

PROTOTYPE DESIGN COLLECTION

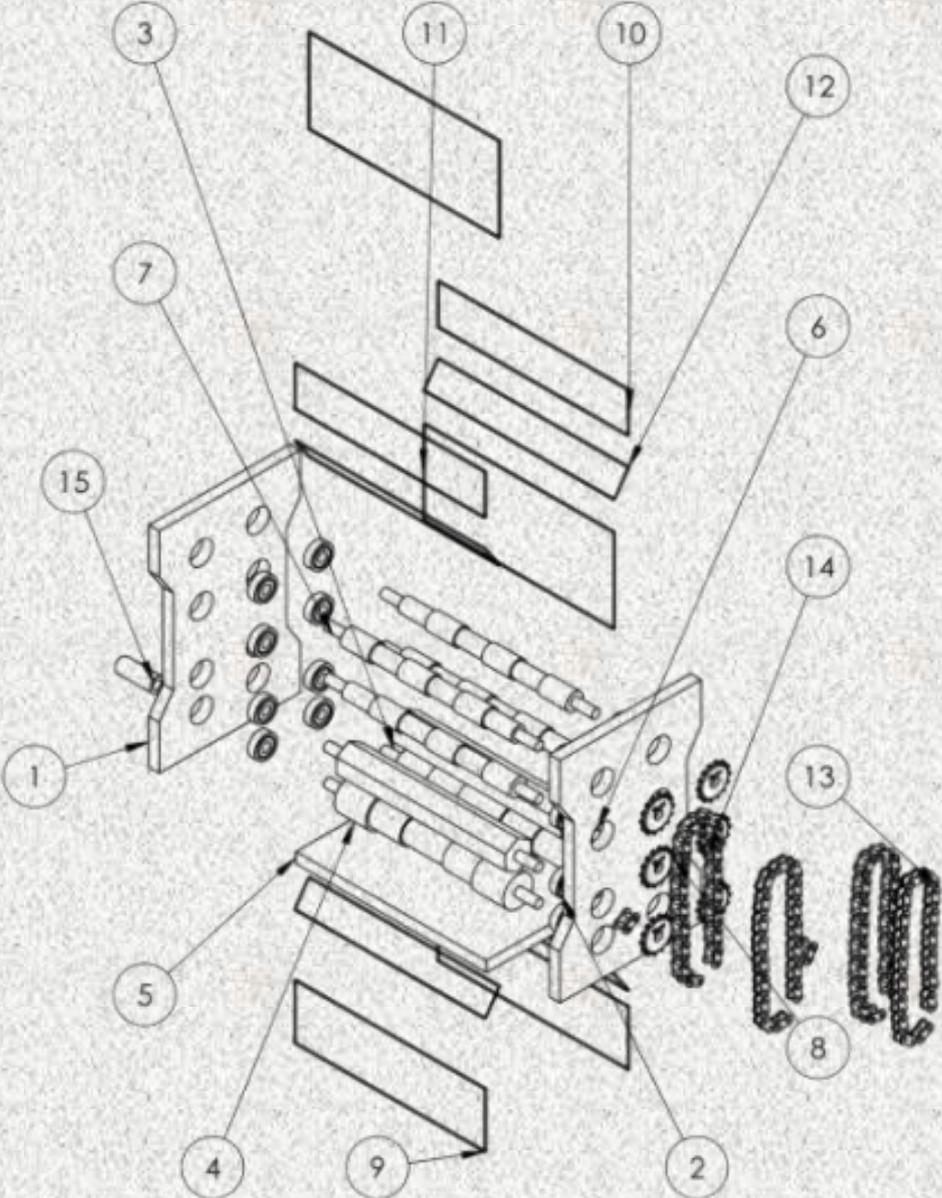
SERIES 4



Universiti Teknologi MARA
Pasir Gudang Campus

Prototype Design Collection

Series 4



Ahmad Najmie Rusli

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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 19

Design and Fabrication of Automatic Cat Litter Box

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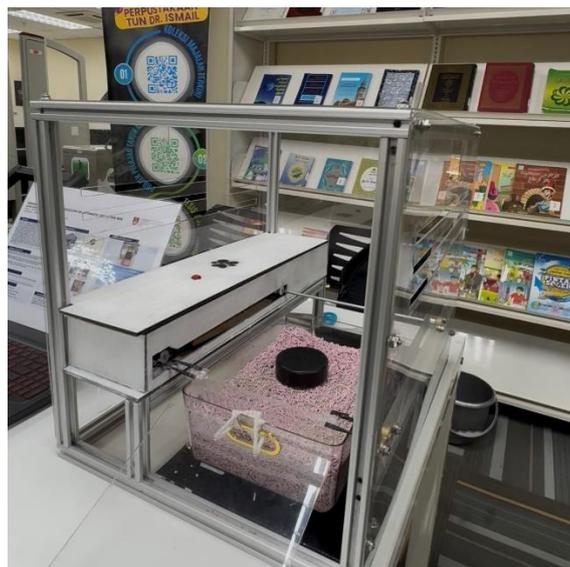
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PROJECT DESCRIPTION

Many cat owners face challenges in maintaining a clean litter box due to time constraints, hygiene concerns, and the manual effort required for regular cleaning. These issues can lead to unpleasant odors and potential health risks for human. Hence, this project presents the development of an automatic cat litter box, consist of self-cleaning system designed to reduce human intervention in managing feline waste. The main objective of this project is to design and fabricate a fully functional automatic litter box that improves hygiene, saves time, and reduces the owner's workload. The design is developed using SolidWorks, while the control system is programmed using an Arduino UNO microcontroller. The litter box utilizes sensors and a timer-based mechanism to detect when a cat enters and exits the box. After a preset countdown, the cleaning system is activated, automatically raking the waste into a separate compartment. The completed product has an approximate dimension of 540mm (L) × 411mm (W) × 446mm (H), weighs 9kg, supports a sand capacity of 2.5kg, and is powered by a 12V battery. The project has successfully achieved its stated objectives, resulting in a fully operational automatic litter box that has been tested and proven to function effectively under real conditions.

Keywords: *Automatic cat litter, Cat litter*

PROTOTYPE



DESIGN PARAMETER

