RC Snow Blower

Mark Hager Jr., Tristen Horton

Dr. Lucas Craig — Mech 477 Capstone Project

SPECIAL THANKS

Toby Lancto for donating the snowblower!

Introduction

This Capstone Project aims to take an existing snowblower and provide remote-control motion (forward and reverse). This will involve...

Design Criteria

Engaging System

- Low cost: ~$100
- Simplicity
- High Effectiveness – 0.17

Motion System

- Low cost: ~$120
- High Effectiveness – 0.15
- Long-term sustainability
- Programable to increase or decrease gears

Capstone Objectives

- Design an electro-mechanical system for engaging the motion
- Design an electro-mechanical system to forward and reverse
- Create a remote-control system using Arduino for forward and reverse motion
- Create a design report and poster presentation.

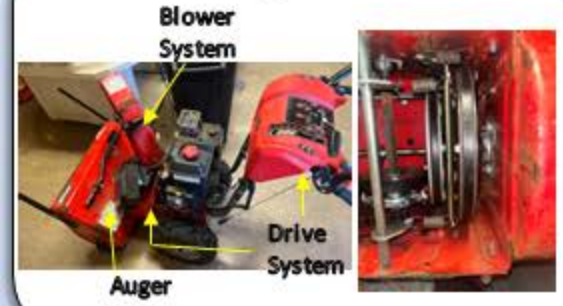
Research

MAX Remote controlled Snow Blower (MAX, 2021)

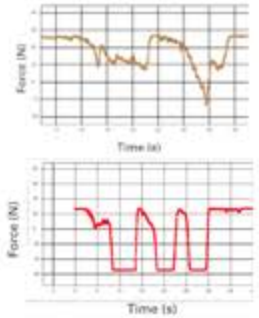
Snowbot (Snowbot, 2021)

Both existing models are not remote-controlled, but they are fully autonomous. Some future work for our project would be to make our blower independent like these.

Background

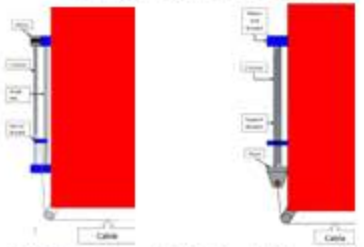


Initial Testing



Preliminary Designs

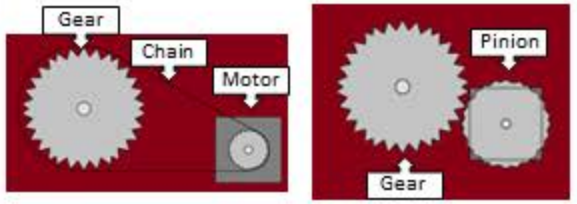
Engaging System



Weighted Objectives Table

Drive control		#1		#2
Comparison Criteria	Weight	Score	Weight	Score	Weight
Cost	8	2	16	2	16
Difficulty	5	3	15	2	10
Sustainability	10	2	20	4	40
Effectiveness	10	5	50	5	50
Total:	33	Total:	101	Total:	116

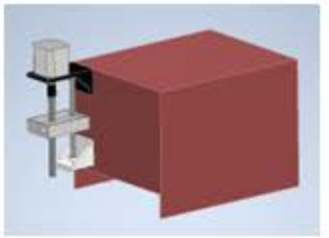
Motion System



Weighted Objectives Table

Motion System		#1		#2
Comparison Criteria	Weight	Score	Weight	Score	Weight
Cost	8	2	16	3	24
Difficulty	5	3	15	1	5
Sustainability	10	5	50	3	30
Effectiveness	10	5	50	4	40
Total	33	Total	131	Total	99

Final Designs / Results



<More models to come>

Experimental Testing

<More photos to come>

Contributions

Name	Work	Tasking
Contributions	Developed two concepts for Turning System, MA 22	Created concepts for turning system
	Design Report	Created code for motor
	Created .PPTX for including formatting, adding information and graphics, MA22	Helped with PDR
	Assisted with problem solving and design for engage/disengage system	Created and worked on Engage/Disengage system
	Assisted with problem solving and design for forward/reverse system	Designed Forward/Reverse System
	Poster	Assembled/Designed all physical parts
	Applied up for Scholastic Activities	
	Investor Models	

Complications

- Initial design for the engage system failed
- Time constraints with a two-man team was limited