Using Physics in Withdrawing and Purifying Air without Human Intervention

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Pollution is a very widespread problem in our world and one of its main sources are car emissions. Using physical principles and renewable energy, we created a new device that highly improves the outdoor air quality in a new and unique way. Our project is an artificial ecological tree that is placed outside in areas packed with car traffic. The tree's air withdrawal mechanism is constructed using Bernoulli's principle, the Venturi effect and rising convection currents which lets the tree withdraw air from outside automatically and without human intervention, leading it to the Mechanical Branch which contains 3 stages of air filtration and purification where we created a new method to remove dust particles using static electricity, and we designed a new mechanism that extends the time required for a preventive maintenance check for the filters by 6 times according to our design! When we tested the efficiency of our tree, the amount of the withdrawn air was 25.08 CFM which is more than enough to initiate the accumulative process of filtering and purifying the air which yielded very high results as the filtration percentage was 90.3% in worst cases as evident by the experiments we conducted. In conclusion, our tree will make the environment a much better place for living beings and it will increase the efficiency of car motors without the need of human intervention for a long time. It is also a human-friendly tree which also allows people to interact with using an integrated tablet device that provides many services.

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