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DESIGN OF A GARBAGE COMPACTING TRACTOR TRAILER HYDRAULIC SYSTEM

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by

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Supervised by

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Manufacturing
Systems Engineering

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Dissertation submitted to the Department of Mechanical Engineering of the University of Moratuwa in partial fulfilment of the requirements for the Degree of Master

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DECLARATION

This Dissertation paper contains no material which has been accepted for the award of any other degree or diploma in any University or an equivalent institution in Sri Lanka or abroad, and to the best of my knowledge and belief, contains no material previously published or written by any other person, except where due reference is made in the text of this Dissertation.

I carried out the work described in this Dissertation under the supervision of Dr. M. A. R. V. Fernando.

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ABSTRACT

The most common motorized vehicle used for garbage transportation in Sri Lanka is the tractor with an open trailer. Garbage is transported in an open system causing unpleasantness, pollution, bad smell, poor hygiene and over spillage.

The objective of the proposed design is to improve the capacity of garbage handled by the open tractor-trailer per each transport cycle and to improvise a closed system for waste transport to improve hygienic standards.

The proposed design is one in which an existing tractor-trailer is modified to a rear loading trailer. While loading, the garbage will be compacted using a hydraulic system to overcome the low productivity. A hydraulic pump, solenoid valves, hydraulic cylinders and an electrical system are used for this construction. Apart from this, the trailer body is modified into a closed body.



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The measured value of solid waste currently handled per single load which is approximately 1000 kg, will be improved to about 2000 kg per load. The closed system will minimise the environmental pollution present in the existing system. These modifications to the existing tractor trailer would help to improve the present standards of solid waste management at a relatively low cost.

The cost of installation of the hydraulic system and constructing a closed body is approximately seven hundred thousand rupees.

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LIST OF ACRONYMS

ASL	Automated side loader
CMC	Colombo Municipal Council
DMMC	Dehiwela Mount Lavinia Municipal Council
MSW	Municipal solid waste
SWM	Solid waste management



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