MONASH University

MONASH ENGINEERING

ROBOTICS AND MECHATRONICS ENGINEERING
TRC2001 INTRODUCTION TO SYSTEM ENGINEERING

The Special Group
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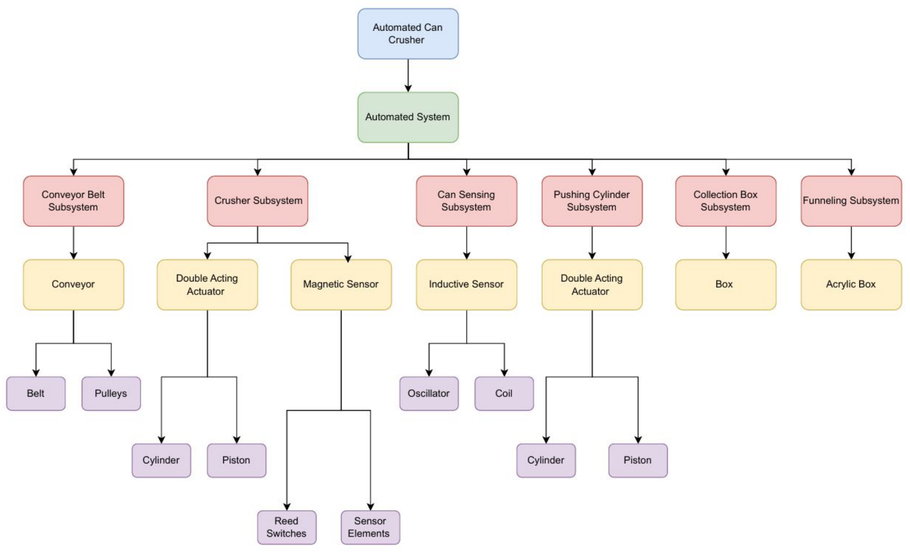
Automated Can Crusher

PROBLEM IDENTIFICATION

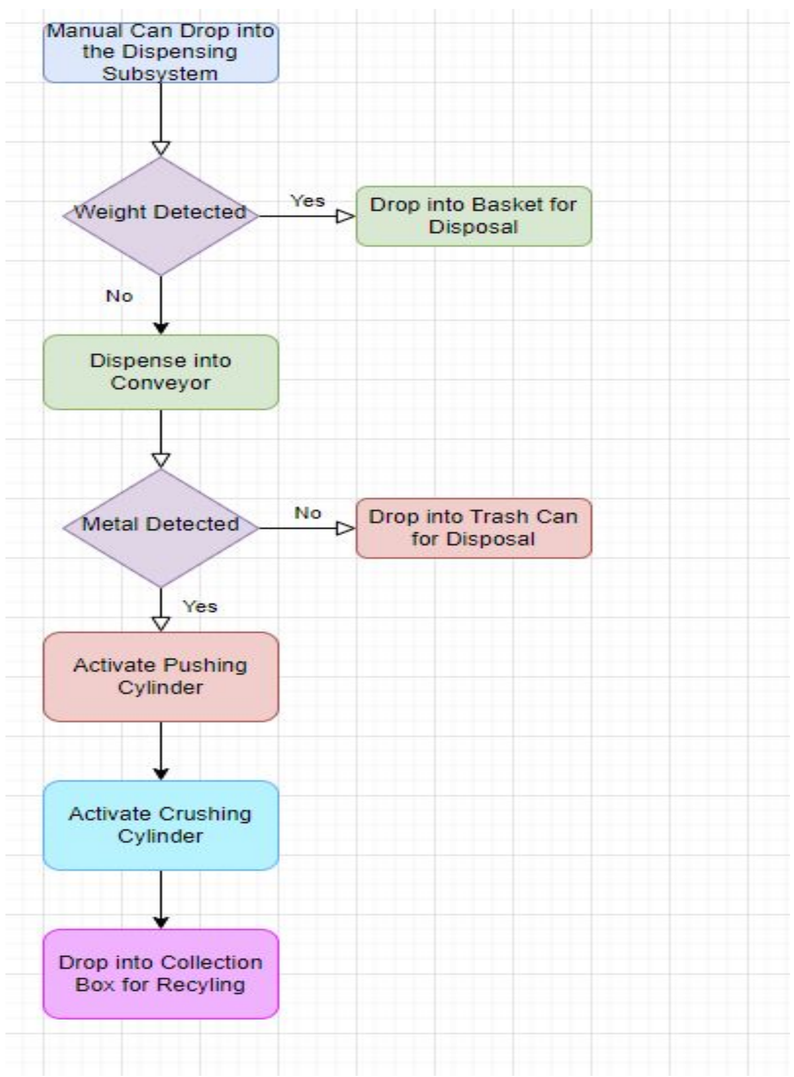
Can crushing:

Can waste often takes up significant space and can be mixed with other trash that needs sorting or compacting. Our project aims to crush and sort cans into a compact size for easier waste organization. Manually crushing cans is time-consuming and requires physical effort, especially in large quantities. This machine automates the process, making it safer and more efficient, saving time in waste collection.

SYSTEM OVERVIEW



SYSTEM OPERATION



PROPOSED SOLUTION (3D MODEL)

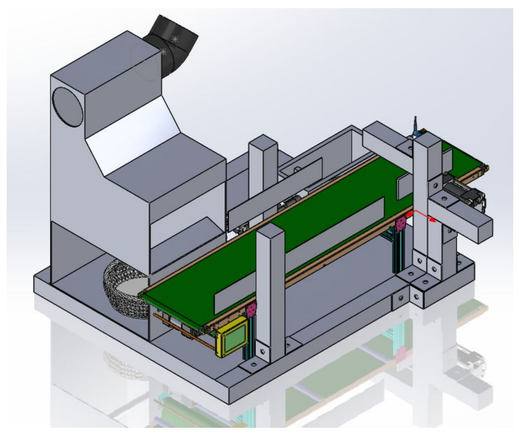


Figure 1 Isometric View

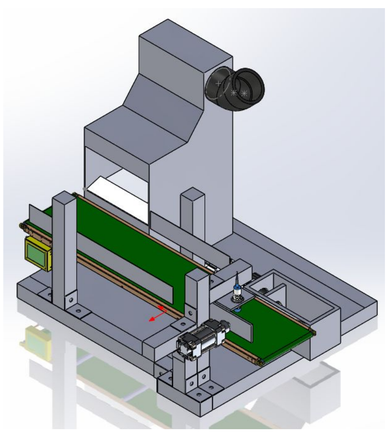


Figure 2 Isometric View

In this system, a can is manually dropped into a sorting box, where broom bristles separate them by weight—heavy cans fall into a basket, while empty ones move onto a conveyor. An inductive sensor at the conveyor end detects aluminum cans and triggers compression. Two cylinders control the compression and metal detection, with compressed cans dropping into a collection box.

CONCLUSION

In conclusion, tremendous effort has gone into planning this project from the very beginning. We began by researching on different problems that our system can address. After selecting the most suitable idea, we brainstormed different automated systems which we then ultimately decided on an Automated Can Crusher. Subsequently, we moved on to designing the system alongside creating a flowchart and a system hierarchy to help outline the system's functionality clearly and provide a concise overview of our project.

After reviewing the system, it is clear that the Automated Can Crusher has properly demonstrated the integration between mechanical, electrical, and pneumatic system to achieve a user-friendly and energy efficient solution for recycling aluminium cans. This will incentivise different companies to get hold of the system to improve their recycling rate as the system's design emphasizes safety, reliability, and ease of use, especially for commercial application. Most importantly, the productivity of the companies that choose to invest in the product will tremendously increase and help in growing their business.