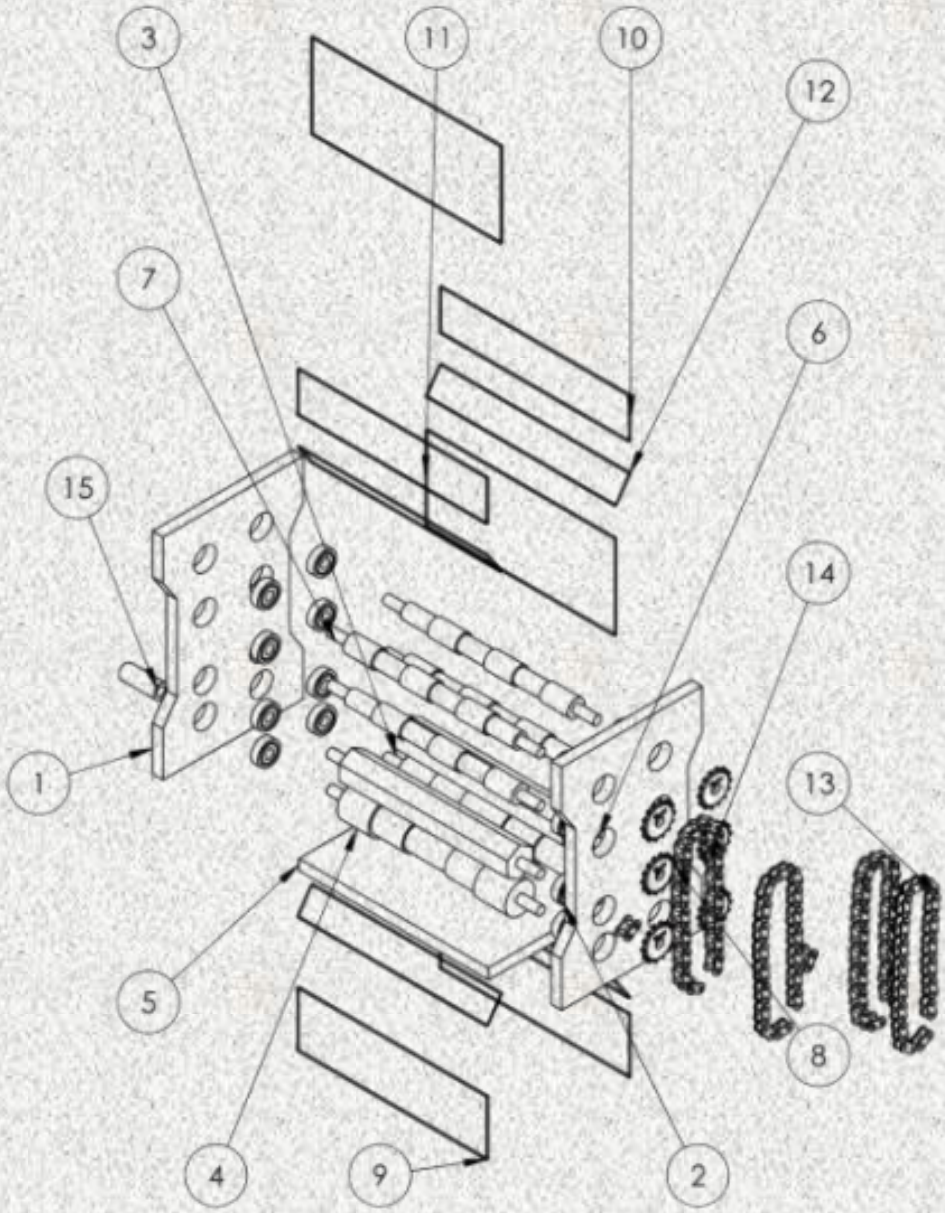
PROTOTYPE DESIGN COLLECTION

SERIES 4

Universiti Teknologi MARA
Pasir Gudang Campus

Prototype Design Collection

Series 4



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FOREWORD

This digital book on Prototype Design Collection Series 4 (PDC Series 4) 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 43

Free Energy Water Generator

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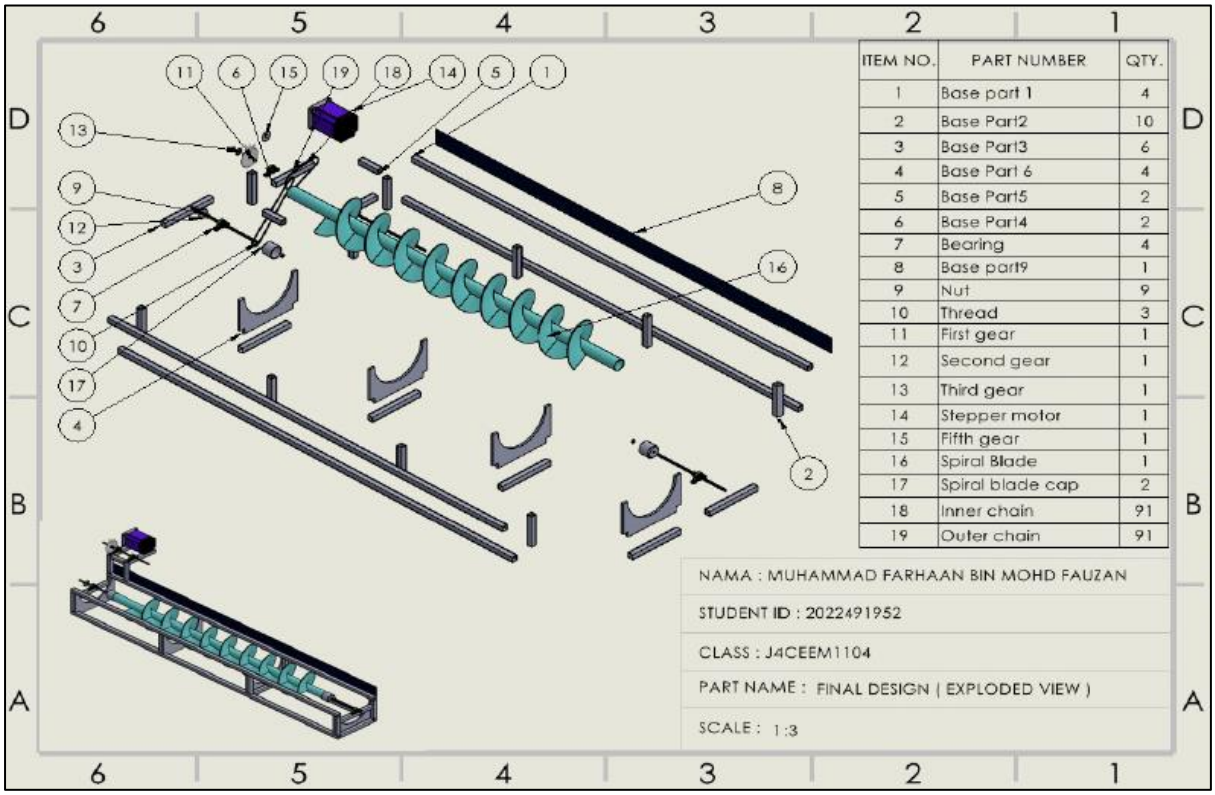
PROJECT DESCRIPTION

The Free Energy Water Generator is designed to provide a sustainable and renewable electricity source by utilizing water flow as its primary energy input. This project aims to develop a compact and efficient generator capable of producing electricity without reliance on conventional fuels, making it ideal for remote areas and off-grid applications.The research methodology involves the design and fabrication of a small-scale water turbine system integrated with a stepper motor and capacitor-based energy storage. The turbine converts kinetic energy from flowing water into mechanical motion, which is then transformed into electrical energy using a stepper motor. Computational simulations in SolidWorks guide the optimization of turbine blade efficiency, while experimental testing evaluates power output, stability, and durability. Results indicate that the generator effectively harnesses water flow to generate electricity, maintaining stable output with minimal maintenance. This study contributes to the advancement of green energy solutions by demonstrating an accessible and sustainable power generation method. Future work will focus on improving efficiency through enhanced turbine materials, integrating smart energy management systems, and expanding applicability across diverse water environments.

Keywords: *Renewable Energy, Water Turbine Generator*

PROTOTYPE

DESIGN PARAMETER



ITEM NO.	PART NUMBER	QTY.
1	Base part 1	4
2	Base Part2	10
3	Base Part3	6
4	Base Part 6	4
5	Base Part5	2
6	Base Part4	2
7	Bearing	4
8	Base part9	1
9	Nut	9
10	Thread	3
11	First gear	1
12	Second gear	1
13	Third gear	1
14	Stepper motor	1
15	Fifth gear	1
16	Spiral Blade	1
17	Spiral blade cap	2
18	Inner chain	91
19	Outer chain	91