bettair®

Mapping Air Quality

Air pollution mapping for cities on a previously unimaginable scale

bettair®

Mapping Air Quality

This novel smart city technology provides a highly efficient and large-scale pollution mapping tool for cities.

It provides insights and information that cities need to better understand and mitigate air and noise pollution.

Our sensing cartridge design allows to easily replace all sensors when required.

CUSTOM VISUALISATION TOOLS

Pollution data is provided using the latest GIS visualisation tools, and can be adapted to the individual requirements of each city.

THE PLATFORM

The platform is built around a grid of nodes that are strategically placed to optimise map coverage. Our solution is scalable and can be adapted to any city.

ADVANCED DATA POST-PROCESSING

Pollution data is run through a unique post-processing algorithm. The algorithms provide precise measurements of several air quality indicators with similar accuracy as traditional equipment but at a fraction of the price. Impressive Pearson Correlation ($R^2 > 0.9$) when compared with traditional AQM equipment.

The platform is fed by innovative sensors which are easy to install and can withstand tough climates.

OUR NODES

IP65 rated dust tight and water resistant

Customised low-power electronics

Low-power wireless network access

WHAT OUR NODES MEASURE

Temperature

Relative Humidity

Ambient Noise

PM_1 $PM_{2.5}$ PM_{10}

NO_2 NO SO_2 CO O_3 H_2S CO_2

Atmospheric Pressure

ENVIRONMENTAL REQUIREMENTS

Operating Temperature Range -10 to 45 °C

Operating Relative humidity Up to 95% non-condensing

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WHAT CAN CITIES DO WITH BETTAIR?

- Mitigate air pollution
- Identify unknown sources of pollution
- Potential revenue generation through fines
- Assess the impact of environmental actions
- Reduce air pollution costs
- Categorize zones per air quality
- Forecast air pollution episodes
- Climate Change Monitoring

HOW DOES POLLUTION AFFECT YOU?

Air pollution is a major problem for public health.

Outdoor air pollution kills 3.3 million people annually, mostly in cities.

The problem is magnified by unprecedented urban population growth.

PM
Affects central nervous system

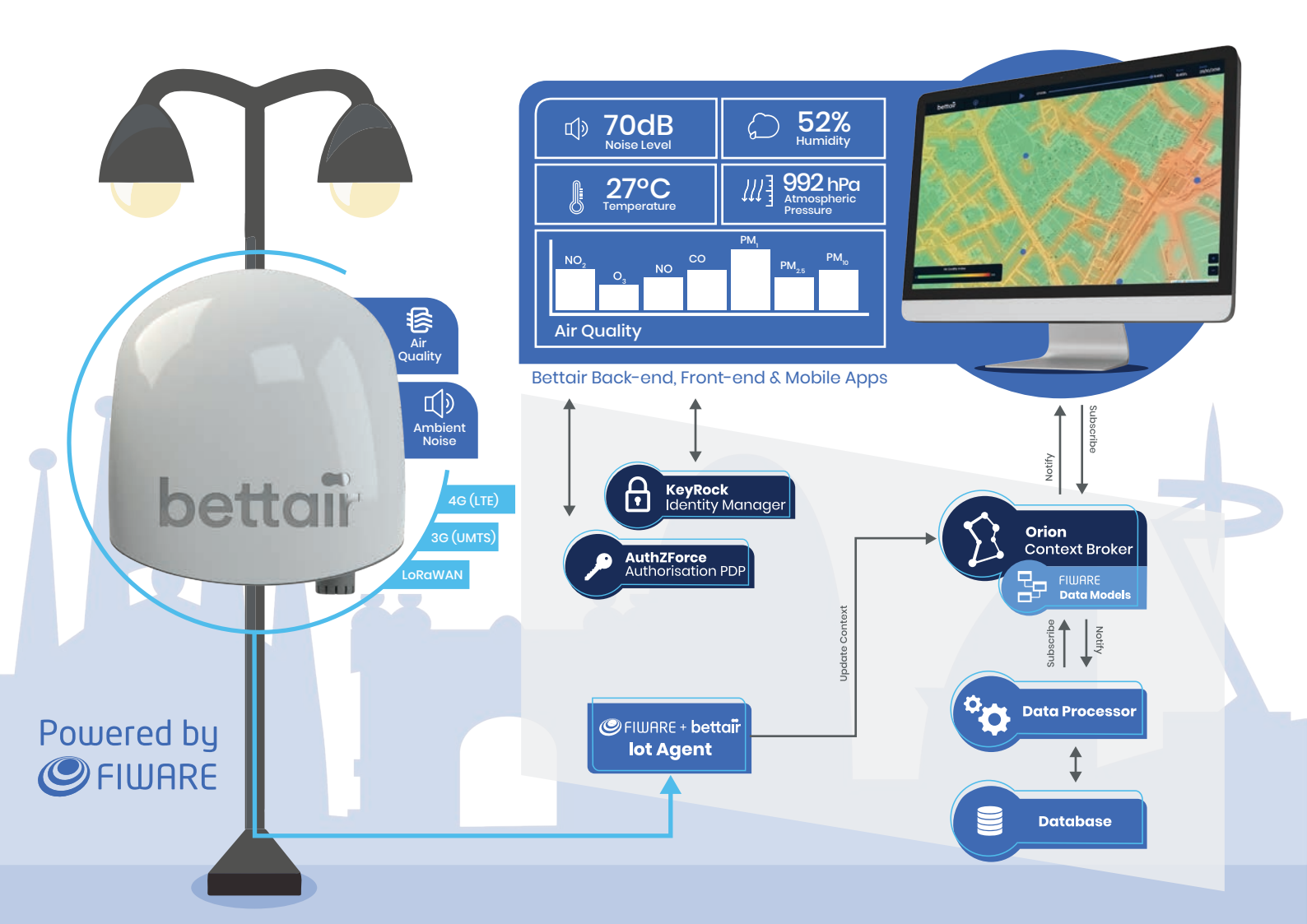
NO_2
Affects liver, spleen, and blood

PM
Asthma, reduced breathing capacity, & chronic obstructive pulmonary disease

O_3, PM
Heart diseases

O_3, PM, NO_2, SO_2
Cause eye, nose, and throat irritation; respiratory problems

PM
Affects reproductive system

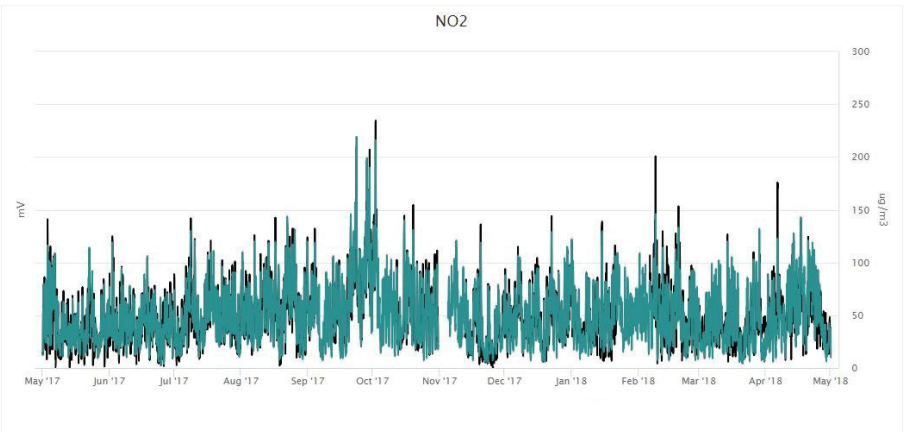

70dB
Noise Level
52%
Humidity
27°C
Temperature
992 hPa
Atmospheric Pressure
NO2
O3
NO
CO
PM1
PM2.5
PM10
Air Quality
Bettair Back-end, Front-end & Mobile Apps
Air Quality
Ambient Noise
bettair
4G (LTE)
3G (UMTS)
LoRaWAN
KeyRock
Identity Manager
AuthZForce
Authorisation PDP
FIWARE + bettair
Iot Agent
Update Context
Notify
Subscribe
Orion
Context Broker
FIWARE
Data Models
Subscribe
Notify
Data Processor
Database
Powered by
FIWARE

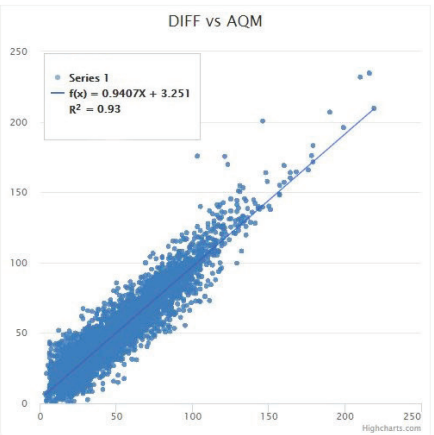
Measurement Specifications

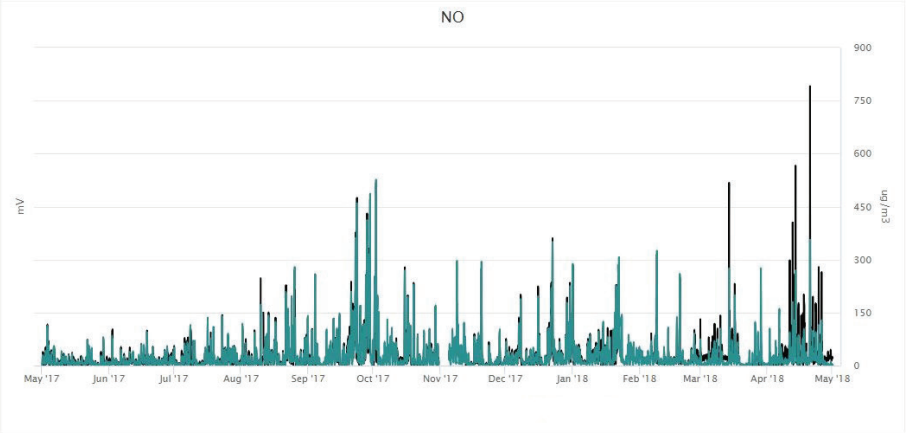
Variable	Range	LDL**	Resolution		Precision	Unit
NO_2	0 -20 ppm***	2 ppb ****	0.1 ppb	±	8 ppb	ppb or µg/m³
O_3	0 -20 ppm	2 ppb	0.1 ppb	±	8 ppb	ppb or µg/m³
NO	0 -20 ppm	2 ppb	0.1 ppb	±	8 ppb	ppb or µg/m³
CO	0 -500 ppm	10 ppb	0.1 ppb	±	60 ppb	ppb or µg/m³
SO_2	0 -20 000 ppm	4 ppb	0.1 ppb	±	15 ppb	ppb or mg/m³
H_2S	0 -20 000 ppm	2 ppb	0.1 ppb	±	6 ppb	ppm or mg/m³
CO_2	400 - 10 000 ppm	400 ppm	1 ppm	±	30 ppm	ppm or mg/m³
PM_1	0 -500 µg/m3	1 µg/m³	1 µg/m³	±	2µg/m³	µg/m³
$PM_{2.5}$	0 -500 µg/m3	1 µg/m³	1 µg/m³	±	2µg/m³	µg/m³
PM_{10}	0 -500 µg/m3	1 µg/m³	1 µg/m³	±	2µg/m³	µg/m³

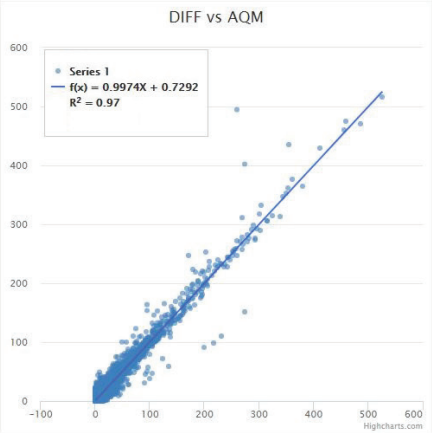
*** Limit of Detection
*** parts per million
**** parts per billion

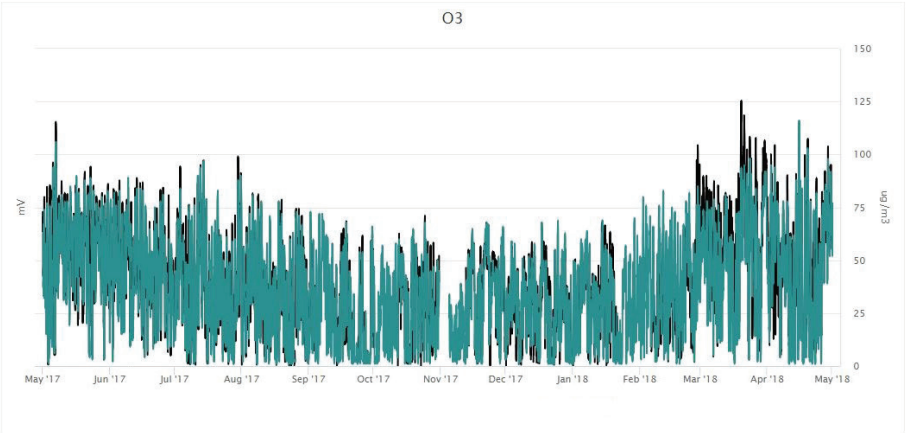
RESULTS OF LONG-TERM IN-FIELD TEST AND COMPARISON WITH TRADITIONAL AQM STATION

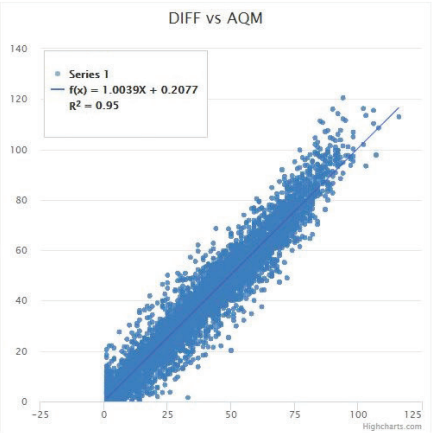












Pollutant R^2 correlation coefficient

NO_2	O_3	NO
0.93	0.95	0.97

The co-location period covered with this station started on the 1st of May 2017 until the 30th of April 2018

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Better cities, Better life, Bettair®

https://bettaircities.com

Bettair Cities

info@bettaircities.com