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**MECHANICAL ENGINEERING DESIGN
(MEC 332)**

PUMPNETIC

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1.0 INTRODUCTION

1.1 Overview of the project

This project is about helping farmers to spray fertilizer and pesticide more efficiently. Nowadays, there are various types of spray tool to use such as knapsack motorized sprayer. But, all the spray tool has a problem. The problem with all various type of spray tool is the user needs a lot of energy to carry the knapsack or spray tool on their shoulder. It will hurt the user's spine and fatigue from carrying the heavy tool spray. As a result, we come up with a project called Pumpnetic. The Pumpnetic is a combination of a pump with a kinetic energy that created by pushing or pulling the Pumpnetic. Also, this project has helped other user to ease their fertilizing or pesticide work such as at India and Bangladesh who do not have enough money to buy the spray tool. Our team try to come up with similar solutions and implement it there to help users for example farmers to work more efficiently. The design of the Pumpnetic has been chosen by morphological analysis and pugh chart method. This product is made of materials that are affordable and common material that are easy to find such as plastic, stainless steel plate, brake, tires and other. The Pumpnetic tank can carry up to 20 litres of water-based fertilizer or pesticide at one time which it can cover more area compared to other spray tools which have a small tank. As a result, it does not always need to refill.

1.2 Design objectives

1. To help farmers ease their work when fertilizing by just pushing and pulling the fertilizer trolley to fertilize plants.
2. To enhance more effectual sprayer because it has more than 1 nozzle and can fertilize big areas.
3. To provide a comfortable working environment by freeing the shoulder from carrying the weight of knapsack sprayer.

1.3 Scope of project

i. Overall description of the work.

This project is for the creation of a sprayer fertiliser pump. The idea of this project is coming from the sprayer fertiliser pump itself. As we know, sprayer fertiliser pump widely used in agriculture site. But, the consequences of carrying this sprayer pump can be serious. So, we came out with a brand-new innovation. This innovation is made to ease workers to fertilise their plant. This innovation only need a worker to move our product along the site. It is because we add wheels to help worker improve their work rates.

ii. Deliverables.

This project will make a better sprayer fertilise pump. Which means this product has key features that makes this project is better and reliable than other fertilise pumps. It comes with parts such as wheels, nozzle and cut off valve. These various parts have its own functions that will make this project operate efficiently.

iii. Justification for the project.

What makes this product more reliable than others? It is because this product is a combination of two works but in a single working process. For example, our product can pump out the fertilise on it own, as long it is moving.

iv. Assumptions.

All projects have assumed certain conditions as part of their existence. For example, our body frame is made of stainless steel. To be specific, it is Aisi 304 stainless steel which is have strong tensile strength and highly corrosion resistance. These qualities will ensure our product is suitable in various types of weather.