The development and advancement of the solar energy industry is heavily constrained by fundamental limitations of photovoltaic (PV) technology, despite the growing demand for clean, renewable energy. Commercial panel efficiency remains low at about 21% and peak solar production time does not match peak demand time. Traditional batteries consume PV output to charge each day. Icarus' technology aims to overcome these limitations by increasing PV power generation and providing thermal energy storage. Icarus technology extracts heat and cools PV panels, collects and stores the heat, thus effectively converting PV arrays into hybrid PV/Thermal storage and generation systems.

We are currently working with Jacobs School of Engineering at University of California, San Diego (UCSD), and the Combustion and Solar Lab at the College of Engineering at San Diego State University (SDSU) to optimize designs for the energy storage system (Figure TA.1) and the snap-on heat exchanger (Figure TA.2). We have modeled these components in SolidWorks to analyze the components and optimize the designs using ANSYS.

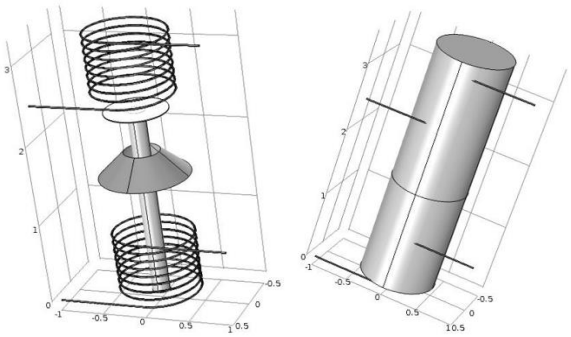

Figure TA.1 – Thermal storage tank design

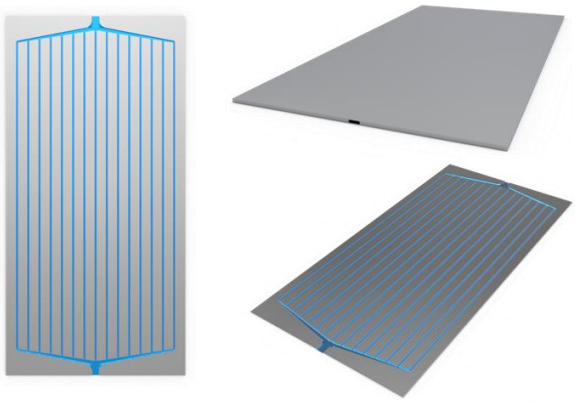

Figure TA.2 – Solar panel heat exchanger design

Icarus has already built and is testing a full-scale alpha prototype at the Englekirk Structural Engineering Facility of Jacobs School of Engineering at University of California, San Diego (UCSD). We have confirmed the feasibility and usefulness of this heat extraction and cooling technology through a proof of concept (see Figure TA.3). We are now developing the heat exchanger and storage system.

The prototype includes a robust monitoring system with a weather station that measures and reports parameters such as panel temperature, fluid temperature and fluid pressure. The prototype was designed and built with help from the Jacobs School of Engineering at UCSD.

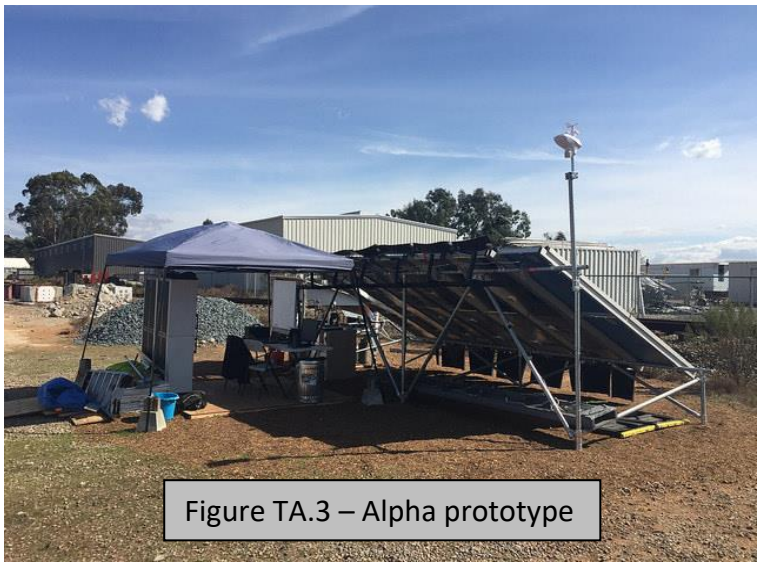

Figure TA.3 – Alpha prototype

Precisely controlling flow of fluids or controlling the location in the system where phase change occurs, has been challenging. This is important because once gasified, the fluid loses substantial ability to transfer heat. The current control system effectively monitors the system's

state but lacks ability to adequately control the fluid flow (See Figure TA.4) which is critical to optimize the heat transfer rate. We are currently working to optimize the control system and seek technical guidance to maximize system performance.

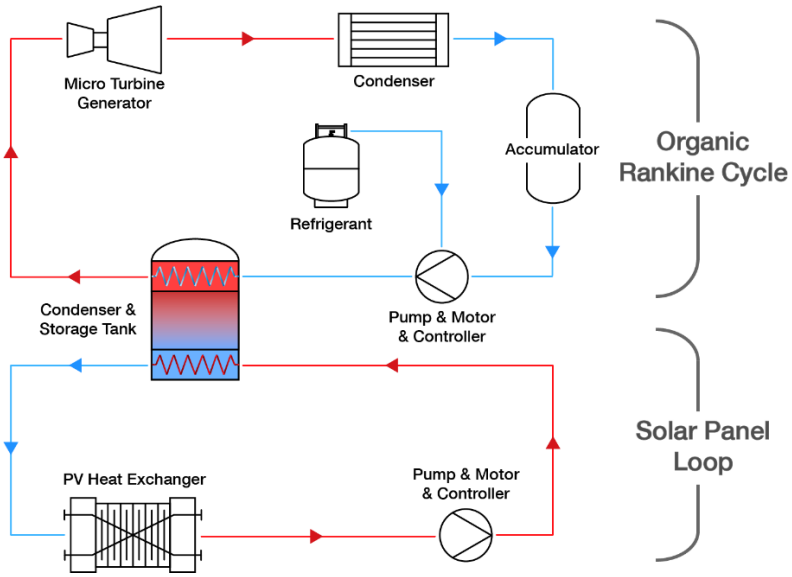

Figure TA.4 Simplified schematic plan of the system.

Technical assistance and guidance from the National Renewable Energy Lab (NREL) and the American-Made Network is requested. We seek mentorship, coaching, fabrication, prototyping, testing and validation expertise for the final designs of the Icarus system and its components.

Specifically, we seek guidance at the NREL Thermal Storage Materials Laboratory and NREL Advanced Manufacturing Research. Through NREL, we hope to identify advanced materials and optimal sustainable solutions for fabrication of the Icarus Solar Panel Heat Extraction Heat Exchanger, the Thermal Storage System, and the Monitoring and Control System. We also solicit help to analyze cost, performance, and value of the entire Icarus system at various scales.

We received good application review support from Powerhouse venture fund and incubator and The Wilton E. Scott Institute for Energy Innovation at Carnegie Mellon University. We are discussing fabrication & prototyping, funding & investment, and mentorship & coaching assistance from both Powerhouse and The Wilton E. Scott Institute. Interphase Materials, Inc., an Icarus supplier that treats some of our components with nano-surface treatment to improve heat transfer is in Pittsburgh, PA, which may help fabrication transportation if any work is to be done at the Wilton E. Scott Institute.

Finally, to complete the necessary testing and validation prior to UL certification and commercial launch we will solicit additional assistance from the above connectors through the American Made Solar network to ensure these steps are approached correctly and completed properly.

Technical assistance in the areas above would allow full development of Icarus' technology.

We will continue to work with program connector Cleantech San Diego for business development, mentorship and coaching and other activities.