



**COMPARISON OF DIFFERENT VENTILATION
SYSTEM APPROACHES FOR REDUCING AN
AIRBORNE CONTAMINANTS IN FOUNDRY
WORKSHOP**

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I hereby declare that this thesis is based on my original work except for the quotations and citations, which have been acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UiTM or other institutions. Therefore, I, admit that have been provided with the Academic Rules and Regulations for Under Graduate, Universiti Teknologi MARA, adaptable with the manner of my research study.

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ABSTRACT

A foundry is a place that produces metal castings by melting and pouring the molten metal into a mold. However, an airborne contaminants can take the form of environmental factor such as dust, fumes and gases which produce by the machines and processes in foundry. Although, the foundry workshop at UiTM Pulau Pinang is running only at a small scale compare to industry, student and supervisor may exposed to an airborne contaminants. Thus, by SolidWorks flow simulation as engineering control tool, the main objectives from this study is to identify the amount and area of contaminated in foundry workplace. The simulation has been made by analyzed the amount and area of an airborne contaminated for engineering control applications such as general ventilation and local exhaust ventilation (LEV). The results is then were compared with natural ventilation to establish which engineering control method has an effective contaminants removal rate. Besides, five positions of breathing zone are identify around the foundry workplace. As a result, the application of extracted fan for general ventilation only reduced slightly amount and area of contaminated in the foundry workplace. However, the efficiency of LEV to carry out the contaminants away from breathing zone shown with decreasing amount of exposure such as aluminium oxide and carbon monoxide. Hence, the use of LEV for reducing exposure is concluded as the most efficient engineering control application compare to others.

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