How about to clean up city air we use… cars?

Heatherwick Studio has revealed a concept for an electric vehicle (EV) that can "vacuum up" air pollution generated from other cars while in motion. Designed for IM motors, the Airo model will be installed with a high-efficiency particulate air (HEPA) filtering system that is capable of actively cleaning air.

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It will also feature driver-controlled and autonomous operation modes. The car will have a flexible interior so it can be reorganised to be used as a dining or sleeping space. (*Dezeen)*

Why does this matter?

Air quality is pretty terrible in urban areas around the world. City air pollution levels worldwide are on average around *four times* higher than those recommended by the World Health Organization, with the highest levels recorded in cities in Pakistan, India, Bangladesh and China.

In Europe the picture isn't much better. Historic policies to promote diesel vehicles – themselves ironically *aimed* at reducing CO2 emissions – have resulted in (*predictable*) declines in air quality in many of the continent's cities.

This poor air can have significant impacts on human health – many of which are still not fully understood. *Analysis* suggests 160,000 premature deaths in Shanghai, Tokyo, Dehli, Mexico City and Sao Paulo in 2020 alone were the result of particulate matter (PM) air pollution. On top of

this, *research* has linked air pollution exposure to dementia, and it has even been *tied* to depression.

Heatherwick isn't the only architect and design studio attempting to grapple with the problem – building designs are *adapting* to mitigate or dampen the effects of bad air.

How does it work?

The Airo concept (not the first time Heatherwick has stepped into *vehicle* design) is electric, so it will have no tailpipe emissions, and it will be fitted with the HEPA system on its undercarriage to "vacuum" PM from the air as it travels. While it's not clear whether the system will use power to filter air, HEPA filters are *effective* in trapping PM. They don't, however, clean other air pollutants like nitrogen dioxide – though advanced filters can do this – so Airo may only tackle part of the problem.

Mobile air pollution solutions

While a host of *stationary objects* have been designed to improve city air, and the humble tree does a *good job*, other methods to tackle the problem on the move are being utilised. As we *highlighted* last week, Voi has *launched* an e-scooter with air-pollution sensors that can help users avoid pollution hotspots. City traffic managers can also access the scooters' data to inform measures aimed at improving air quality.

Elsewhere, in Salt Lake City, researchers have *installed* sensors on trains to monitor air quality and CO2 emissions as they move across the city.

So that's it, we switch to vacuum cars to

drive around in and all is good?

Not really. Transport is just one part of the picture and to tackle air pollution at source cleaner fuels and electrification will need to be deployed in buildings, as well as across the vehicle fleet. This will take time. What's more, while EVs don't have tailpipes that contribute to air pollution, their tyres and brakes do add to the problem – and *research* suggests these sources can be significant. Engineers are *looking* at additional ways to tackle that problem too.

The best thing you can do to make a contribution to urban air quality in the short term? *Get on your bike*.

Article by Marc Height