

**FMCL Smart Device
(Smart Device to Filter and Monitor Carbon Monoxide Levels)**

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ABSTRAK

Pengelolaan emisi gas buangan dari kegiatan industri dan transportasi di Indonesia merupakan hal yang perlu diperhatikan. Terlebih lagi Indonesia merupakan negara dengan tingkat kepadatan penduduk terpadat keempat di dunia. Hal ini sangat berpengaruh pada kadar emisi gas buangan yang mencemari udara, tingkat pencemaran udara yang tinggi akan berpengaruh pada tingkat kesehatan masyarakat. Maka dari itu, sebagai upaya mengurangi kandungan gas berbahaya di udara, peneliti mengembangkan inovasi berupa perangkat pintar yang mampu memonitoring dan memfilter udara sehingga emisi karbon monoksida dapat diminimalisir. Inovasi ini bernama FMCL Smart Device (*Smart Device to Filter and Monitor Carbon Monoxide Levels*). Dalam FMCL Smart Device terdapat beberapa tingkatan filter yang tersusun atas pemanfaatan kembali limbah domestik seperti cangkang telur, kulit kakao, sabut, dan ijuk kelapa. Dalam memahami, memecahkan, dan mengantisipasi masalah, peneliti menggunakan metode eksperimen. Berdasarkan hasil eksperimen, FMCL Smart Device mendapatkan nilai 83,5 atau pada grade *Excellent* dalam Analisis SUS dan terbukti meminimalisir kandungan karbon monoksida sebesar 78%, sehingga dapat membantu mengurangi pencemaran lingkungan, dan menjadi salah satu inovasi yang berguna dalam membantu pengelolaan lingkungan.

Kata kunci : Emisi, Filtrasi, FMCL Smart Device, Inovasi, Karbon Monoksida, Monitoring, Pencemaran Udara.

ABSTRACT

Management of exhaust emissions from industrial and transportation activities in Indonesia is something that needs to be considered. Moreover, Indonesia is a country with the fourth-most densely populated population in the world. This is very influential on the level of exhaust emissions that pollute the air, high levels of air pollution will affect the level of public health. Therefore, in an effort to reduce the content of harmful gases in the air, researchers have developed innovations in the form of smart devices that are able to monitor and filter the air so that carbon monoxide emissions can be minimized. This innovation is called FMCL Smart Device (*Smart Device to Filter and Monitor Carbon Monoxide Levels*). In the FMCL Smart Device, there are several filter levels composed of the reuse of domestic waste such as eggshells, cocoa shells, coir, and coconut fibers. In understanding, solving, and anticipating problems, researchers use experimental methods. Based on the experimental results, the FMCL Smart Device got a score of 83.5 or at the Excellent grade in the SUS Analysis and was proven to minimize the carbon monoxide content by 78%, so that it can help reduce environmental pollution, and become one of the innovations that are useful in helping environmental management.

Keywords: Air Pollution, Carbon Monoxide, Emission, Filtration, FMCL Smart Device, Innovation, Monitoring