

The Setty Family Foundation 2018 Applied Engineering Challenge



Abstract

The Setty Family Applied Engineering Challenge tasked my project group with designing a temporary shelter specifically for refugees in Eastern Europe to be used by governments, municipalities, and humanitarian agencies that is cost effective, portable, sustainable, and provides all necessary domestic needs. After months of research and design, we have developed the Poly Shelter; an eight-person structure erected to provide comfortability and safety to those in need. Poly Shelter is designed to withstand the harshest of climates, provide exceptional insulation, and incorporate a rainwater collection system sufficient enough to support each unit. Poly Shelter proves itself to be an economically viable solution to the perpetual worldwide refugee crisis. Its innovative walls, comfortable interior climate, and water management systems will improve countless refugee's quality of life throughout the world. Designed to weather the worst climates in Eastern Europe, it could prove as the next breakthrough in solving the current massive refugee crisis.

Keystone Words: Refugee Shelter, Mechanical, Sustainability, Design, Application

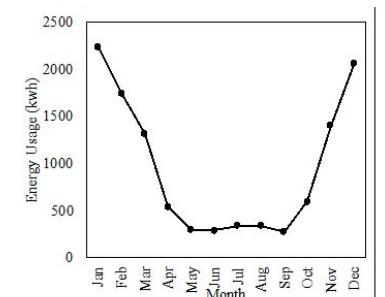
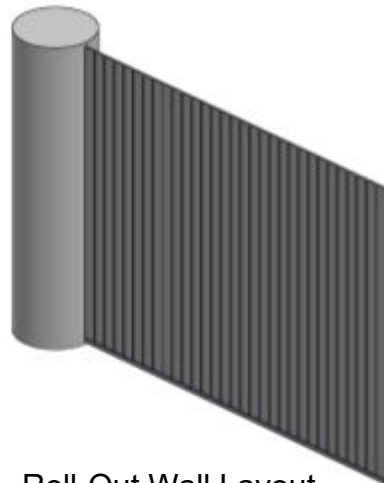
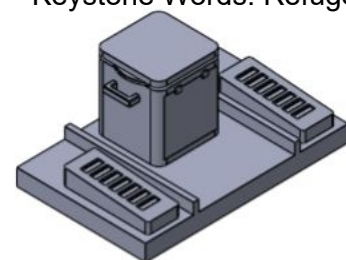
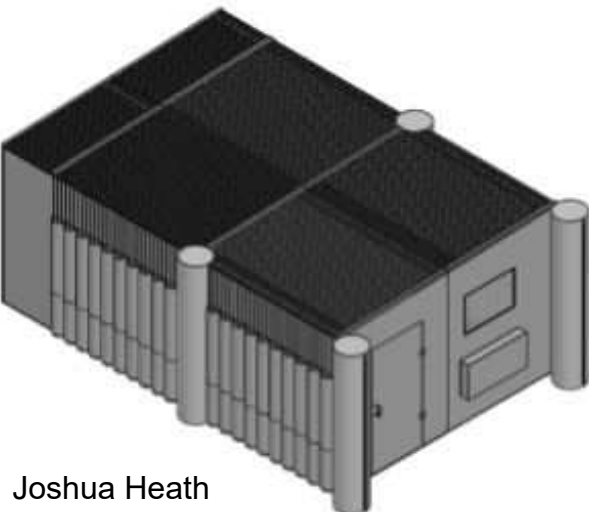


Figure 21. PTAC energy usage per month with peaks during the colder winter months, created using TRACE 700.



Roll-Out Wall Layout

Poly Shelter's Exterior Layout

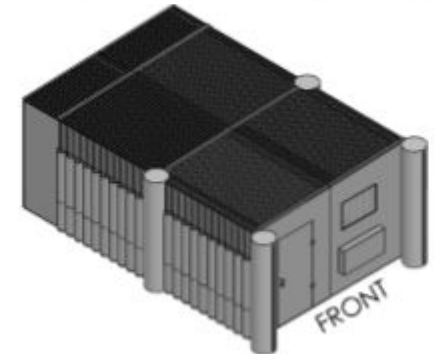


Poly Shelter's Toilet

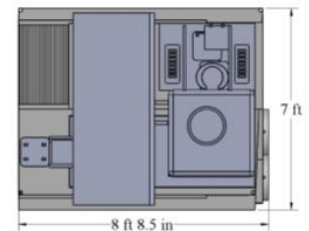
	Poly Shelter	Tent
First Cost	\$4,318.17	\$600.00
Life Span (Years)	10	1
Annual Cost	\$514.12	\$618.90
Payback Period (Years)	8.41	0.97
Net	-\$104.78	



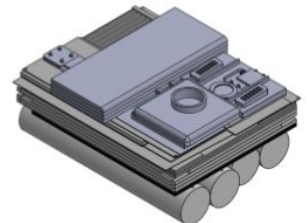
Poly Shelter's Toilet in Portable Setting



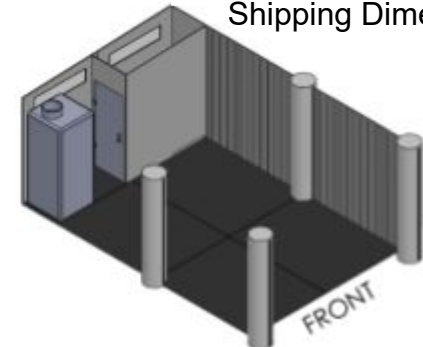
Isometric View of Poly Shelter



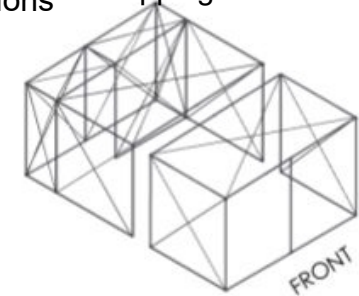
Packaged Shelter Shipping Dimensions



Packaged Shelter in Shipping State



Interior of Poly Shelter



Structural Support Members