

Utilization of Sphagnum Moss as a Jeepney Emission Filter for Smoke Density Reduction

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Abstract : Traditional jeepneys contribute significantly to air pollution in the Philippines, negatively affecting both the environment and people. In response, the researchers investigated Sphagnum moss which has high adsorbent properties and can be used as a filter. Therefore, this research aims to create a muffler filter additive to reduce the smoke density emitted by traditional jeepneys. Various materials, such as moss, cornstarch, a metal pipe, bolts, and a papermaking screen frame, were gathered. The moss underwent a blending process with a cornstarch mixture until it achieved a pulp-like consistency, subsequently molded using a papermaking screen frame and left for sun drying. Following this, a metal prototype was created by drilling holes around the tumbler and inserting bolts. The mesh wire containing the filter was carefully placed into the hole, secured by two bolts. In the final phase, there were three setups, each undergoing one trial in the LTO emission testing. Each trial consisted of six rounds of purging, and after that the average smoke density was measured. According to the findings of this study, the filter aided in lowering the average smoke density. The one layer setup produced an average of 1.521, whereas the two layer setup produced an average of 1.082. Using One-Way Anova, it was demonstrated that there is a significant difference between the setups. Furthermore, the Tukey HSD Post Hoc test revealed that Setups A and C differed significantly ($p = 0.04604$), with Setup C being the most successful in reducing smoke density (mean difference -1.4128). Overall, the researchers came to the conclusion that employing Sphagnum moss as a filter can lower the average smoke density released by traditional jeepneys.

Keywords : sphagnum moss, Jeepney filter, smoke density, Jeepney emission

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