



Scale model | Photo source [Airpal](#)

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STUDENTS DESIGN SUSTAINABLE, MODULAR SMOG TOWER

 ARCHITECTURE & DESIGN

The modular smog tower design filters air through the vortex effect created in the chimneys, without any outsourced power

Spotted: Students at Howest University in Belgium have designed Airpal, a sustainable, modular smog tower that improves biodiversity and purifies air pollution, without any external energy source required.

Smog is a kind of air pollution, originally named for the mixture of smoke and fog in the air. Mehdi Zekri, Gregory Van der Donckt and Mohamed Hmeid, who developed the concept, were studying sustainable cities and communities. “After analyzing polluted locations in a city and the way we can solve air pollution and biodiversity, we ended up at a smog tower. Then we inspired ourselves on the air purifier in a Chinese city called Xi’an and the smog tower in Delhi,” say the students.

The design consists of simple white concrete and only three basic parts: the cubicle, the foundation part and the filter itself. Airpal is very easy to assemble, with cubicles stacked on top of each other and filters installed in place. Municipalities can assemble the design in different sizes according to their wishes, thanks to the modularity and complexity of the pieces.

The tower is made out of white concrete to keep the chimney cool, but the foundation and filters are a dark colour, so as to absorb as much heat to enhance the draft effect. Smog is a thick heavy warm layer that creates a higher pressure at the bottom. The cold air higher and the wind create a lower pressure and thus create a draft that sucks the smog into the filters.

For the installation, one only has to dig a pit and fill it again and tamp down once the foundation is in place. The flexibility of the design also means that it can be moved over time and does not even

have to be dismantled during work.

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Takeaway:

Smog is made up of a combination of air pollutants that have shown to significantly compromise human health, harm the environment and even cause property damage. Smog also inhibits plant growth and can cause widespread damage to crops and forests. Developments such as this could play a significant role in reducing the [estimated 4.2 million deaths per year](#) caused by ambient air pollution.