Tensegrity Medical Device – 33% Update

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Project Description

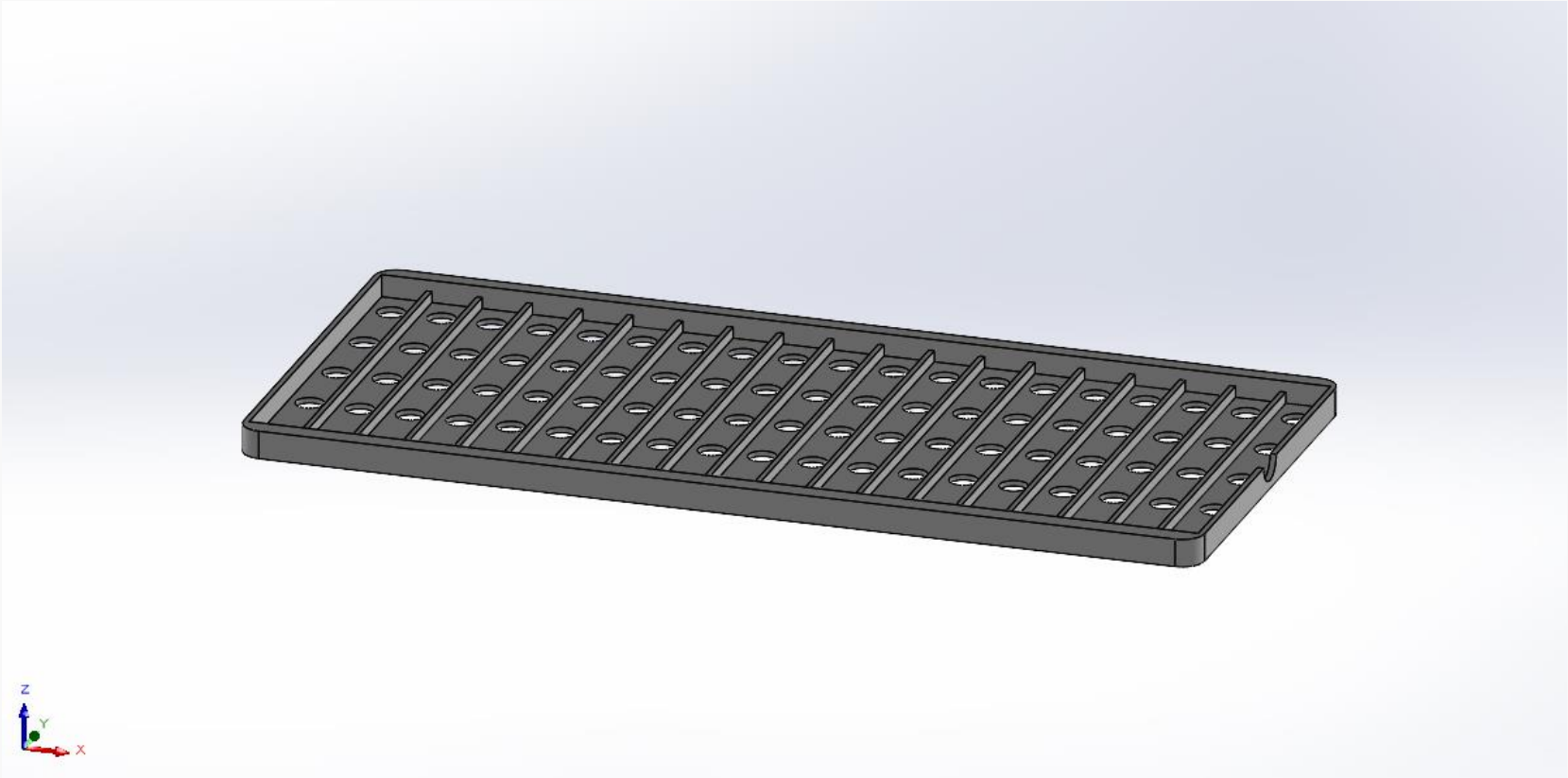
- Utilize photo biomodulation (PBM) technology
- Red LED lights, infrared sensors, & rechargeable battery
- Design a cutting-edge tool that monitors blood flow & oxygen circulation
- Offers a non-invasive solution for cardiovascular health monitoring

- Enhances cellular function, promotes tissue repair, and reduces inflammation
- Applicable to medical institutions, rehab centers, military, and sports teams
- Partnering with EE & CS Capstone to enhance teamwork skills
- Jesslynn Armstrong, President, Light Matter Solutions, LLC

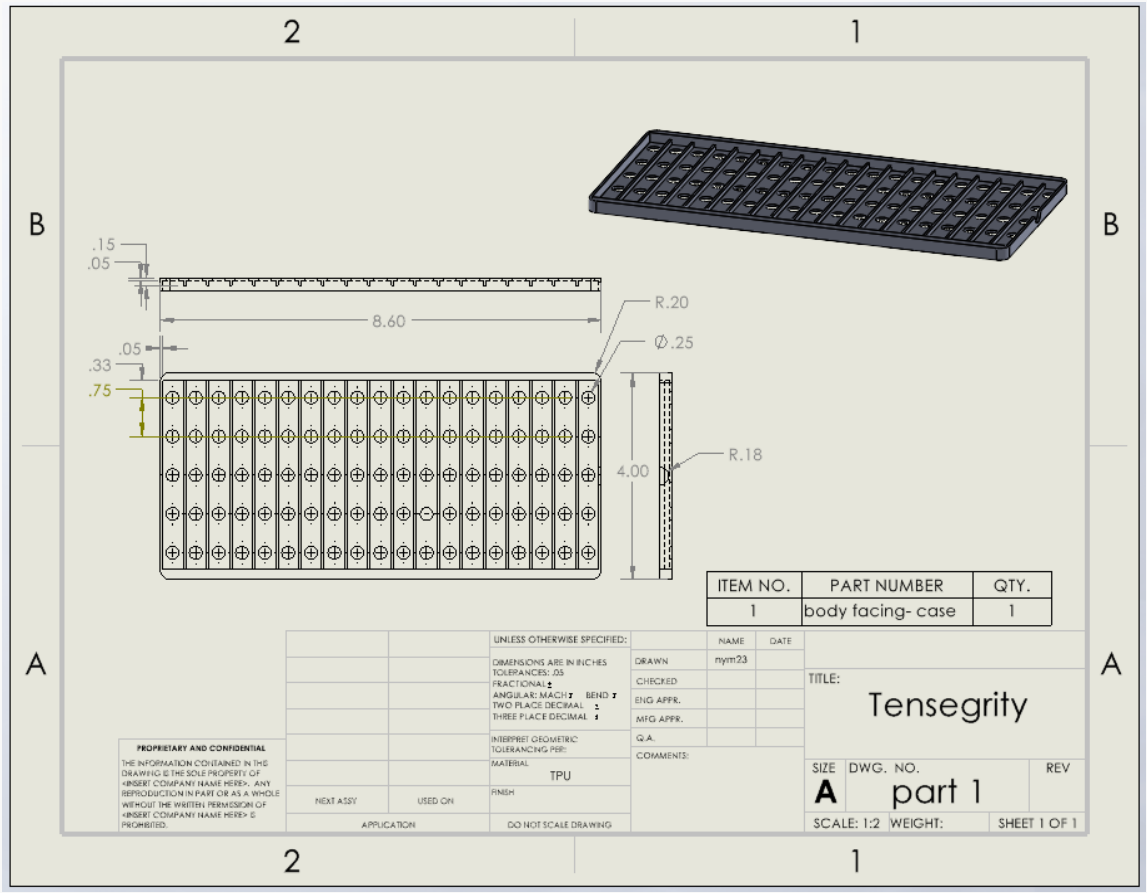
Overview

- Have a top encasing designed and printed
- Used PCBs we found online and soldered them in parallel along with our LEDs and resistors
- Using an UNO board currently to control the LEDs

Case Design – CAD Part



Case Design – CAD Drawing



Purchasing Plan

#	Part Name	Quantity Needed	Purchase Quantity	Quantity Arrived	Price	Total Unit Price	Ordered (Y/N)	Notes
1	Multiplexer Switch ICs	10	10	10	$1.39	$9.15	Y	
2	Resistors (1500 pcs)	1	1	1	$7.99	$7.99	Y	
3	SMD Capacitors (720 pcs)	1	1	1	$7.99	$7.99	Y	
4	Red LEDs	16	16	16	$0.44	$7.04	Y	
5	Infrared LED	32	32	32	$6.67	$66.70	Y	
6	PPG Sensor	1	1	1	$15.90	$15.90	Y	
7	HUZZAH32 - ESP32 Feather Board	2	2	2	$24.50	$49.00	Y	
8	Custom PCB	TBD	NA	NA	Need quote	Need quote	N	Currently finalizing the design and developing our custom PCBs
9	Lithium Ion Polymer Battery	1	1	0	$9.99	$9.99	N	Reached out to our selected battery supplier
10	Flexible Lithium Polymer Battery	1	1	0	Need quote	Need quote	N	" ___ "
11	TPU 95A HF	1	1	1	$41.99	$41.99	Y	
		Percent Purchased	75.90730012	%	Total Spent	$215.75		
		Budget Spent	43.15	%	Total Budget	$500.00		

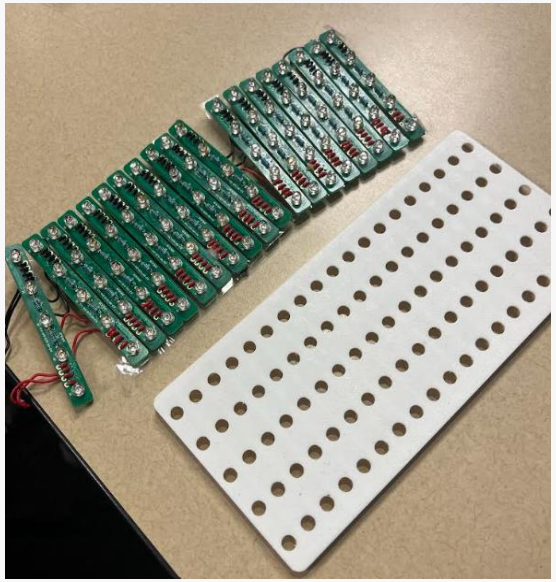
Manufacturing Plan

- ME portion – 48%
- Entire capstone – 58%

Part	Time [hours[	Manufacturing Method	Quantity	Progress %
Custom PCB	2	Ordered- Third party provider	19	60% (Design) 20% (Manufactured)
Wiring Components	2 (EE team)	Soldering Kit	38	100%
LED Components	3	Manufactured w/ PCB	95	95%
Casing - inner	~ 15	3D Printed	1	100%
Casing - outer	-	3D Printed	1	0%
Adhesive	-	Ordered- Third party provider	1	0%

- some design revisions are in order especially for casing component.
- finalize the material selection for the casing component
- Implementing an in-circuit system configured in series instead of parallel
- enabling Bluetooth integration with the designated app for the device
- Finalize material selection for Adhesive

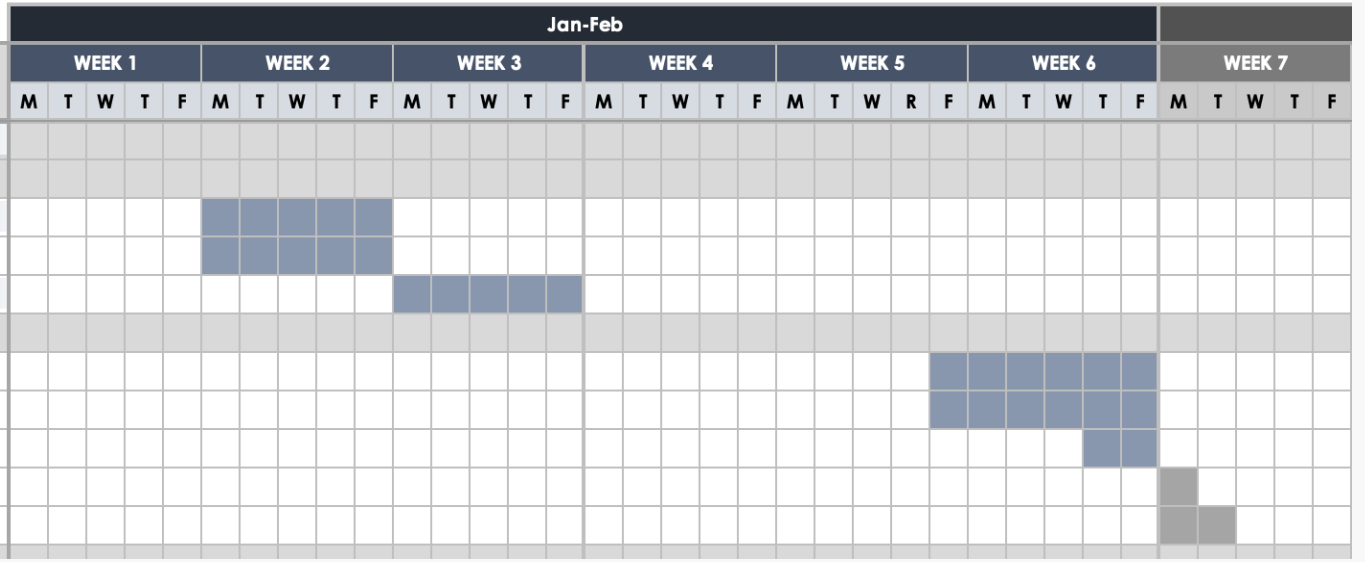
Demonstration



Gantt Chart

PROJECT TITLE	Tensegrity Medical
PROJECT MANAGER	Norma
DATE	Tuesday, February 4, 2025

TASK ID	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION IN DAYS	PCT OF TASK COMPLETE
1	Kickoff Meetings					100%
2	Hardware Status Update (33%)					
2.1	Meet with EE	ME & EE	01/20/25	01/24/25	5	100%
2.2	Order 1/2 of materials	ME Team	01/20/25	01/24/25	5	50%
2.3	Review Circuit Wiring Plan	ME & EE	01/27/25	01/31/25	5	100%
3	Hardware Status Update (67%)					
3.1	Order remaining materials	All	02/14/25	02/21/25	7	0%
3.2	Begin wiring circuit	ME & EE	02/14/25	02/17/25	3	0%
3.3	3-D Print Other half of casing	Norma	02/13/25	02/22/25	9	0%
3.4	Finish wiring	ME & EE	02/18/25	02/23/25	5	0%
3.5	On/off	ME & EE	02/18/25	02/23/25	6	0%



Thank You, Questions?