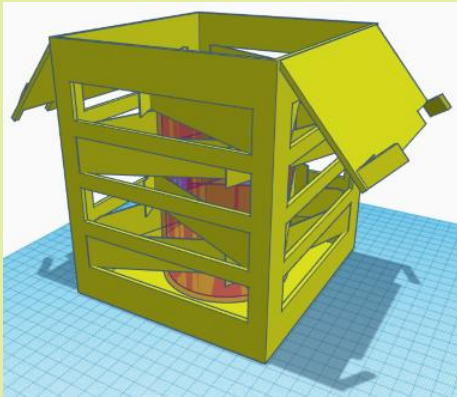


ITERATE

Sharing



In developing an alternate void filler, we were inspired by the Hoberman Ball. We experimented with air filled bags, origami muri-ori fold as possible void fillers.



Our 3D prototype drawing using TinkerCad



Building our 4th prototype



On March 1st, 2022, we were interviewed by *FIRST* Robotics Canada on it's weekly *FIRST* Canada Live Twitch livestream. On the Show we shared our Z-Box innovation and our passion for STEM robotics enthusiasts around the world.



On February 2, 2022, the Canadian Corrugated and Containerboard Industry Association posted our Z-Box presentation for the world to see on their YouTube channel. Shortly after that, on February 8th, the Board of Directors of the CCCA watched our presentation at their quarterly board meeting. The board members were impressed with our Z-Box innovation.

Improvements



We created 5 versions of our prototype to perfect the interlocking arms. We went from an initial prototype with 4 arms to our final prototype with 16. Each arm has multiple notches to tailor the Z-Box to the shape and size of the product. After the Z-Box has been used, it can be fully recycled without the inconvenient need to separate the components into different waste streams since it is completely made of containerboard.



CTRL-Z
TEAM 5091

Visit our:

- website at: <https://ctrlzfl.com>
- product description: <https://youtu.be/tB0x6xoMd64>
- presentation at: <https://youtu.be/EyPuPzLrRrk>



PROBLEM IDENTIFICATION

Currently used packaging void fillers, like bubble wrap, are less ecofriendly as they are made of plastics. Only 9% of discarded plastics get recycled and the remainder end up as pollution. We are not owners of this world; we are merely its stewards for future generations. We need to make sure that our packaging does not harm the planet.

Sources of Information

We have consulted with experts and referred to any articles and websites

Experts

All our experts, leaders in their field, strongly endorsed the Z-Box

James Downham, CEO of PAC Global, A Toronto-based global packaging association found the Z-Box to be unique and recommended the use of thinner material and create different sized Z-Boxes to accommodate different-sized products. He also thought the Z-Box will improve the unboxing experience for the customer.

Allen Kirkpatrick, Executive Director of the Canadian Corrugated and Containerboard Industry Association, taught us that 89% of corrugated boxes are recycled back into more corrugated boxes, and was impressed with our design.

Robert Suga, Director of Quality and Continuous Improvement at Atlantic Packaging, one of Canada's largest containerboard manufacturers, said that the Z-Box is a very good concept and that shippers would appreciate its cost-efficiency.

Selected References

- Paper Packager Ranpak Packs a Punch-and So Could Its Stock, Al Root, Barron's, Dec 23, 2021
- Recycling Isn't as Clear-Cut as You Might Think, Jo Craven McGinty, Wall Street Journal, Apr 23, 2021
- The Parcel Shipping Boom Continues, Katharina Buchholz, Statista, Sep 28, 2021
- Turn Your Shipping Box into A Competitive Advantage, Brent Hughes, Forbes, Jan 11, 2021
- The Packaging Mistakes Companies Make-and Why They Make Them, Kate Murphey, Wall Street Journal, Nov 23, 2021
- Cardboard Boxes Have Never Been in More Demand-or More Expensive, Ryan Dezember, Wall Street Journal, Mar 31, 2021
- Dive-21% of Online Oversized Packages Arrive Damaged, Dan Alaimo, Retail Dive, Aug 27, 2018
- Don't Give Them A Break-Avoiding Parcel Shipping, Amware Fulfilment, Amware, Nov 30, 2020
- When Your Packaging Fails The Cost of Shipping Damage, Rocket Industrial, Rocket Industrial, Feb 20, 2020
- UPS-Peak Demand Projected to Exceed Capacity by 5M Packages Daily, Max Garland, Supply Chain Dive, Jul 27, 2021
- Items labelled as "fragile" not covered by Canada Post if damaged, Courtney Greenberg, CTV News Toronto, Feb 23, 2017

Existing Solutions



Our patent search revealed that the Z-Box is superior to existing void fillers.

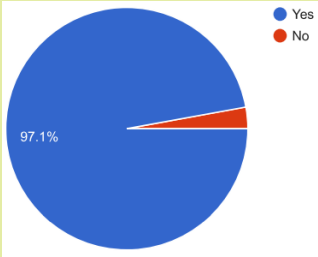
INNOVATIVE SOLUTION Ctrl-Z's Solution

The Z-Box is an integrated containerboard box liner that protects products of various sizes and shapes for shipping, while serving as an environmentally friendly alternative to traditional polystyrene and resin void fillers. The inner carton has adjustable interlocking pre-cut arms, to safely encase the product during transport.

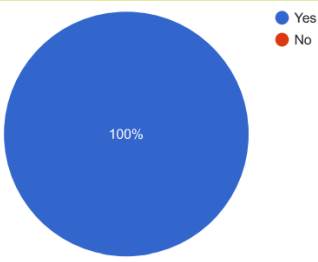
Survey Results

We surveyed adult consumers and 97% were concerned that most protective packaging is ending up as landfill. 100% of respondents would prefer to receive fully sustainable packaging.

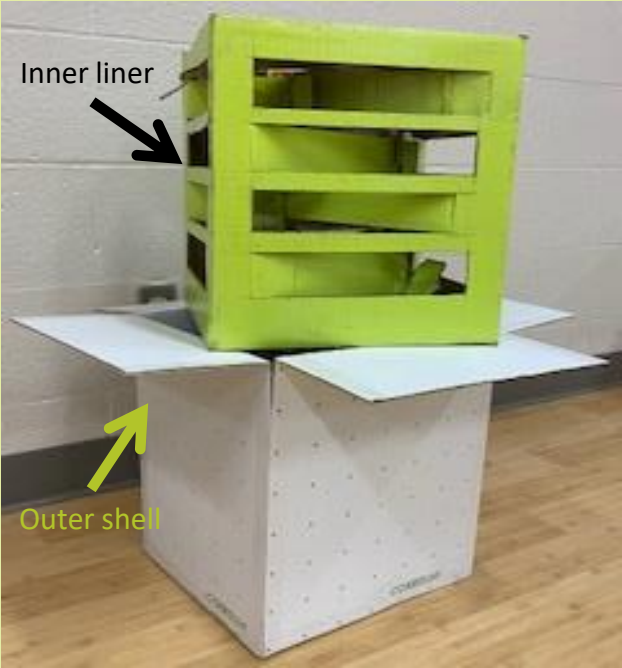
Does it concern you that most protective packaging, like bubble wrap, is petroleum-based and ends up in landfill?



Would you prefer to receive products shipped in 100% sustainable packaging that can be fully recycled?



How the Z-Box Works



The item is placed securely in the Z-Box, then the locking arms of the inner container are secured to prevent any shifting within the box. The Z-Box is superior to current void fillers because it is easy to use, effective, and petroleum-free.

Profitability Projection

Z-Box 8 Year Financial Projection				
Number of parcels shipped annually in Canada	1,470,000,000			
Percentage of parcels using the Z-Box	1%			
Number of parcels shipped using the Z-Box	14,700,000			
Percentage take up		2.0%	4.0%	7.0%
Ctrl-Z selling price for Z-Box	\$0.90			
Number of units sold	294,000	588,000	1,029,000	1,470,000
Sales commission rate	0%			
Manufacturing equipment costs	\$14,000			
Equipment costs per unit	\$0.00095			
Revenue		Year 1	Year 2	Year 3
		\$264,600	\$539,200	\$916,500
Per unit costs				
Variable cost % of selling price	90%			
Variable cost	\$0.45			
Equipment cost	\$0.00095	\$0.45		
Manufacturing costs		132,300	265,360	464,030
Manufacturing profit		132,300	273,840	452,470
Fixed costs				
Advertising	400,000	200,000	100,000	100,000
Insurance	50,000	50,000	50,000	50,000
Rent	15,000	15,000	15,000	15,000
General and admin	10,000	10,000	10,000	10,000
Pretax profit	(343,900)	(10,960)	187,070	485,580
Income taxes	(68,780)	(2,192)	37,414	97,120
Net income	(\$275,120)	(\$8,768)	\$149,656	\$388,460
Required rate of return on Z-Box	15.00%			
Present value		\$ 839,309	(\$29,507)	(\$613)

Ctrl-Z received guidance from Atlantic Packaging Inc., concerning materials and technology to be used in the commercial version of the Z-Box. Ctrl-Z estimated the cost to produce the Z-Box, market demand volume and selling price per unit in developing base case financial projections for the Z-Box which provide strong indication that Z-Box can be a viable and profitable business.