

## CASE STUDY

## Laing O'Rourke

Capella development (S4), King's Cross, London

## Laing O'Rourke cuts energy costs & improves workers health with EnVELO

Laing O'Rourke is Principal Contractor for Capella, also known as S4. As the final piece of the King's Cross Masterplan, Capella will be a terrace of seven towers, providing residential and commercial accommodation in one of London's most vibrant neighbourhoods.

Laing O'Rourke recognised that health and wellbeing in on-site welfare accommodation could be improved by EnVELO's solution, just like other indoor spaces. They also wanted to find opportunities to reduce energy usage and improve sustainability.

EnVELO spent 3 months monitoring the 4-storeys of S4 accommodation. This confirmed the challenging environment on a busy construction site. Spikes in airborne particulate matter indoors, crowded areas at peak times, and keeping surfaces clean were all issues that Laing O'Rourke and its inhouse services provider Select wanted to address.

EnVELO began controlling ventilation and heating in S4's drying and change facilities from 28 November 2022. Automated ventilation has led to major reductions in adverse health impacts from the air. Automated control of heating and ventilation has cut energy usage by an estimated 45%. The results show that both health & wellbeing and energy efficiency can (and importantly *should*) be optimised together.

EnVELO's automations were quickly adapted to ensure overnight drying of clothes in the change area. This, combined with improvements in surface hygiene in the canteen areas, has resulted in strong feedback and engagement from on-site employees. Comments have included "It's the right thing to do", "This should be done on every site" and "It's the right temperature now, and the clothes are always dry!"

EnVELO is now being extended to other areas of S4.



EnVELO automation has **reduced winter energy consumption** by almost **50%**.



EnVELO has cut levels of particulate matter indoors. Severe health impacts from **PM2.5 have fallen by 46%**.



EnVELO has **improved other health impacts** due to CO<sub>2</sub>, VOCs & surface hygiene **by 12-77%**.

*"At Capella, we wanted to deliver more sustainable and healthier accommodation. The team at EnVELO were quick to understand our needs, and their solution readily adapted to our environment. The results speak for themselves. With better health and wellbeing for our employees, and major reductions in energy use, many different indoor environments could benefit from a solution like this.."*

**Paul Dawson, Project Director, Laing O'Rourke**

## Energy savings with EnVELO workflow

Ventilation and heaters in the S4 Drying Room have been controlled by EnVELO from 28 November 2022. Results to 30 January 2023 show significant energy savings, estimated using data including internal & external temperature, device power consumption and air changes.

**50% energy saving from intelligent automated control**

**Estimated annual energy cost saving of over £15,000 for one drying room!**

**Cost of EnVELO recovered in less than 3 months of winter energy-savings alone**

## Impacts on health & wellbeing before and with EnVELO workflow

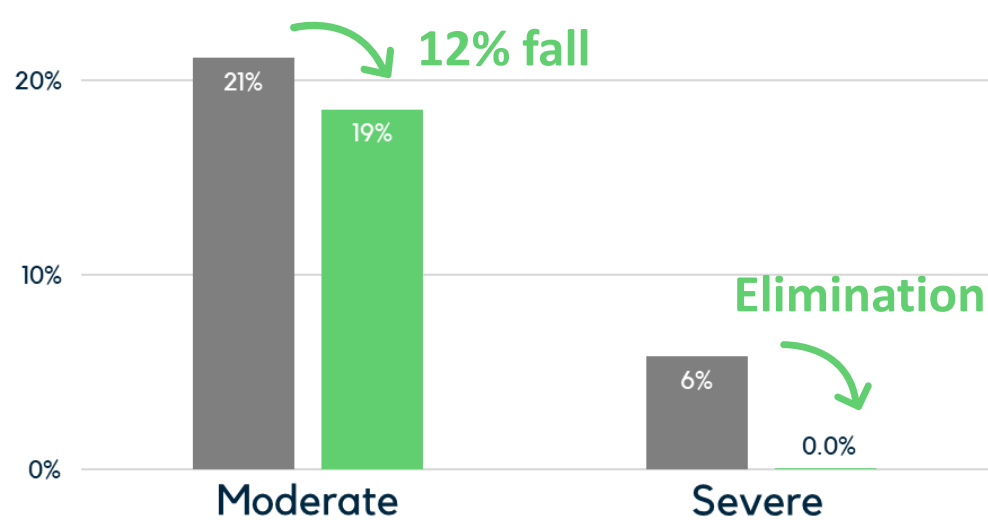
A study from 4 September 2022 to 30 January 2023 used continuous air quality measurements taken across S4 every 5 minutes, together with regular surface testing. EnVELO workflow was deployed from 28 November 2022, with other spaces at S4 remaining without workflow for control purposes. The charts show the time during operating hours when there is a moderate or severe impact to human health & wellbeing (based on thresholds for relevant parameters being breached), both before and with EnVELO's workflow being deployed.

Before EnVELO

With EnVELO

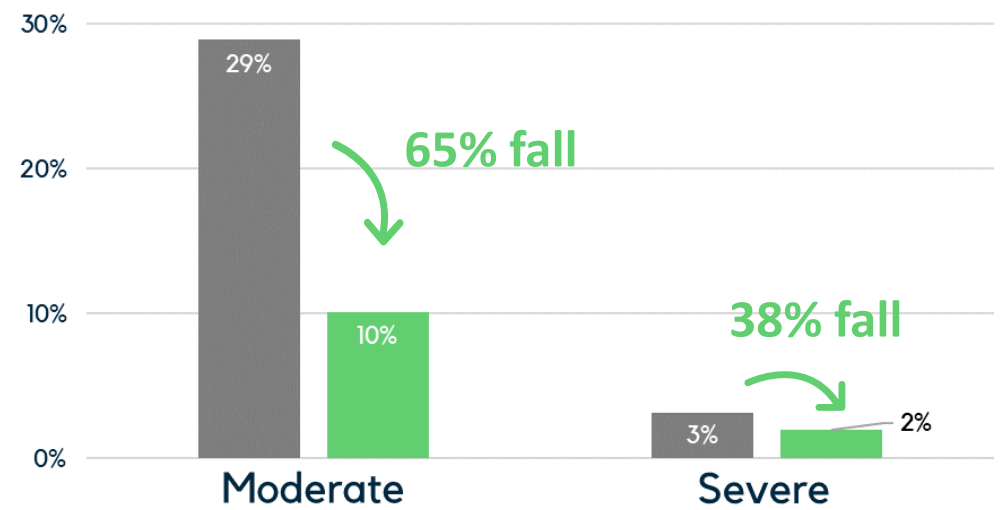
### CO<sub>2</sub> impact

% of operating hours when CO<sub>2</sub> impacts health & wellbeing



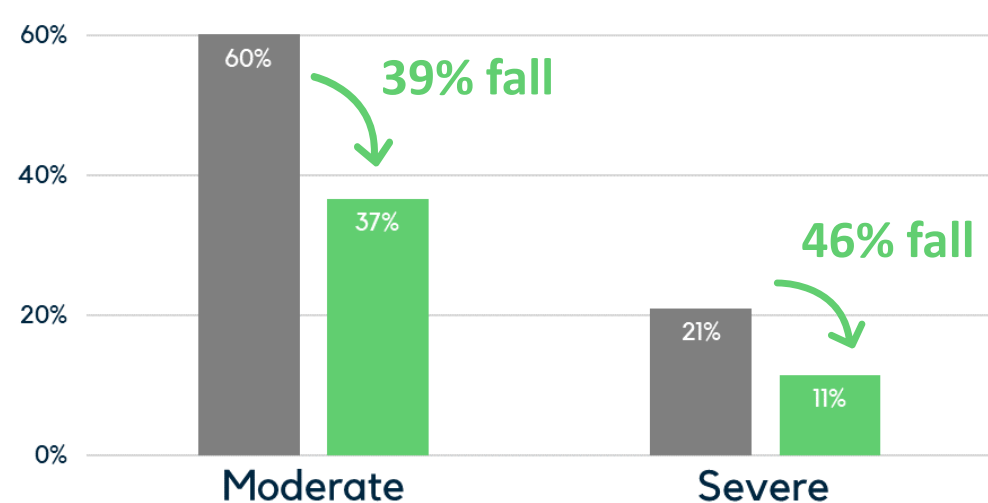
### VOC impact

% of operating hours when VOCs impact health & wellbeing



### PM2.5 impact

% of operating hours when PM2.5 impacts health & wellbeing



### Surface impact

% of operating hours when surface hygiene impacts health & wellbeing

