

Measuring air pollution on a bicycle

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A small group of EPFL students captured second place at the international competition iCan with their bike light with an air pollution gauge.

Four EPFL microengineering [students](#) invented a bicycle-borne system to measure CO and NO₂ levels in the air thanks to a sensor in the casing of the bike light. Dubbed BeMap (Bicycle Environmental Mapping), this

little system gauges [air pollution levels](#) throughout the bike ride and then transmits the data to a computer. The idea has merit, as the students captured second place at the international microengineering competition iCan held this past summer in Anchorage (Alaska).

BeMap's main use is to help cyclists choose the route with the lowest level of vehicle exhaust. But the idea is also to put the air-pollution readings submitted by all users into an open-source database on the internet and use the data for purposes of environmental mapping. "The readings could, for example, be the basis for environmental or transport-related studies," according to the students. During any given bike ride, 500 to 1,000 pollution readings could be taken and then uploaded in real time via Bluetooth.

Reaching tight spots

BeMap's inventors are already in contact with OpenSense, a project designed to measure [air](#) quality through mobile monitoring, and financed by Nano Tera. OpenSense has put sensors on trams and buses in Zurich and Lausanne, for example. "With bicycles, we can go down narrow streets and reach other spots that are off limits to buses. The readings crowdsourced by BeMap will also help cover more ground," said Chloe Dickson, head of the BeMap project team.

Because BeMap is an open-source project, the documentation needed to make it and print the 3D casing is available free of charge online. The students are also considering marketing a ready-made device sometime in the future.

Registration for the next iCan competition, which will be held in Paris in July 2016, is open until 11 December. [Click here](#) for more information on the [competition](#).

Provided by Ecole Polytechnique Federale de Lausanne

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