Active Filter

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The biggest challenge in 21 century is atmosphere pollution. There are many reasons of atmosphere pollution but the most important is launching polluted air in the atmosphere from factories. Among the existed filters which are used for filtering the exhaust gases (from factories), the cheapest and most widely distributed is the filter with fabric membrane. The analysis revealed one main problem: the existed filters can't catch small particles mixed in the exhaust gases. Therefore we formulated the aim of the project: to establish the principle of using a membrane filter that catches small particles mixed in exhaust air. In our school inventors club, based on the problem solving theory, the principle and mechanism has been developed to achieve the purpose which is briefly described: part of the exhaust gas pipe and the gas stream is divided into two parts (two independent tubes). Aluminum plates with different static charges are placed in each tube (one positive and one negative). The exhaust gas mixed with the particles that pass each tube is charged with conformable charges by the electrodes. And when they get together again in the upper part of the tube they stick each other as they are charged with the opposite electric charges and become at least twice as large in size, thus it will be easier to catch them by the fabric filter membrane. The working model of the filter was built in our school. We conducted experiments and proved that constructed models working principle is efficient. Conclusion: proposed mechanism and working principle is better than any current fabric membrane filter.

Awards Won: