

Air filter integrated in a bicycle's wheel – giving bicycles the power to provide cleaner urban air

TECHNOLOGY/PRODUCT OVERVIEW

This product offers a simple, end user inclusive, and inexpensive way of filtering the air from particulate matter particles (PM 10, PM 2.5 and similar). This product is integrated in a bicycle wheel. The basic concept of the product is using the rotation of the wheel, combined with the axial motion of the bicycle to push air through the filter material, thus filtering the air.

The device itself is actually quite simple, and it has a goal of helping towards the solving the problem of air pollution in urban areas. Everyone who has a bicycle is a potential user of the product, but the users that would benefit the most are people living in urban areas that face the problem of air pollution.

The best possible way to implement this device is to integrate the filters on bicycles sharing or renting systems that have a significant number of users, for example such systems are common in East Asia. Another way to implement the product is offering it to people as a product that can be added to their bicycle while buying a new one, or fixing their old bicycle. With all of the statements above, the ideal partnership would be with a company, but it is not exclusive to other companies, that works in the mentioned fields. The partnership could be via licensing the product, or selling the rights together with the complete documentation.

TECHNOLOGY/PRODUCT FEATURES, SPECIFICATIONS AND ADVANTAGES

The product offers a unique approach to providing a solution for the growing air pollution problem in cities located around the world. Compared with other solutions, which aim to install air filters in bicycles, this product offers significantly better efficiency, and a more significant impact, initially due to the fact that this product offers a bigger area of filter material exposed to polluted air. Other solutions which provide filtering of outdoor air in urban environments are in essence fixed building which offer localized and have a demand for electrical energy.

The biggest advantage of the product is the high universality of the design, which also offers easy maintenance and assembly. There are only a few factors which effect what design is needed for a particular wheel. These factors being:

- Width and diameter of the wheel
- Electric or standard bicycle wheel.



POTENTIAL APPLICATIONS

Potential applications of this technology/product include:

- Integrating the product on the wheels of bicycles included in bicycle and electric bicycle public transportation systems (bicycle sharing systems). This application is envisioned to be the primary application of the product.
- Integrating the product on the wheels of bicycles and electric bicycles which are not part of a public transportation system.

The estimated market size for this product is almost a billion of potential users. This is the case because of the popularity of bicycles in the most polluted cities in the world, especially in countries such as China and India. Additional markets include Western European countries, the USA and the United Kingdom that have developed bicycle sharing systems.



CUSTOMER BENEFITS

The most prominent benefits that the technology offers include:

Benefits for bike sharing system users:

- Gives a unique character to the bicycles, additional functionality, and increased social and environmental impact
- Reducing air pollution in parts of the city where traffic causes increased pollution, parts of the city which typically are frequented by a significantly large number of people.
- Reducing air pollution by a significant amount with no electrical energy required.

Benefits for individual users:

- Unique personalization opportunities for the bicycle or electric bicycle.

Benefits for all users:

- Easy maintenance and repair
- Easy to add onto existing bicycles

TECHNOLOGY/PRODUCT READINESS LEVEL

The current state of the product, according the IPI Singapore technology readiness level, is equivalent to TRL 4, which means that the technology has already been demonstrated in a relevant environment.

If you are interested, please respond to:

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