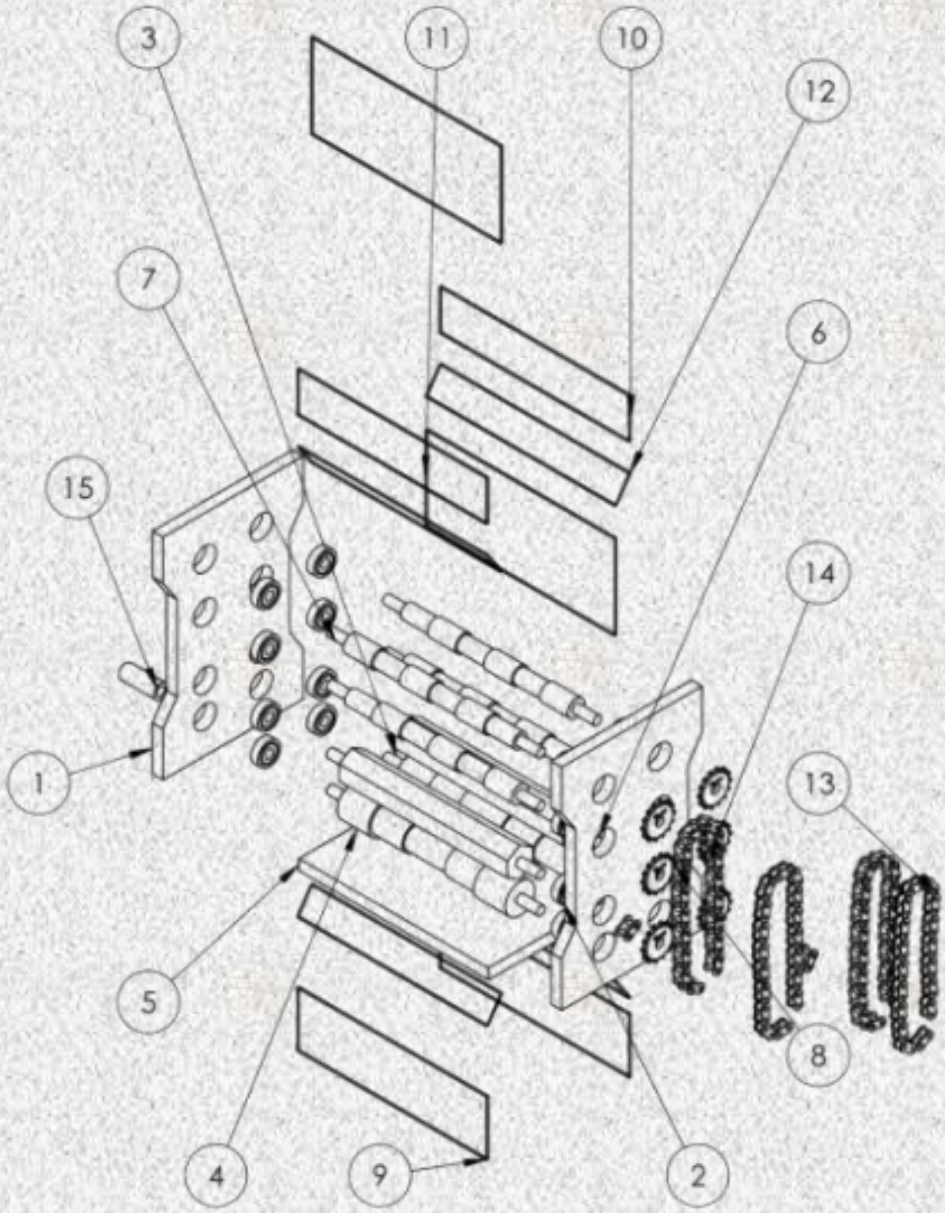
PROTOTYPE DESIGN COLLECTION

SERIES 4

Universiti Teknologi MARA
Pasir Gudang Campus

Prototype Design Collection

Series 4



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PUBLISHER:

Universiti Teknologi MARA

Cawangan Johor Kampus Pasir Gudang,

Jalan Purnama, Bandar Seri Alam, 81750 Masai, Johor

September 2025

eISBN: 978-967-0033-62-4

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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e-ISBN: 978-967-0033-62-4

CHAPTER 42

Umbrella Dryer Machine

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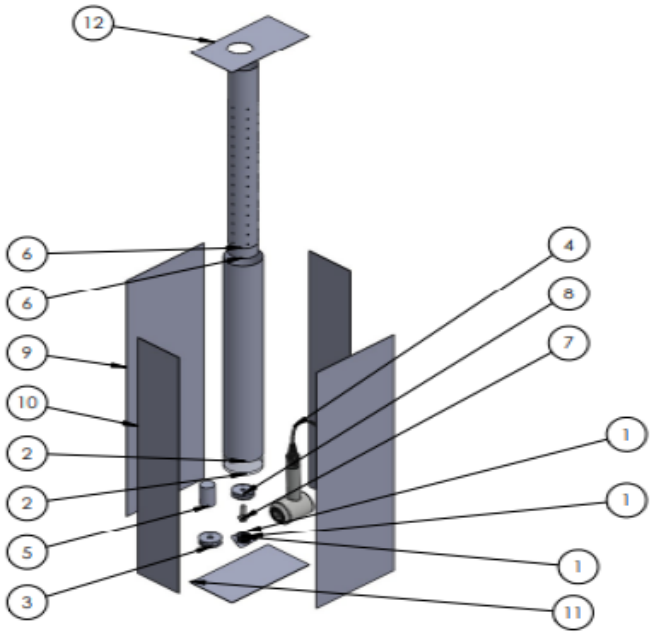
PROJECT DESCRIPTION

The Umbrella Dryer Machine is designed to address the inconvenience and safety hazards associated with wet umbrellas in indoor spaces. Wet umbrellas contribute to slippery floors, increased maintenance, and potential theft risks when left unattended. This project aims to develop an efficient, compact, and user-friendly solution for drying umbrellas quickly, enhancing cleanliness and safety in public and private facilities.The project involves the design, fabrication, and evaluation of a prototype that integrates centrifugal drying and controlled heating mechanisms. The methodology includes computational design using SolidWorks, material selection for durability, and experimental validation to assess drying efficiency and safety compliance. The system operates by spinning the umbrella at high speeds to remove excess water, combined with a controlled heating element to accelerate the drying process while ensuring user safety. Performance testing demonstrates that the prototype significantly reduces drying time compared to conventional methods while preventing water spillage. The system effectively minimizes maintenance costs for building facilities and enhances user convenience. Future improvements include incorporating automatic sensors for user detection, optimizing energy efficiency, and refining airflow mechanisms to accommodate various umbrella sizes.

Keywords: *Umbrella Drye, Indoor Safety*

PROTOTYPE

DESIGN PARAMETER



ITEM NO.	PART NUMBER	QTY.
1	assem blower	1
2	Assem INNER OUTER	1
3	bearing + conveyor	1
4	hair dryer	1
5	motor	1
6	Assem PVC INNER	1
7	M12-1.75 x 45	1
8	bearing + conveyor 1	1
9	aluminium profile 300mm width x 935mm length	2
10	aluminium profile 160mm width x 935mm length	2
11	Aluminium 160mm x 300mm length	1
12	top Aluminium 160mm x 300mm length	1

NAME: AIN NUR MAWADDAH

STUDENT ID: 2022828932

CLASS : J4CEEM1104C

PART NAME : EXPLODED VIEW UMBRELLA DRYING MACHINE

SCALE : 1:2 | SHEET 1 OF 1