REFERENCE

CASE STUDY REPORT

AIRLITE AND BOUYGUES

airlite
The paint that turns your walls into a natural air purifier

BOUYGUES ENERGIES & SERVICES
L'innovation partagée

REFERENCE

BOUYGUES AND AIRLITE CLIENT: EAST LONDON SCHOOL

THE PROJECT

We partnered with Airlite to deliver a sustainable and environmentally friendly solution to help tackle indoor air quality in our offices and contracts. Many of these are located in areas where the issue of air quality is paramount.

This specific school (name withheld) is one such project and experiences high levels of air pollution due to the close proximity to busy roads.

Toxic nitrogen dioxide (NO_2) is the main pollutant that we sought to address in the most environmentally friendly, cost effective and sustainable way.

96.4%
REDUCTION IN TOXIC NITROGEN DIOXIDE

100%
REDUCTION IN HAZARDOUS WASTE

62.7%
LOWER CO2 FOOTPRINT THAN REGULAR PAINT

WHAT IS AIRLITE?

Airlite is an innovative and environmentally friendly paint that actively purifies the air. Airlite copies nature to break down pollutants, acting as a catalyst, rather than absorbing or filtering them out.

- Actively breaks down NO_2 to purify the air by reducing pollution and toxins.
- Naturally antimicrobial, killing bacteria on the surface and degrading viral proteins.

NB Although not tested against COVID-19 yet, independent studies show that Airlite's technology 'could be used to inactivate the influenza virus' (Nakano et al, 2012).

- Low CO_2 footprint; between 62% and 76% lower than that of conventional paint.
- Prohibits mould growth, thereby reducing airborne spores and allergens.
- Contains no VOCs (respirable irritants).
- No hazardous or flammable waste.
- Breaks down smells.
- Certified Cradle to Cradle Gold, made with 40% recycled materials in a factory powered entirely by renewable energy; perfectly aligned to the circular economy.
- Contributes to all major certification schemes, such as BREEAM, LEED and WELL.

CUSTOMER BENEFITS

Improved **health & wellbeing**

Air pollution is the number one threat to humanity according to the World Health Organisation.

- Airlite reduced NO_2 levels in the classroom by over 90%. This meant windows could be opened without concern about pollution levels.
- Surfaces are now naturally antimicrobial, killing bacteria and reducing the transmission of germs.
- VOCs were removed, reducing the risk of respiratory diseases – the room was painted whilst occupied without issues.
- Odours are eliminated in the classroom.

Airlite is significantly easier to apply/install and maintain, uses less energy and is far more cost effective than alternatives, including air purifying units and living / green walls.

KEY INFORMATION

Switching from traditional paints to Airlite supported both Bouygues and the client towards their sustainability, environmental, innovation, air quality and employee/pupil health and wellbeing goals.

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BACKGROUND

Bouygues Energies & Services partnered with Airlite in 2019 as part of the Bouygues Matching-up scheme; a global programme aimed at delivering innovative solutions across our business for the benefit of clients and employees.

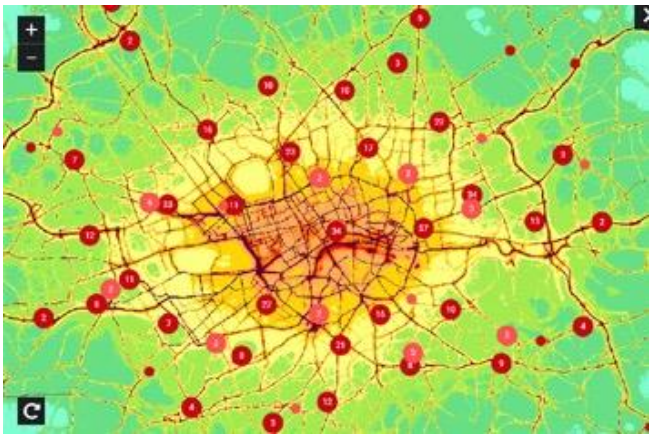
Airlite was identified as a revolutionary product, that could bring multiple benefits to all stakeholders with minimal cost and effort – simply by switching paint.

A school in east London was selected as a trial project for Airlite roll-out.

THE SCHOOL

Situated in east London, the school is located next a major and heavily congested main road into London city centre.

Air quality was such a concern, windows in the school were prohibited from being opened, often causing rooms to be excessively warm in summer months.



Map shows NOx levels across London

METHODOLOGY

Air quality monitors were installed in two identical, adjoining classrooms.

One classroom was then painted with Airlite whist the other remained untouched. The monitors were left in place for a period of one month after painting to track any changes over a period of time. Baseline temperature and humidity was measured, although nitrogen dioxide was the main concern.

Readings were taken every minute, resulting in over 86,000 data points.

In addition to measuring the impact on air quality, the trials also looked at sustainability, environmental, health, safety, wellbeing and financial elements in order to fully appraise Airlite for use across the business.

KEY INFORMATION

Testing air quality requires results to be gathered over time, rather than a simple spot test. To gain meaningful insight to the effectiveness of Airlite, over 86,000 readings were taken over a period of one month.

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RESULTS

The results of the test were broken into three discrete elements:

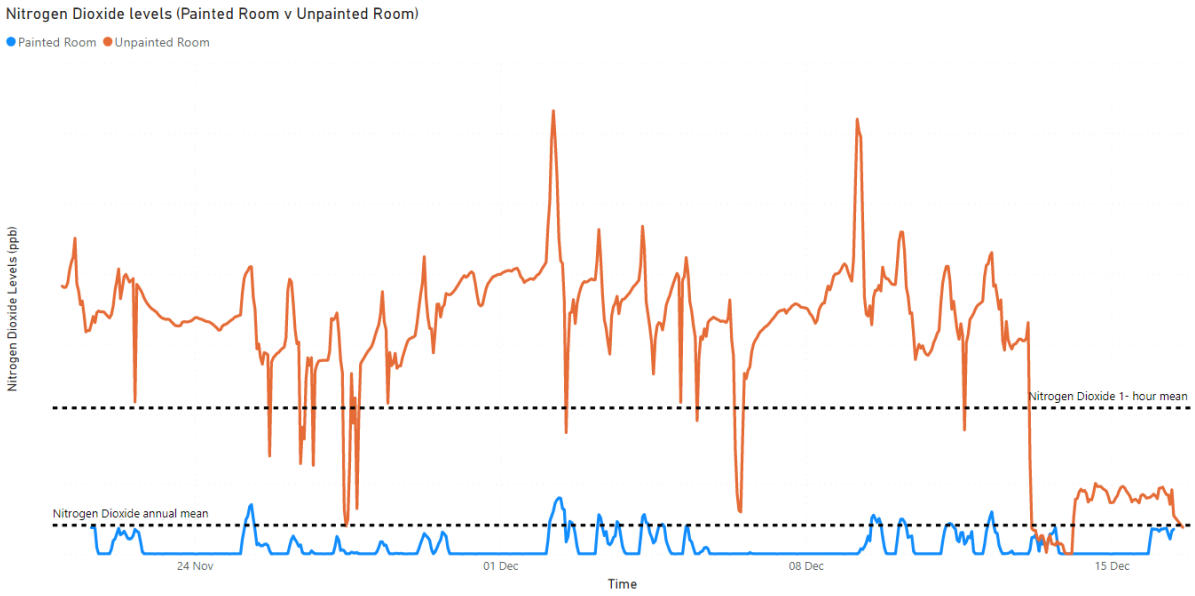
- **AIR QUALITY**
- **SUSTAINABLE SOLUTIONS & ENVIRONMENTAL IMPACT (zero carbon and waste)**
- **HEALTH, SAFETY AND WELLBEING**

AIR QUALITY

96.4%
REDUCTION IN TOXIC NITROGEN DIOXIDE

- Mean nitrogen dioxide levels were 96% lower in the classroom painted with Airlite.
- Mean NO_2 concentration in the unpainted classroom was 153.0ppb*
- Mean NO_2 concentration in the classroom painted with Airlite was 5.5ppb.

The reduction in NO_2 was significant, reducing it below EU limit levels**.



In addition to our tests, independent tests at the University of Rome, La Sapienze and Queen's University Belfast showed Airlite to reduce NO_2 by up to 88.8% after 60 minutes.

* ppb = parts-per-billion.
**EU Air Quality Standards for nitrogen dioxide (NO_2):
- 1 hour mean limit value = 200µg/m^3 = 106ppb (at 25°C)
- 1 year mean limit value = 40µg/m^3 = 21ppb (at 25°C)

KEY INFORMATION

NO_2 concentration was 96% less in the classroom painted with Airlite. Independent tests showed Airlite reduces NO_2 levels by up to 88.8% after 60 minutes.

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SUSTAINABLE SOLUTIONS AND ENVIRONMENTAL IMPACT

100%
REDUCTION IN HAZARDOUS WASTE

>98.8%
REDUCTION IN VOCS

62.7%
REDUCTION IN CO2 FOOTPRINT

Using publicly available data from Airlite and Dulux environmental product declarations (EPDs*), the application of Airlite was compared to the standard paint (Dulux Trade Vinyl Matt) for the exact same project.

The total area painted at the school was 320sq.m.

EPD data (*1)	Dulux Trade	Airlite	Impact
VOCs	**8g/l**	**<0.1g/l** (*2)	**-98.8%**
Total for one classroom	170g	<2.6g	-167g
Hazardous Waste	**0.17kg/m²**	**0.00kg/m²**	**-100%**
Total for one classroom	54.5kg	0.0kg	-54.5kg
Global Warming Potential	**0.31kg CO_2-eq / m²**	**0.11kg CO_2-eq / m²**	**-62.7%** (*3)
Total for one classroom	99.2kg	35.2kg	-64.0kg

Airlite eliminated hazardous and flammable waste, removed all but a trace of VOCs and significantly reduced the CO_2 footprint of the project.

**(1) Source: Airlite Purelight EPD (Environmental Product Declaration) and Dulux Trade EPDs. All EPD data published in accordance with ISO 14025 and EN 15804 standards.*
**(2) Traces of VOCs register from the manufacturing processes, with 0.1g/l being the lowest limit of the analyser.*
**(3) Where Dulux Diamond Matt is used, the reduction in CO_2 is >76%*

KEY INFORMATION

Airlite's environmental credentials are unparalleled in paint. VOC free, powder based and made with recycled raw materials, Airlite significantly reduces the CO_2 footprint, VOCs and waste.

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HEALTH, SAFETY AND WELLBEING

In addition to the improvement of air quality, other impacts on health, safety and wellbeing were also appraised.

Reducing VOCs has a direct beneficial impact on the health and safety of painters and contractors present at the time of painting (VOCs are linked to respiratory disease). It also impacts occupants after the paint has been applied.

Improved **health & wellbeing**

Contractors noted that working with Airlite significantly reduced smell and left them feeling 'clearer headed'. All painters enjoyed working with Airlite.

Due to the lack of VOCs and smell, Airlite can be applied whilst buildings are occupied with doors and windows closed. This impacts customer satisfaction (the smell of paint is a common cause for complaints across the industry) as well as potential costs, with reduced downtime and painting not limited to out-of-hours works.

Airlite has been independently tested at the below institutions to confirm it eliminates up to 99.9% of bacteria from any surface.

Testing conducted at: University of Rome, La Sapienza (IT) and EMSL Analytical Inc, Houston (US).

99.9%
OF BACTERIA ON SURFACES ELIMINATED

Bacteria	2hr Reduction	4hr Reduction
STAPHYLOCOCCUS AUREUS ATCC 25923	99.9%	99,9 %
PSEUDOMONAS AERUGINOSA ATCC 15692	96.0%	99,9 %
ENTEROCCOCCUS FAECALIS ATCC4352	99.5%	99,9 %
LISTERIA MONOCYTOGENES ATCC 19115	98.5%	99,9 %
BACILLUS CEREUS ATCC 14579	99.9%	99,9 %
KLEBSIELLA PNEUMONIAE ATCC13883	99.9%	99,9 %
ACINETOBACTER BAUMANII ATCC19606	97.6%	99,9 %
STREPTOCOCCUS AGALACTIAE ATCC13813	99.9%	99,9 %
SERRATIA MARCESCENS ATCC13813	97.3%	99,9 %
SALMONELLA TIPHYMURIUM ATCC29630	99.8%	99,9 %

At present Airlite does not have specific test data for COVID-19, however Airlite state that testing is currently being undertaken.
Independent studies have confirmed that Airlite's technology significantly inactivates the influenza virus by degrading viral proteins *(Nakano et al, 2012)*.

KEY INFORMATION

In addition to removing VOCs, Airlite is naturally anti-microbial and has been proven to kill 99.9% of bacteria. As with the air purifying qualities, this property will not expire or reduce over time.

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CONCLUSION

Changing from a conventional paint to Airlite offered substantial environmental and sustainability benefits to both Bouygues and our client.

Airlite transformed surfaces into active air purifiers, naturalising pollutants and killing bacteria for the lifetime of the application (up to 10 years). This will have a beneficial impact on our workforce and building occupants for years to come.

Airlite is priced as a premium/eco paint, however offers additional benefits usually only associated with more costly and time consuming alternatives.

The trial confirms Airlite is a suitable alternative to conventional paint and offers significant benefits to both Bouygues and our clients.

Compared to other air purifying and wellbeing products, Airlite offers a far greater cost-benefit ratio as well as being far easier and less disruptive to install/apply.

Airlite is priced as an 'eco paint' and requires fewer coats than most 'premium paints', therefore reducing labour costs and time. In addition, Airlite offers an array of other benefits that go way beyond simply colouring walls and ceilings.

	Airlite	Regular Paint	Premium Paint	Eco-Paint	Living Walls	Purifiers /Filters
Colours Surfaces	√	√	√	√	½	
Low VOCs / no smell	No VOCs			√	√	
Circular Economy Aligned	√			?		
Cradle to Cradle Certified	GOLD			?		
Reduced CO^2 Footprint	√			?	√	
BREEAM, LEED, WELL Pts	√			?	√	√
Reduces Pollution (NO_x)	√				√	√
Prohibits Mould	√					
Neutralises Smells	√					√
Eliminates Bacteria	√					
Repels Dust / Dirt	√					√
Cost to install / apply* (per sq.m)	£5-10	£4-8	£6-12	£5-10	>£500	>£10k

KEY INFORMATION

Report produced by Bouygues E&S UK Limited.

For further information please contact:

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