AirAdvanced®

From Plant Intelligence to Environmental Intelligence

Smart air-quality management for Waste-to-Energy facilities





David Cartelle
SUEZ Air & Climate

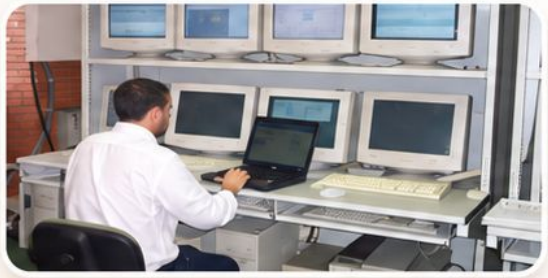
General

25 years of evolution in air-quality management

AirAdvanced®

From local control rooms and conventional mobile units to connected monitoring, modelling and environmental intelligence

THEN — 25 years ago



- Local control room
- Limited communications
- Bulky instruments
- Conventional mobile units





25 YEARS

NOW — Today

- Connected sensor networks
- Real-time cloud data
- Modelling & forecasting
- Environmental intelligence



More computing power
From local systems to high-performance cloud platforms

Better communications
From occasional connections to real-time IoT networks

More compact sensors
From bulky equipment to a new generation of sensors

Models & prediction
From point data to advanced modelling and environmental intelligence

Today we do more than measure better: we understand, connect and anticipate.

The new Air Quality Directive: from monitoring points to spatial intelligence

Directive (EU) 2024/2881 – Implementing Decision (EU) 2026/1208

ASSESSMENT ECOSYSTEM

Fixed measurements

The reference anchor

- Remain mandatory above assessment thresholds
- Reference data for compliance

Indicative measurements

Adds spatial information

- Can complement fixed measurements
- Support spatial distribution and hotspot screening

Modelling

From points to continuous space

- Spatial representativeness of stations
- Identifies uncovered areas and possible hotspots

THE SHIFT

2028

Mandatory complement in exceedance zones

≤50%

Possible reduction of fixed points in qualifying zones

Hotspots

Models can trigger additional measurements

The regulatory direction is clear: measure + model + complete the gaps

MONITOR → MAP → UNDERSTAND REPRESENTATIVENESS → ACT

Indicative ≠ low-cost by default
It must meet Annex V data-quality objectives.

Legal basis: Directive (EU) 2024/2881, Arts. 8–9 & Annex V · Commission Implementing Decision (EU) 2026/1208.

The plant does not end at the AirAdvanced®

Inside the fence

- Process
- Emissions
- Performance
- Maintenance

One environmental system

Outside the fence

- Air quality
- Meteorology
- Other sources
- Citizens



The atmosphere does not know where our fence is.

General

Measuring is not understanding



Wildfire



Traffic



Other industries

PM_{10} = 48 µg/m³

What does 48 µg/m³ actually tell us?



Saharan dust



Resuspension



Local activities



Our plant

Concentration ≠ origin

? The real question is:

Does this have anything to do with my facility?

General

Environmental Intelligence

Observations
- Air-quality networks
- On-site monitoring

Plant Data
- Emissions
- Operational variables

Environmental Intelligence

Environmental Context
- Meteorology
- External sources
- Regional background

Modelling
- Dispersion
- Atmospheric transport
- Forecast



Observe → Understand → Anticipate → Act

General

AirAdvanced: from data to decisions



The value is not that all data are on the same screen.

The value is that they can be analysed together.

General

From monitoring to prediction

Observe

What is happening?

Real-time measurements

Understand

Why is it happening?

- Observations
- Modelling
- Meteorology
- External sources

Anticipate

What happens next?

- Forecast meteorology
- Atmospheric transport
- Receptor-oriented modelling

Observation + modelling = Anticipation

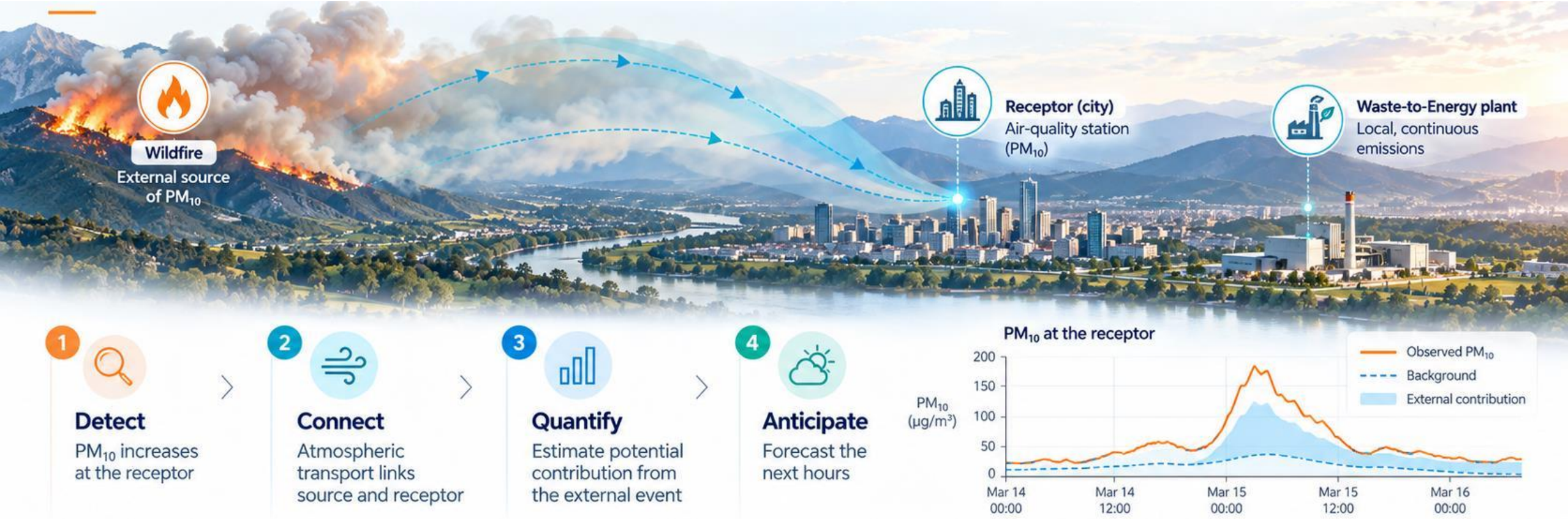


Environmental Intelligence

General

A simple example

An increase near the plant does not necessarily come from the plant



The objective is not simply to say ‘it wasn’t us’.

The objective is to explain what happened.

General

A real

ex

PM2.5 Episode · Preliminary Source Investigation

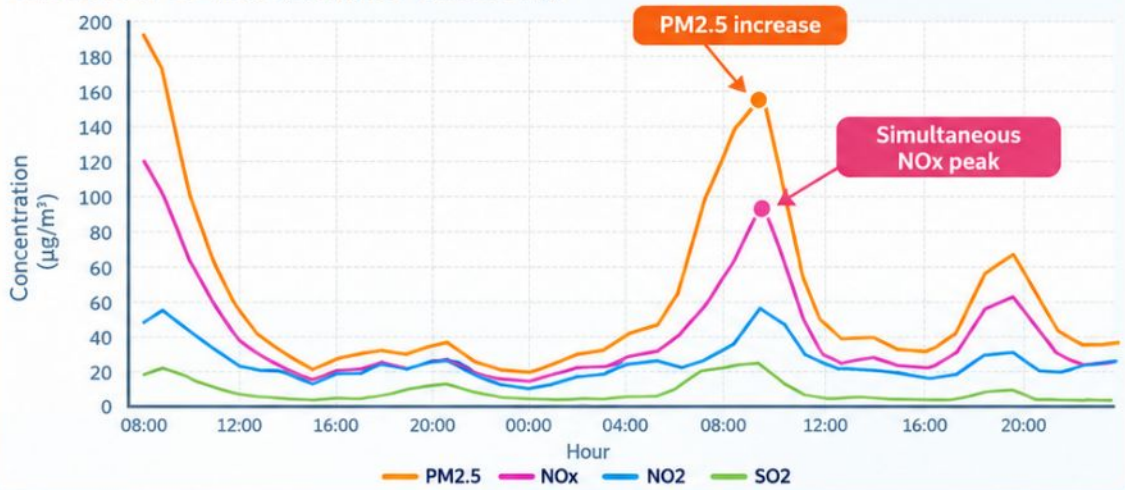
Real case reported by client

Client alert

High PM2.5 levels were detected at the east station.
It is the only station in the area with elevated values.
No African dust intrusion is forecast (MITECO).

Evolution of atmospheric pollutants

East station · 24 hours (examplee episode day)



Initial scientific reading

1. The coincidence of PM2.5 + NOx suggests a **possible influence of a local source.**
2. The absence of African intrusion **reduces the probability of a Saharan regional origin.**
3. The observed pattern **does not allow us to attribute the episode directly to the plant.**
4. **Other potential local sources must be assessed:** traffic, resuspension, or other activities.

Provisional conclusion

There are indications of a local contribution, but not enough evidence to state that the episode originated in the plant.
Observations, meteorological context, and modelling must be combined to attribute the source with greater confidence.

General


REGIONAL MODELS
(FARM / CAMS)
WILDFIRE TRANSPORT
(PlumeTrace)
OBSERVATION NETWORK
(AirAdvanced)
MICRO-SCALE DISPERSION
(PMSS)
RECEPTOR ANALYSIS
& TRANSPORT CORRIDORS
AirAdvanced
5 networks
16/16 stations
2 alerts
99% data available
Dashboard
Supervision
Hypersivion
Simulation
Receptors
EDAR Guadalhorce
37.82
Pollutants
BAT
NH3
SH2
1 hour
24 hours
Last value
0.00
0.02
37.82
HYPERVISION
MICRO-SCALE CONCENTRATIONS
Concentration (µg/m3)
0
50
100
200
300
3D DISPERSION MODEL
URBAN SCALE (PMSS)
Concentration
High
Low
WILDFIRE TRANSPORT ANALYSIS
(PlumeTrace)
Bilbao
Zaragoza
Active fires
Positive corridors
Receptors
INTEGRATED ENVIRONMENTAL INTELLIGENCE
Observation networks
Regional models
(FARM / CAMS)
Micro-scale dispersion
(PMSS)
Wildfire transport
(PlumeTrace)
Receptor analysis

SUEZ AIR & CLIMATE

aeversu SUMMIT II

How PlumeTrace works

and how the same logic helps a Waste-to-Energy plant



1 Detect
A peak is observed at a receptor near the plant.

2 Check the atmospheric link
Is there a positive transport corridor between the source and the receptor?

3 Quantify
Combine observations, meteorology, regional background and modelling to estimate the contribution.

4 Anticipate & explain
Forecast the next hours and support operational, environmental and communication decisions.

Applied to a Waste-to-Energy plant

- Investigate complaints or concentration peaks
- Distinguish plant impact from traffic, resuspension or regional background
- Support decisions with scientific evidence

Main data sources used

Observations · Meteorology · Regional models (FARM / CAMS) · Local / receptor-oriented modelling · AirAdvanced

The objective is not simply to say "it wasn't us" — it is to explain what happened, how much came from the plant, and what may happen next.

Smart plants need smart environmental context

Measure → Understand → Anticipate → Act

The next step is to extend plant intelligence beyond the fence.

From Plant Intelligence to Environmental Intelligence



General


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summit
Thank you
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QUESTIONS?