

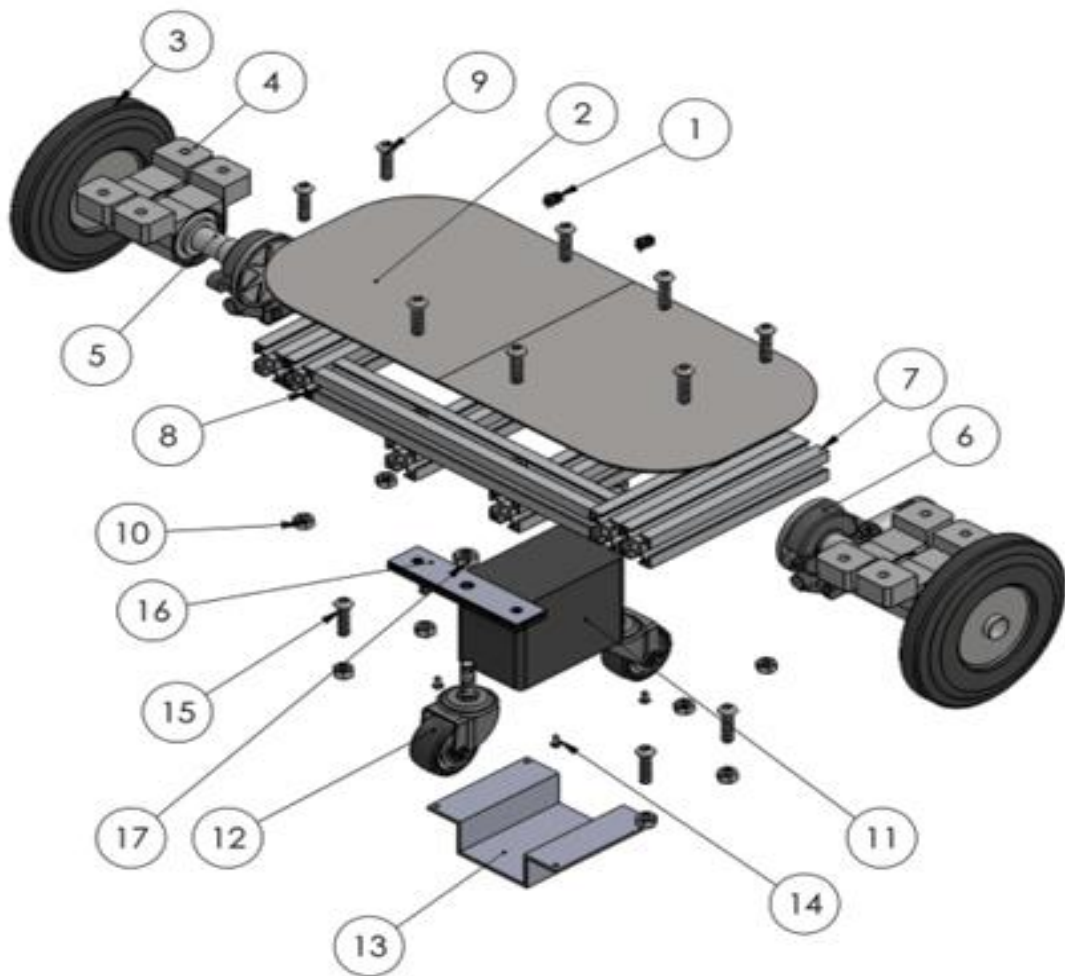
PROTOTYPE DESIGN COLLECTION

SERIES 2



Prototype Design Collection

Series 2



AHMAD NAJMIE RUSLI

**UNIVERSITI TEKNOLOGI MARA CAWANGAN JOHOR
KAMPUS PASIR GUDANG**

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FOREWORD

This digital book on Prototype Design Collection Series 2 (PDC Series 2) is published as a reference design for mechanical engineering students. The designs presented experience a few phases of analysis before fabrication of prototype. Each project summarises the project description, prototype, figures, and design parameter. The design products vary in tools or equipment for household, workshop, entrepreneur, etc. Suggested material and detail of prototype dimension are also mentioned in this book.

It is hoped that this book will assist the students to have more ideas on innovation design products in the future.

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CHAPTER 86

Design and Fabrication of Mechanical Sand Purifier

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PROJECT DESCRIPTION

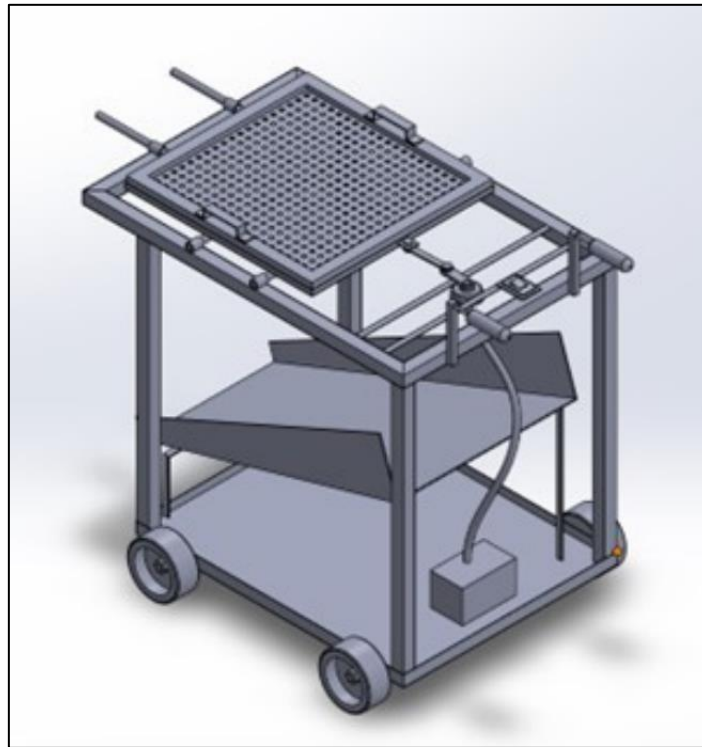
Sand purification is an essential process in construction and infrastructure development. However, the traditional sand purifier requires two workers to filter and pack the sand, making it time-consuming and costly. This project aims to design and develop a simple sand purifier that will help workers do their job faster while reducing the cost of the sand purifier. The traditional sand purifier requires two workers to filter and pack the sand, making it time-consuming and costly. Most sand purifiers in recent years are also quite expensive, especially automated machines. This limits accessibility for small-scale construction businesses and communities. The primary objective of this project is to design and develop a sand purifier that will filter all the unwanted substances in the sand and pack it into a sandbag with only one worker required. The machine is equipped with mechanical parts and runs using an electric motor, making it more affordable and accessible. The sand purifier was designed and fabricated using mechanical parts and an electric motor to shake the filter. The machine was tested and evaluated for its filtration efficiency, durability, and user-friendliness. The sand purifier developed in this project filtered all the unwanted substances in the sand and packed it into a sandbag with only one worker required, making the job faster and more efficient. The use of mechanical parts and an electric motor reduced the cost of the sand purifier, making it more affordable and accessible to small-scale construction businesses and communities.

Keywords: *Sand purifier, User-friendly, Construction*

PROTOTYPE



DESIGN PARAMETER



ITEM NO.	MATERIAL	QTY.
1	Base frame	4
2	base plate	1
3	frame	1
4	filter	1
5	aluminium	2
6	handle	2
7	Tray holder	1
8	wheel	1
9	Battery	1
10	tray	1
11	motor	1
12	shaft	1
13	Aluminium Profile	8
14	nut	4

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STUDENT ID : 2020821284
CLASS : J4EM1104G
DRAWING TITLE : BILL OF MATERIALS
SCALE : 1:10
SHEET 1 OF 1