

# Design and Analysis of Fugitive Dust Emission Collector

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**Abstract:** *This creative project explores the design and analysis of a novel fugitive dust emission collector, with a focus on its application in stone crusher units and crematorium facilities. Recognizing the detrimental health and environmental impacts of dust emissions, this project proposes a multifaceted approach. The core solution involves a combined system, this captures and removes larger dust particles through established methods like cyclones or bag houses. Dry fog dust suppression system, this technology utilizes atomized water droplets to suppress smaller fugitive dust particles, preventing their airborne spread. This project delves into the specific needs of stone crusher units and crematorium facilities. Utilizing CAD software, 3D models of the emission collector will be created, incorporating considerations like material selection, efficiency and airflow optimization, integration with existing infrastructure. Computational fluid dynamics (CFD) analysis by Simulating airflow patterns and dust capture efficiency within the collector. Assessing the collector's ability to withstand operational loads and environmental factors. This project aims to achieve, reduced fugitive dust emissions, enhanced environmental compliance, improved operational efficiency. Overall, this creative project showcases an innovative approach to fugitive dust control, potentially leading to improved environmental and public health outcomes in diverse industrial settings*

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