Bin Mounted Compactor

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Aim of the Project

The Aim of this project is to design and manufacture a bin mounted compactor which will be used to compact a domestic recycling bin.

Objectives

- Research different methods of mounting a compactor on a bin.
- Design and manufacture the optimal mounting bracket.
- Redesign and manufacture the bin compactor to fit the new mounting bracket.
- Carry out several test to determine the space saved by using a compactor.

Background

Compactors originated from a device made for compacting empty oil drums by a mechanic. This idea was then modified to be used for domestic bins where they where water from the kitchen sink was used to drive the compacting piston. A second version of this was designed using electricity to operate the piston. From the background research it is obvious to see that this product downsized as it was improved.

Availability

From research carried out it was found that there were no bin compactors available to be bought over the counter in Ireland. Anyone wishing to purchase a bin compactor must purchase them online. The average cost of these products is €50.

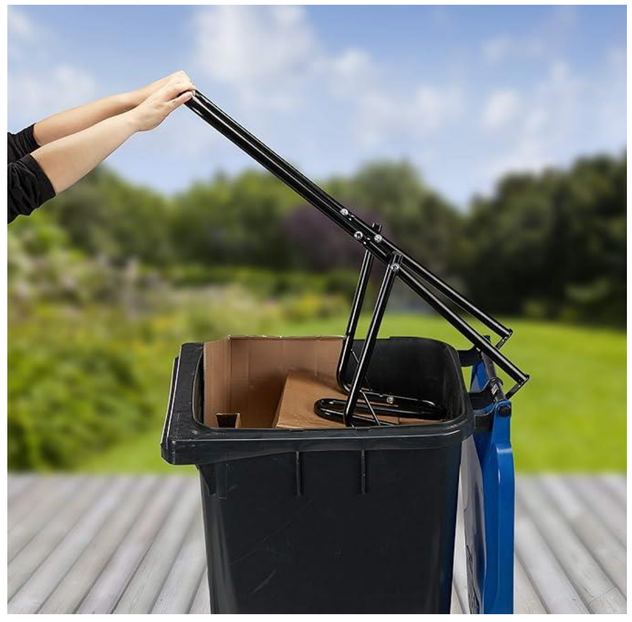

Photo of: Bin Compactor Available From Amazon

Material

This product needs to be as light weight as possible and must have a high level of corrosion resistance. To achieve this, extensive research was carried out using various software packages such as Granta Edupak and SolidWorks to run FEA. During these test it was proved that aluminum was the best material suited to meet these requirements.

Manufacture

There was 17 parts to be manufactured for this project which were all made from aluminum. All machining was done in the manual machine shop. It consisted of mainly mill work as there was not a lot of lathe work required as the project was designed around material available in the workshop to reduce machining time as much as possible.

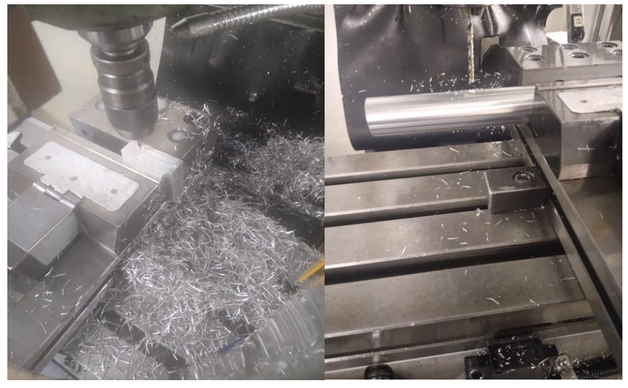

Photo of: Parts being machined.

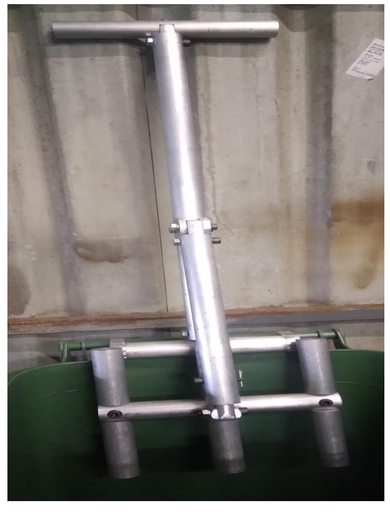

Photo of: Assembled Compactor..

Results

The project is still in its testing phase to try and get the most accurate figure for space saved by using a compactor. At present test have shown that soft plastics like bags and packaging are the easiest to compact gaining 300mm compared with cardboard and formed plastics only gaining 170mm.

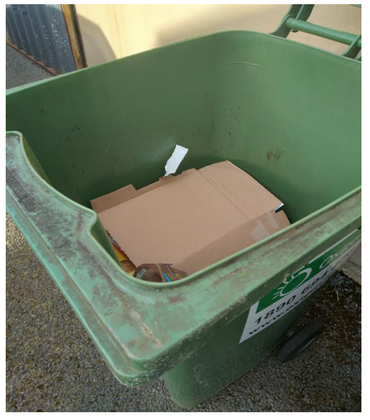

Photo of: Compressed bin.

Conclusion

The designed compactor comes in a 9.8kg which met the weight requirement. The testing proves that the manufactured compactor is capable of compacting recyclable good without causing any deformation.

Acknowledgements

I would like to acknowledge Niall Hogan for his speedy procurement of material and my supervisor Neil Conway.