Team: SunCatch

Project: Mobile Solar-Thermal system with PCM heat storage

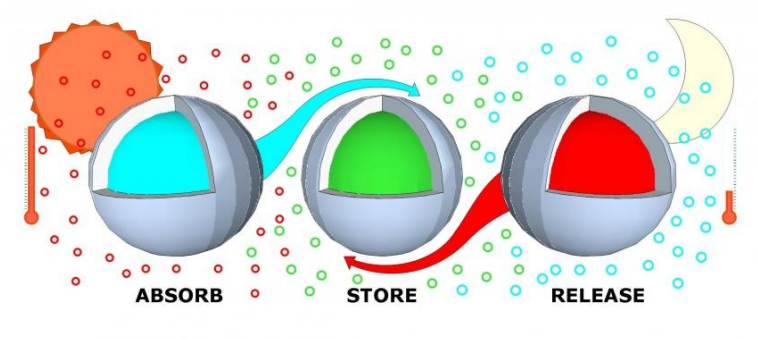
TECHNICAL ASSISTANCE REQUEST

Our team is aimed to create an efficient, low-maintenance, and cost-effective mobile system to generate heat from a renewable energy source. We have built a stationary prototype of the concentrating solar-thermal module with a number of in-house innovations applied. By testing this prototype, we identified the shortcomings that require changes and improvements.

To make our technology mobile and reliable, we need to overcome several challenges. In this regard, we will seek help in the following areas:

1. To make thermal energy storage suitable for mobile systems, we need to reduce the size of the tank yet keeping its thermal capacity at the same level. Our research study shows that phase-change materials like some of the salt hydrates would have a good fit for this purpose and could allow us to reduce the size of the heat storage tank up to 10 times. Six salt hydrates with a different melting temperature were chosen to be tested: $CaCl_2$*$6H_2O$, Na_2SO_4*$10H_2O$, $Na_2S_2O_3$*$5H_2O$, CH_3COONa*$3H_2O$, NaHSO4 • H2O, and Na_3PO_4.$12H_2O$.

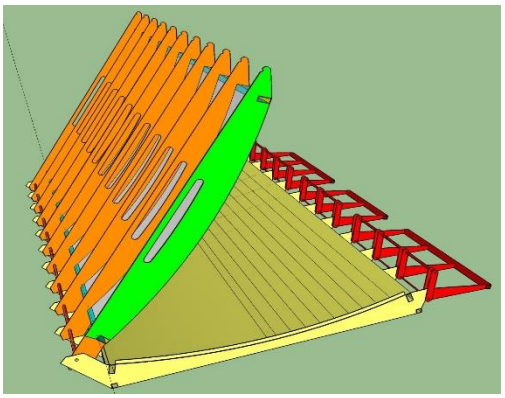
Due to their low cost and non-toxicity, using this type of PCM would be consistent with our idea of creating an inexpensive, efficient, and environmentally friendly mobile solution. To achieve the most accurate results from testing these materials and to advance by trying various mixtures of the PCM and agents, access to the chemical laboratory will be needed. A consulting from chemists who have previously studied salt hydrates as a PCM for low-temperature (below 200 C) thermal energy storage would be invaluable.

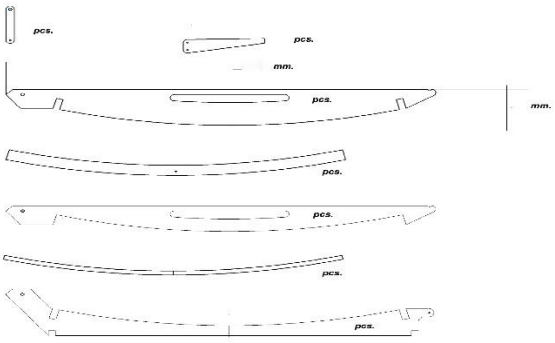


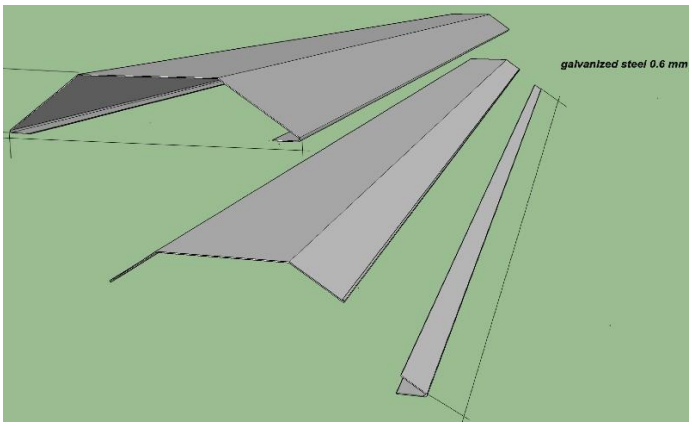
2. Each module of the proposed mobile system will be 32' long. To fabricate a pilot model and especially to manufacture the commercial version of this technology, we will need to find a specialized facility or workshop big enough and equipped with the required machinery and equipment. We partner with Community College of Denver, and they agreed to help us with plasma cutting, welding, and bending the metal to fabricate some details for the pilot

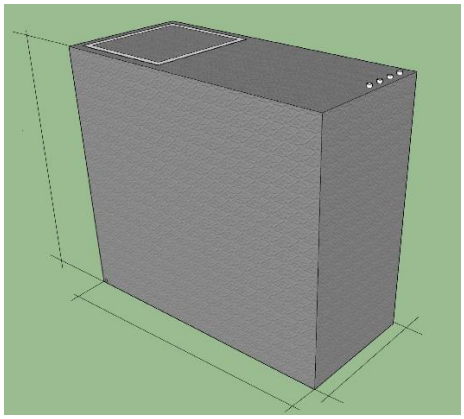
system. But this resource is limited, and we will need manufacturing support or manufacturing partner later on.

3. When we reach the stage when the pilot system is successfully tested, cost modeling analysis and complete market research will be required to proceed to commercialization. We will need help to obtain this information to define the product strategy and pricing.









To offer assistance, please reach out to:

Olga Marinkina – Project manager, President

info@sun-catch.com/ (541)350-2756/https://www.linkedin.com/in/olga-marinkina/

SunCatch Ltd