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INNOVATIVE RESEARCH FOR A SUSTAINABLE FUTURE

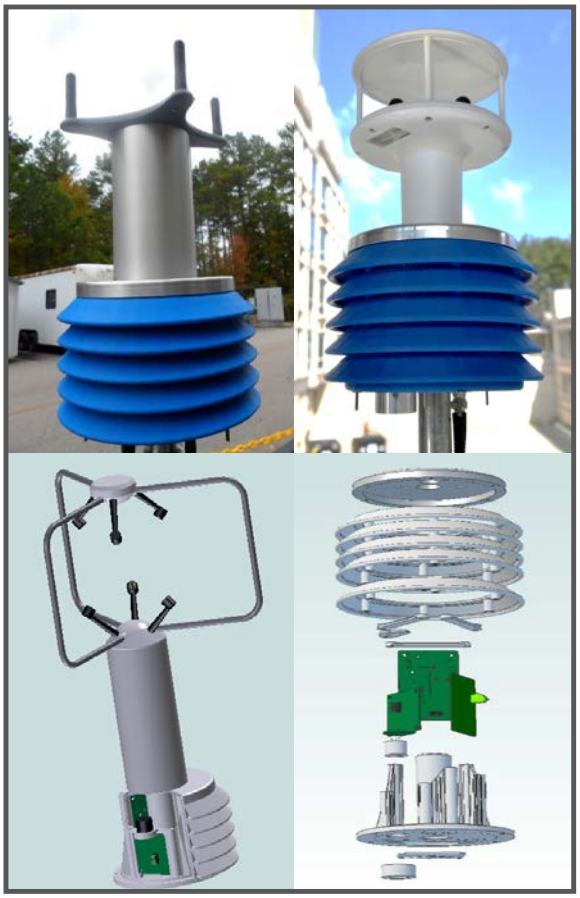
SPod FENCELINE SENSORS UNDER DEVELOPMENT

Next Generation Emission Measurements

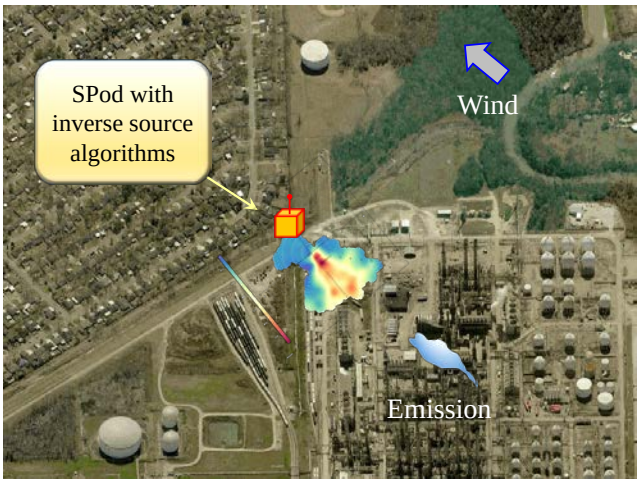
U.S. Environmental Protection Agency (EPA) researchers are helping to develop and test new air pollutant sensors and inverse modeling approaches that can improve facility leak detection and repair and source emissions inventories. The commercialization of cost effective, implementable sensor systems that meet desired performance goals will help bring advanced approaches from the lab to the real-world.

SPod

SPod (right) is a solar-powered sensor system that can be deployed at a facility fenceline. It combines air pollutant and wind field data with inverse algorithms to detect and locate source emissions of volatile organic compounds. The use of SPods would cost less than most commercial fenceline monitoring systems and are simple to deploy and operate (automated). The current SPod uses a passive photoionization detector but other air pollutant sensors can be added. Contained in a 3-D printed housing, the SPod sensor board also measures relative humidity, atmospheric pressure and temperature. The SPod is controlled by a micro-computer and communicates using a short range XBee® (IEEE 802.15.4) network. The units are coupled with commercial wind anemometers.



Example SPods with internal layout



Example SPod application

Design

The SPod is an open source design that continues to undergo development. Parties interested in further information about the SPod can access draft versions of SPod hardware and software designs and application examples upon request.

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