I(c)onic Filter, Part Two

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The goal was to create a mobile system attached to a bike that effectively takes out pollutants from the atmosphere, improving air quality. A tube was attached to the side of a bicycle, at the front of the tube was a high-efficiency filter and in the middle was a home-made ionizer. As the bicycle moves forward, air is propelled through it by forward motion. Biodegradable material (APINAT) filters out large particles and the ionizer charges smaller particles. These negatively charged particles reenter the atmosphere. The ionizer uses a Cockcroft-Walton ladder network, where energy enters the active and neutral station and continues through the ladder network. As it goes through, the electrical charge increases to at least 4 kV. Once in the atmosphere, particles bond into molecules too large to remain in the atmosphere, condense, and fall to the ground, or they repel against negatively charged particles and are propelled against nearby objects. This takes out a significant amount of pollutants from the air, bringing them down in the form of removable dust. In comparison to last year, several model ionizers were built to develop a more stable, efficient, cheaper, and smaller ionizer. A barometer was constructed to use in upgraded testing and Hobby Glue was used to simulate a version of conformal coating. A successful method of attaching the system to the bicycle was implemented, finally connecting the various parts of the system together.

Awards Won: