

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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CHIEF EDITOR:

Ahmad Najmie Rusli

CONTENT EDITORS:

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Hazriel Faizal Pahroraji

Norhisyam Jenal

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Radzi Abdul Rasih

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Tel: +60 7-381 8493

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 33

Design and Fabrication of Automatic Flour Filter

Muhammad Aqil Fahmy Bin Reduan¹ and Hazriel Faizal bin Pahroraji^{2*}

^{1,2}Mechanical Engineering Studies, College of Engineering, Universiti Teknologi MARA
Johor Branch, Pasir Gudang Campus, 81750 Masai, Bandar Seri Alam, Johor Darul Ta'zim.

*Corresponding author (e-mail): hazriel@uitm.edu.my

PROJECT DESCRIPTION

The project is focused on developing a machine that will reduce the amount of power needed to filter flour, which is used in many kitchen operations. Due to the strainer's small surface area, the filtering process must be repeated until all the flour is filtered, inspiring this project's conception among those working in food-related SMEs. Filtering the flour takes a significant amount of time. The goals of this project, on the other hand, are to develop an automatic flour filter using the "SolidWorks" software, fabricate a flour filter, and study how the strainer is rotated using the power window. The strainer in this product can be moved horizontally due to a power window coupled to a circular plate. Additionally, a converter is included for switching between DC and AC power. This project uses the mechanical engineering principle of power window rotation. At the end of the course, this project can design an automatic flour filter, fabricate this flour filter, and then analyze the motor's rotation as it moves the strainer.

Keywords: Kitchen operation, SME, Filtering, Strainer

PROTOTYPE



DESIGN PARAMETER

Technical drawing showing an isometric view of an automatic floor filter assembly. The drawing is framed by a grid with horizontal axis 1-6 and vertical axis A-D. The assembly consists of a square aluminum case mounted on a base with four legs. A power window motor is connected to the case via a circular connector and a connector support. A connector strainer is attached to the motor. A stainless steel wire mesh is placed inside the case, supported by aluminum strainer covers and aluminum PVC connectors.

Rev.	Scale	Projection	Weight	Sheet
0	1:5		10kg	1/1/11

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Course Name: MEC300 - FINAL YEAR PROJECT 11
SECTION: OCT 2022 - MA C 2023
Group: JHEM11003
Approved: **Checked:** **Drawn:**
Drawing Title: ASSEMBLY OF AUTOMATIC FLOOR FILTER
Part Name: -
Part No.: -
 11223 (1) 12222222222222222222 (PVC)
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Exploded view of the automatic floor filter assembly. The drawing is framed by a grid with horizontal axis 1-6 and vertical axis A-D. The parts are numbered 1 through 11. The parts list is as follows:

EQM NO.	PART NUMBER	QTY.
1	BASE FOR STRAINER	1
2	ANGLE L BRACKET	4
3	MED STEEL FLAT BAR	2
4	POWER WINDOW MOTOR	1
5	CONNECTOR SUPPORT	1
6	ALUMINIUM CASE	1
7	ALUMINIUM PVC CONNECTOR	8
8	STAINLESS STEEL WIRE MESH	1
9	ALUMINIUM STRAINER COVER	1
10	CIRCULAR CONNECTOR	1
11	CONNECTOR STRAINER	1

Rev.	Scale	Projection	Weight	Sheet
0	1:8		10kg	1/1/11

11223 (1) 12222222222222222222 (PVC)
 12222222222222222222 (PVC) 122222
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Course Name: MEC300 - FINAL YEAR PROJECT 11
SECTION: OCT 2022 - MA C 2023
Group: JHEM11003
Approved: **Checked:** **Drawn:**
Drawing Title: EXPLODED VIEW OF AUTOMATIC FLOOR FILTER
Part Name: -
Part No.: -
 11223 (1) 12222222222222222222 (PVC)
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