Technical Assistance Request, Suntraption, Inc. Phillip R Anich Applicant, suntraption@gmail.com, 715-209-7313, suntraption.com

With the goal of bringing this proposed device to market there are major categories of technical assistance needed. This product already has a draft design based on working prototypes.

Product design.

Solar Panel selection will dictate parameters of design based on size, shape and weight. The design will then need to be updated with possible changes in versions of slew drive and linear actuator. Before prototyping a final design, analysis must be made to ensure safe operation. The motion control limit switches and anemometer will loop back for device design. Grid or off-grid use will influence drive motor types of AC or DC. Power output considerations will also loop back to design. Where multiples of these stands are requested, consolidation into shipping containers must be investigated.

Motion Control

Integration of motion control hardware and software command code will require understanding of the necessary movements. Constant 15° rotation will be commanded at sunrise each day and will be stopped by a sunrise level-activated limit switch with a secondary redundant safety limit switch beyond all seasonal ranges. A negative rotation at faster speed will be commanded at some repeating time such as 10:00 PM. This negative rotation will be stopped by another set of limit switches, one level-activated and another redundant safety switch. The seasonal adjustments are made by a linear actuator with 94 pulses of 1° over the entire year. Because these affect sunrise and sunset positions, these 1° pulses will be commanded when the rotation is away from any sunrise or sunset position.

The daily-changing commands to begin rotation are time-based on local latitude and can be from a dbase table or from an equation. Need specialized technical assistance here! The linear actuations are based on timing of 1° changes in solar declination and range in frequency of once in two days to once in about 17 days. As mentioned, a key feature of this design is that linear actuation changes in declination ½ the year up and ½ the year down automatically change the sunrise and sunset positions. The 47° throw up then down causes the 47° change of sunrise (sunset) positions from 23.45° South of East (West) on the Winter Solstice (Northern Hemisphere) to 23.45° Noth of East (West) on the Summer Solstice.

Panel/Energy Components

Product support from Arch Solar will aid in panel selection and based on projected output and grid or non-grid integration, determine voltage, wiring (serial/parallel) charge control and batter storage. All will have influence in design. Will need both on and off-grid versions.

Anchoring

Permanent and non-permanent options must be addressed based on design analysis, soil types etc..Bolting into preexisting surfaces, cement blocks and poured sauna tubes, stakes and earth anchors, water weights, etc. are options.

Testing and Output Analysis

The Northeastern Wisconsin Technical College, Green Bay, Wisconsin, will host a one-year setup of, hopefully, two devices for testing and comparative analysis. The Midwest Renewable Energy Association has shown interest in understanding this technology. Efforts will be made to present at next year's Energy Fair. Desktop simulators will be made available for course instructors discussions on apparent sun movements.

Product Development, Sales and Distribution, Acquisition

Product development assistance is needed in all areas of branding, market analysis, marketing, networking, manufacturing, distribution, and support services. Besides some demonstrated mechanical interests and abilities, Solar Prize 7 applicant has 15 years of marketing experience for a regional performing arts venue and nationally distributed radio show. Skillset includes the ability to create all submission elements of this application. The applicant also has some trade-show experience, internet savvy and 38 years of professional on-stage experience. See attached broad job description. Some understanding of how to license or sell this technology is desired.

Badger Technologies will provide product development support through commercialization. They have decades of broad avionics, flight simulation, and energy storage experience. With many areas of operation, they are also currently testing with the UW Milwaukee, a SBIR Phase 2, Hybrid Energy Storage System for the US Air Force.