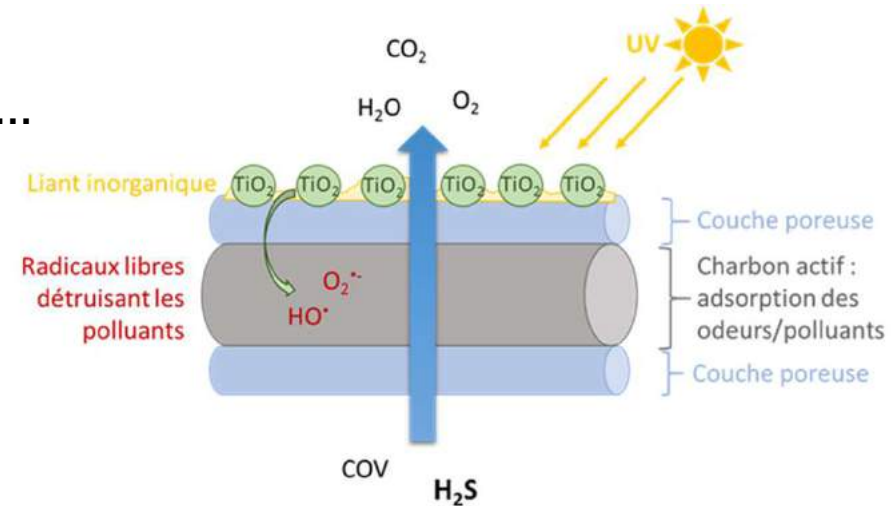
Odour Treatment Innovation : Photocatalytic cover

- (1) Confinement of odorant emissions
- (2) Adsorption of odorant compounds via integrated activated carbon layer
- (3) Production of free radical species via solar irradiation (photocatalysis)
- (4) Degradation of odorant pollutants and regeneration of activated carbon



Cutting-edge technology with significant benefits vs. conventional treatment strategies :

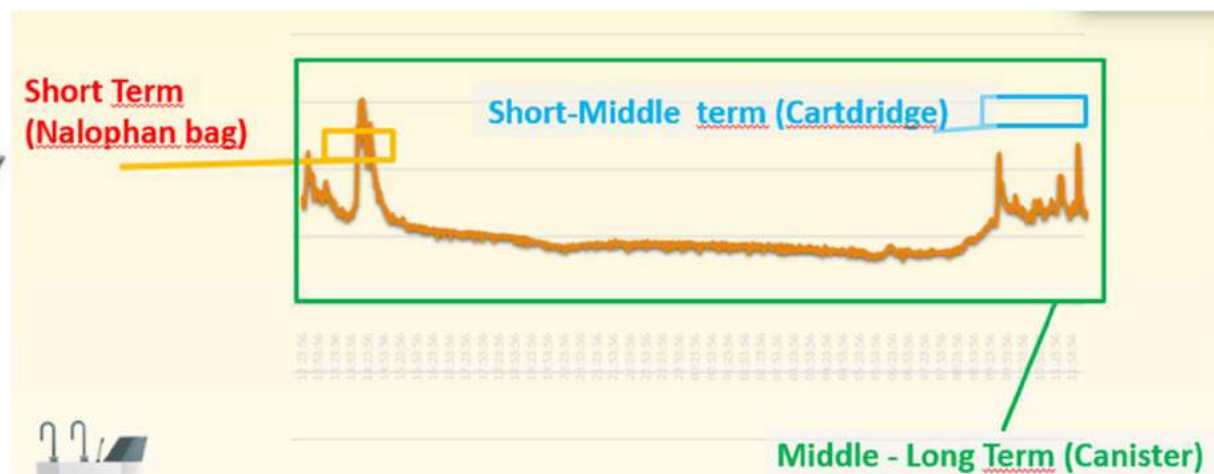
- ❑ Treatment of a large range of pollutants : H_2S , VOCs, odours, NO_x ...
- ❑ Reduced CAPEX (3 to 10X vs. conventional systems)
- ❑ No consumption of electrical power nor chemical reagents
- ❑ No regulatory constraints
- ❑ Natural air passage eliminates risk of explosive atmosphere
- ❑ Ease of installation / maintenance



AIR ADVANCED – EXPLORE 360

Diagnostic Innovation : ODORPREP on-demand odour sampler

- Integrated system for on-demand odour sampling
- Two to 4 sampling lines activated individually or simultaneously
- Tailor configuration to site specific needs (nalophan bags, TENAX cartridges or cannisters)
- Smart-phone app



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Carré de Réunion WWTP – Reference Project



AIR ADVANCED – ACTILAYER REFERENCE PROJECT

Carré de Réunion WWTP (France)

❖ Project Drivers

- ✓ Proximity to Château de Versailles
- ✓ New tramway passing directly in front of the site
- ✓ Paris Olympics 2024 – equestrian events in close proximity

❖ Raw Wastewater Inlet Channel

- ✓ Surface : 200 m²
- ✓ Cover comprises :
 - 150 m² of treated PVC cover
 - 50 m² of photocatalytic filter



AIR ADVANCED – ACTILAYER REFERENCE PROJECT

Carré de Réunion WWTP (France)

Innovative Performance Monitoring Strategy

- ODORPREP deployed for on-demand sampling of background odour concentrations prior to project works
 - 2 channel configuration - nalophan bags for duplicate sampling (Odour concentration via dilution olfactometry)
 - Remote sampling via smartphone app



AIR ADVANCED – ACTILAYER REFERENCE PROJECT

Carré de Réunion WWTP (France)

- Commissioning of structural support



AIR ADVANCED – ACTILAYER REFERENCE PROJECT

Carré de Réunion WWTP (France)

- Installation of photocatalytic cover



AIR ADVANCED – ACTILAYER REFERENCE PROJECT

Carré de Réunion WWTP (France)

● Photocatalytic Filter Panels

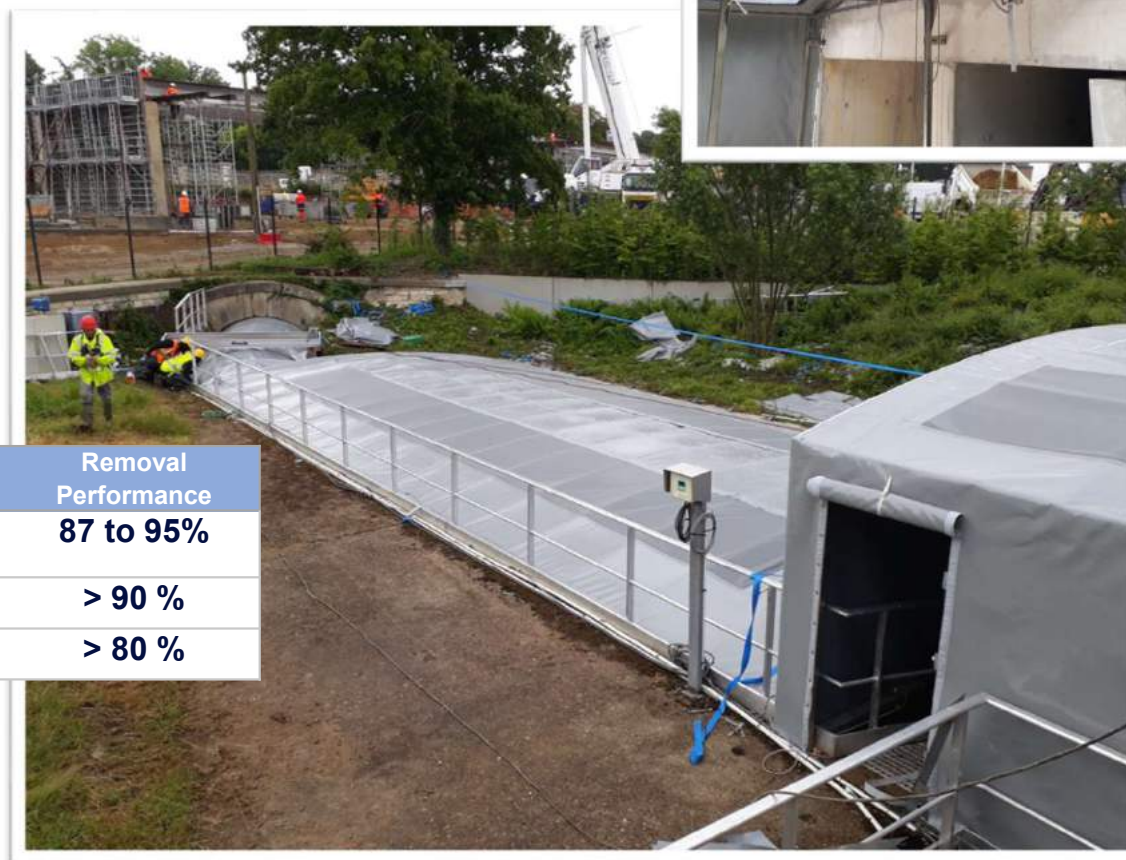


AIR ADVANCED – ACTILAYER REFERENCE PROJECT

Carré de Réunion WWTP (France)

Integral view and performance results

Pollutants	Pre-Works	Post-Works	Removal Performance
Odours (OU/m ³)	1810 to 4830	80 to 240	87 to 95%
DMS (µg/m ³)	100 to 225	< 10	> 90 %
DMDS (µg/m ³)	10 to 120	< 20	> 80 %



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Industrial Remediation – Reference Project



AIR ADVANCED – ACTILAYER REFERENCE PROJECT

Industrial remediation & depollution (France)

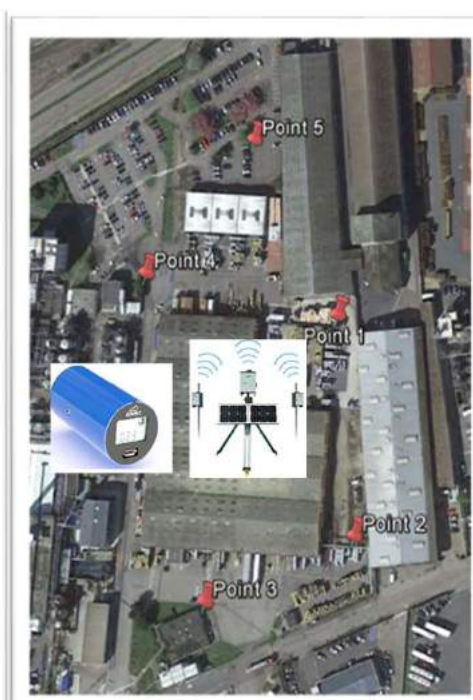
- Demolition, clean-up and remediation following industrial warehouse fire
- Real-time air quality and nuisance odour impact monitoring
- Decision aid tool in support of on-site works and transparent communications strategy



AIR ADVANCED – ACTILAYER REFERENCE PROJECT

Industrial remediation & depollution (France)

- 5 multi-sensor AQ measurement points + 2 ODORPREP units for on-demand odour sampling
- ODORPREP configuration (2 channel) – Nalophan Bag + TENAX cartridge



AIR ADVANCED – ACTILAYER REFERENCE PROJECT

Industrial remediation & depollution (France)

- Photocatalytic filter panels integrated within air extraction and ventilation system (54 000 m³/h)
- Combined ventilation / air treatment system



AIR ADVANCED – ACTILAYER REFERENCE PROJECT

- **MS-GC Sniffing method allows detection and identification of odorous compounds present at low concentrations**

1) Complete chromatogram

2) Zoom on chromatogram and mass spectra

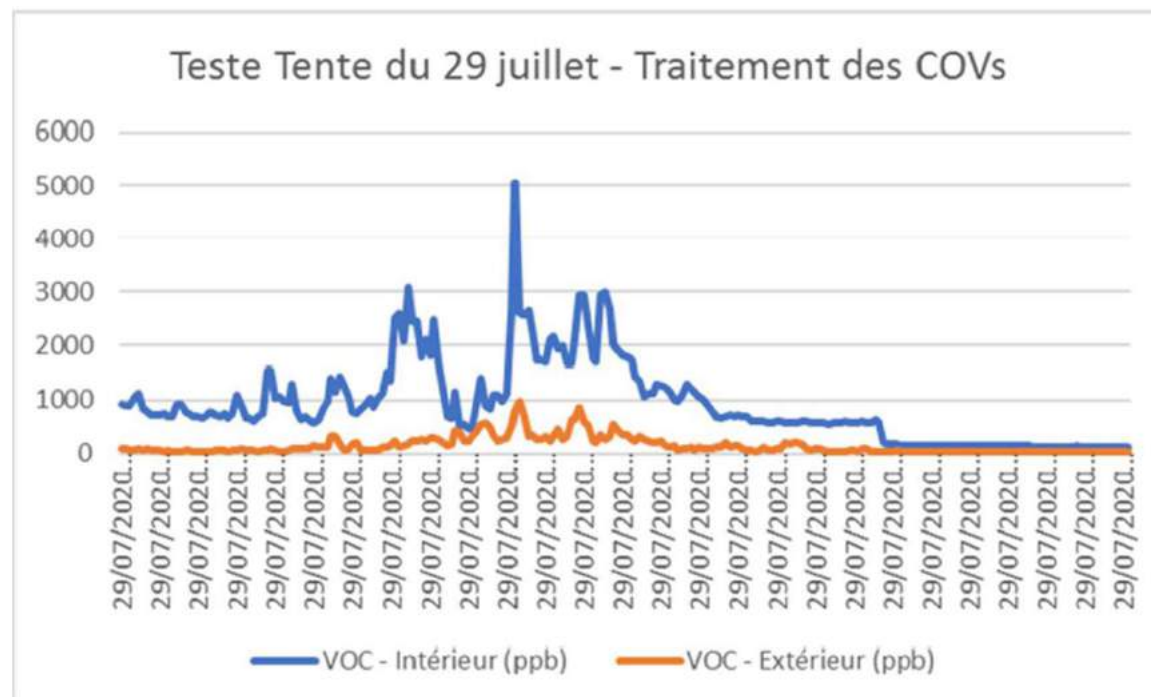


3) Identification of butanoic acid via sniffing

Industrial remediation & depollution (France)



- **Integral view and performance results**
 - **Odour Concentration < 75 OU/m³ sur site**
 - **75 to 90% removal of VOC & Reduced Sulfur compounds**



THANK YOU

For further information please contact :

robert.kelly@suez.com

