



# Quick-Construct Housing for Refugees and the Impoverished

TEAM 99

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## Introduction

The global refugee crisis is a pressing issue affecting millions of displaced individuals, highlighting the need for rapid deployment, sustainable, and humane solutions to improve their quality of life and alleviate their hardships.

## Constraints

1. Assembly team is composed of a maximum of 4 members
2. Package size: can fit 5 packages in a standard shipping container 40 ft. or equivalent
3. Assume that the water source's quality is not drinkable and the contaminants are coliform and heavy metals
4. Materials used should be eco-friendly, safe, and sustainable.
5. Follows United Nations standards for refugee housing.

## Specifications

1. Assembly time <20 minutes
2. Space  $\geq 17 \text{ m}^2$ , with a minimum of 1 separated privacy room
3. Power system capable of delivering 400W for 24 h
4. Capable of withstanding a wind speed of 10 m/s
5. Potable water production rate of 1 L/hr

## Project Impact

### Economic Impact:

- Addresses urgent housing needs among refugee populations.
- Provides a direct solution for replication and scaling, offering commercial opportunities

### Societal Impact:

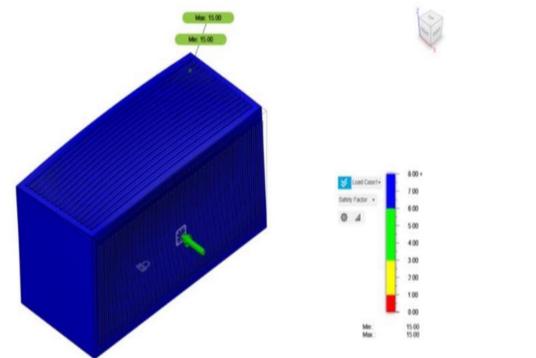
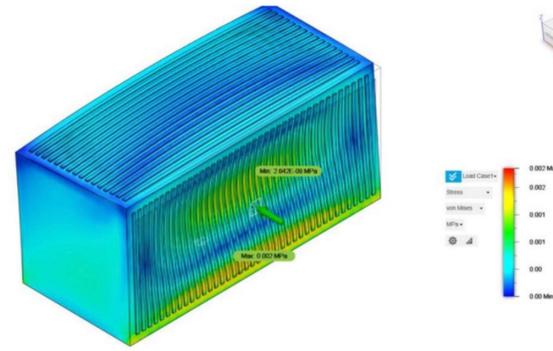
- Improves living conditions, fostering stronger, more cohesive refugee communities.
- Enhances health and safety in refugee camps.

### Environmental Impact:

- Aligns with global efforts to reduce carbon emissions by utilizing renewable energy sources.
- Promotes the use of renewable resources over non-renewable ones, contributing to more sustainable energy consumption patterns.

## Testing & Validating

- Stress Analysis on forces of 10m/s wind.



## Prototype Designing



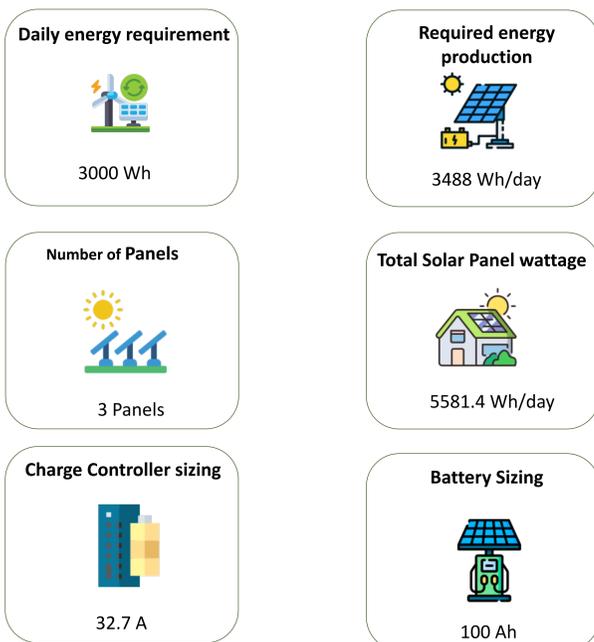
## Conclusion

The project prioritizes refugees' rights, public health, safety, welfare, environmental sustainability, and cost-efficiency. The shelters are designed to be sanitary, safe, and affordable, with easy-to-clean materials and ventilation. They are built with fire-resistant materials and circuit breakers, ensuring structural integrity. The modular design allows for customization to various global settings and cultural practices. The shelters are also designed to minimize their ecological footprint, using renewable energy sources and recyclable materials. Cost efficiency is also a priority, with locally sourced materials and simplified designs minimizing production and transportation costs.

## Acknowledgement

This work was supervised by TEAM Design Coach Dr. Ismail Al-Maraj

## Solar System Parameters



## Solar System Prototype Designing

