



EE

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## INTRODUCTION

Our Portable Smart Home is Perfect for Extreme Climates. Energy-Efficient, Durable, and Equipped with Modern Technology to Enhance Your Remote Living Experience.

## PROBLEM STATEMENT

Extreme temperature fluctuations in arid regions challenge workers' productivity and well-being. Current housing options fall short, leading to discomfort and inefficiency.

## CONSTRAINTS

- Minimum area of 23 Meters Squared.
- Solar panels to generate at least 1000Wh.
- Electricity supply for up to 8 hours.
- Max weight of 3.5 Tons.
- Expandability by at least 65% of the total area.
- Installation time max of 45 minutes.

## TARGET SPECIFICATIONS

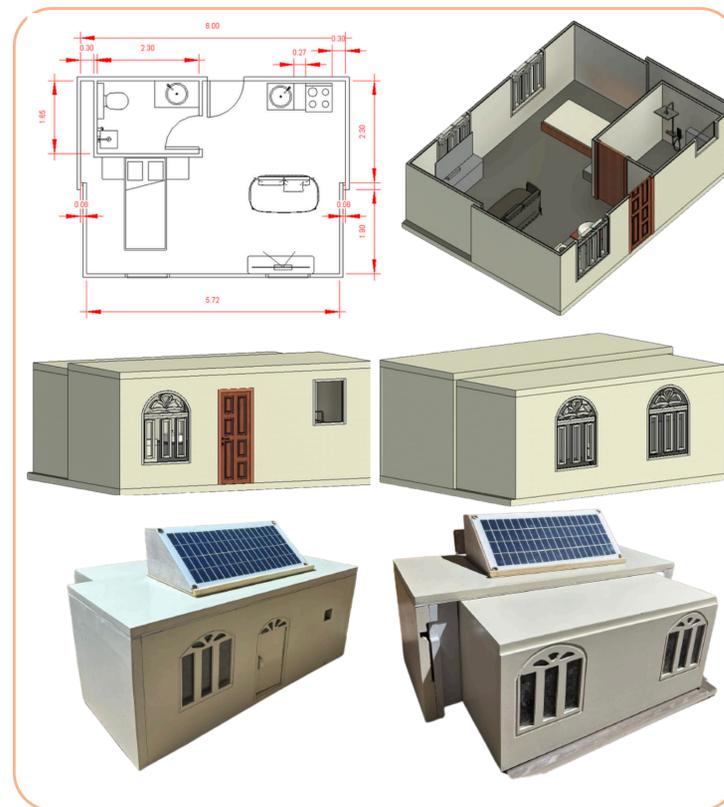
- Area of 23 square meters
- Solar panels capacity of 1000Wh
- Electricity availability of 8 hours
- Maximum weight of 3.5 tons
- Expandability of 65%
- Installation time of 45 minutes

## PROJECT IMPACT

- Improve living conditions in extreme climates.
- Enhance energy efficiency and sustainability.
- Increase durability and comfort.
- Incorporate modern features and functionality.
- Allow for future expansion and adaptability.

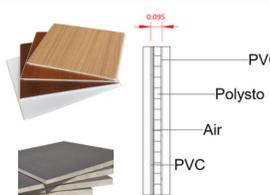
## FLOOR PLAN & 3D

Explore the floor plan and 3D views of our Smart and Sustainable Portable House designed for extreme climates. The layout optimizes a 23-meter square area for comfort and practicality. Experience the future of remote living with detailed 3D visuals that highlight the modern features and smart space utilization of our innovative home system.



## WALL SECTION

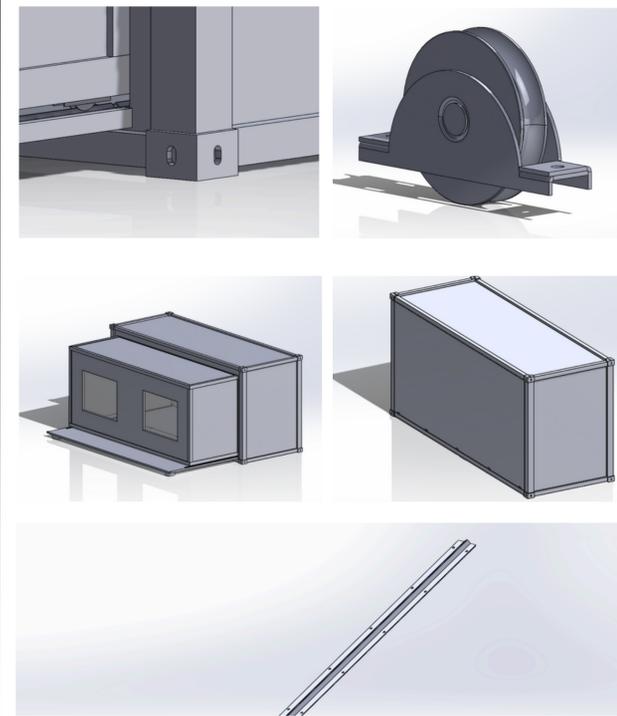
- Cold-formed steel structure
- PVC panel - 10mm
- Polyisocyanurate Insulation-75mm
- Air gap - 10mm
- PVC panel - 10mm



Elements	Our choice	R-Value(m2-K-W-1)	Previous	R-Value(m2-K-W-1)
Finishing	PVC panel	0.0003	Steel sheet	0.0002
Structure	Cold-formed steel	0.02	Galvanized steel	0.02
Thermal Insulation	Polyisocyanurate	2.75	Polystyrene foam	1.25
Gap	air	0.4	No air	0
Total		3.17		1.27

## EXPANDED SYSTEM

The project incorporates a railway and hidden groove wheel system for versatile and efficient movement of components within the smart home. It allows for easy adjustment and customization of interior elements, enhancing functionality and space utilization.



## MOTOR SPECIFICATION



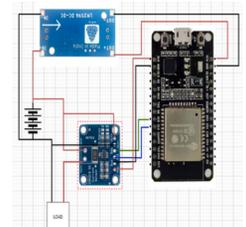
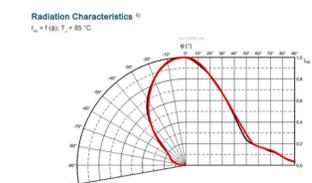
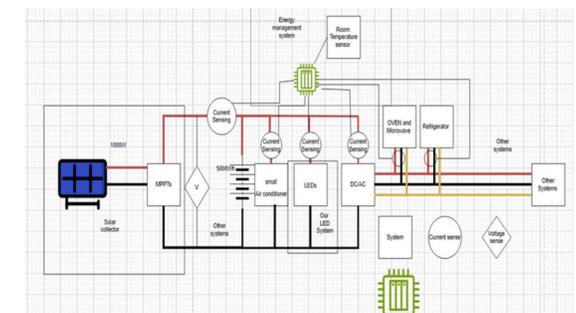
LINE SPEED (ft/min)	LINE PULL (lb)
13.3 (4.1)	8.3 (3.8)
6.7 (2.1)	16.6 (7.5)
4.5 (1.4)	25.0 (11.3)
3.3 (1.0)	33.3 (15.1)
2.7 (0.8)	41.7 (18.9)
2.2 (0.7)	50.0 (22.7)
1.8 (0.6)	66.7 (30.3)
1.5 (0.5)	83.3 (37.8)
1.2 (0.4)	100.0 (45.4)
1.0 (0.3)	133.3 (60.5)
0.8 (0.2)	166.7 (75.6)
0.7 (0.2)	200.0 (90.7)

d(mm)	nf			
	m=1	m=2	m=3	m=4
2	1.444193	2.887975	4.331345	5.774304
4	2.7064	5.409716	8.109954	10.80712
6	3.60515	7.201073	10.7878	14.36538
8	3.96001	7.902036	11.8262	15.73262
10	3.592085	7.158746	10.70025	14.21687
12	2.324526	4.625433	6.903081	9.157819

## ELECTRICAL SYSTEM

This system includes two 12V 200Ah LiPO4 batteries, an 80A solar charge regulator, and high-efficiency solar panels. Efficient LED lighting, a DC air conditioner, and a 3kW inverter ensure comfortable, sustainable living.

## PERFORMANCE



## Annual Degradation Rates

