



# भारतीय प्रौद्योगिकी संस्थान दिल्ली INDIAN INSTITUTE OF TECHNOLOGY DELHI

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**Dr. Dibakar Rakshit**

Associate Professor

TO WHOMSOEVER IT MAY CONCERN

An investigation into the efficiency of 'Aufero' Positive ionization-based filterless mobile technology from ENS Netherlands was carried out for M/s Siddhivinayak Tradelink, Mumbai. An 'Aufero' Positive Ionization based particulate reduction machine had been imported by M/s Siddhivinayak Tradelink, Mumbai from the technology developer ENS, Netherlands. 'Aufero' was tested in ambient roadside air near IIT-Delhi Main Gate for a period of approximately 8 hours on September 30, 2022. The performance has been assessed by simultaneous measurement of particulate concentration at the inlet and the outlet of the machine and comparing the reduction of the particle concentration for particle sizes PM10, PM2.5, and PM1. The details of the experimental setup, observations, and findings are recorded in the report titled "Investigation into the efficiency of 'Aufero' positive ionization-based filter less mobile technology from ENS Netherlands" dated November 2022.

The study aimed to demonstrate a resource and energy-efficient machine capable of maintaining appropriate health safety by enhancing the local ambient air quality. The proposed machine will benefit densely inhabited areas that are susceptible to health risks and diseases owing to poor air quality. The exhaustive investigation of various experimental configurations uncovered the following significant facts regarding the use and design of such machines:

- The particulate matter reduction capacity of the 'Aufero' varies with the particulate matter size as well its concentration.
- It was found that the particulate matter reduction varied from 12.91% to 16.76% for PM1, 15.05% to 24.69% for PM2.5, and from 36.18% to 41.41% for PM10.
- Furthermore, within the PM2.5 size of particulate in ambient air, the removal efficiency was lowest at 15.05% for the concentration range of 40-50  $\mu\text{g}/\text{m}^3$  and highest at 24.69% for concentrations more than 90  $\mu\text{g}/\text{m}^3$ .
- The removal efficiency was lowest at 36.18% for the concentration range of 90-100  $\mu\text{g}/\text{m}^3$  and highest at 41.41% for concentrations more than 170  $\mu\text{g}/\text{m}^3$  in the case of PM10 particulate matter.
- The investigation demonstrates that the number of smaller particles exceeds the number of large particles. Nevertheless, the reduction efficiency is more remarkable for bigger particles than for smaller ones.

The preliminary research demonstrates that the proposed PM mitigation technique effectively enhances the local air quality within the location under study. It is essential to recognize that the overall performance throughout the facility, in aspects of uniformity of the PM concentration cutbacks and absolute PM concentration cutbacks, is highly dependent on the precise location where the Aufero units are installed.

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(B. Premachandran)