Technical Assistance Request: Sol Clarity

Sol Clarity
Dust settles, we don't.

American Made: Solar Prize Round 4
Contact: solclarityeds@gmail.com

The outline of technical assistance requests is given below, followed by more details. The "Need" is also laid out, which indicates the priority of that assistance request, and ranges from Low, which would be nice to have, to very high, which are critical to our progress.

1. *Technical Needs*
   a. *Office & Lab Incubation Space for Building Field Testing Units*
   b. *Field Locations in Arid Climates for testing EDS Integrated Solar Panels*
2. *Technology Subcomponents*
   c. *Solar Panel Assembly Manufacturer*
   d. *Electronics Manufacturing Services*
   e. *Electrode Printing and Production*

1. Technical Needs:

1a. Office & Lab Incubation Space for Building Field Testing Units

Physical space is necessary in order to construct the field-testing setups, along with basic laboratory space and tools, including: soldering station, power drill, saw capable of cutting metal structural L-struts, basic hand tools (wrench, screwdrivers, etc.). Will need approximately 100 square feet of floor space plus a benchtop.

Ask: Building/Lab/Incubation space to build field testing setups
Need: Very High (Critical)

1b. Field Locations in Arid Climates for testing EDS Integrated Solar Panels

We are looking for various locations to test the EDS in dry, arid environments. We already have collaborators in Chile, India, and the MENA region, and have a previous field trial done at Sandia National Labs NM. Additional testing sites will prove beneficial for a techno economic analysis. In particular, we are looking for testing sites in California, which is a big market for solar in the US.

Ask: Outdoor field testing site locations in arid climates, especially California
Need: Medium (Useful)

2. Technology Subcomponents

2a. Solar Panel Assembly Manufacturer

Integrating the EDS during the initial assembly of the solar panel is preferable for the environmental durability of the system. The EDS stack currently uses materials and processes already used in solar panel assembly in order to increase the ease of adopting the EDS technology. Our lamination collaborator provides us with the required equipment but they are not a commercial producer of solar panels, and we would prefer to work directly with a solar panel manufacturer.

Ask: Solar panel manufacturer to produce EDS integrated solar panels
Need: High (Important)

2b. Electronics Manufacturing Services

The EDS is activated by a power supply using a custom designed circuit currently built by us in the laboratory, which produces the required output required for dust removal. The circuit is thoroughly tested and optimized, but production of the circuit and power supply is currently done by hand. We are interested in working with a vendor/producer of electronics who can produce the power supply in an industrial setting, including housing the power supply in a weatherproof box/enclosure.

Ask: Supply/vendor/contacts of electronic production facilities, capable of small batch production and assistance in electronic housing and packaging
Need: Medium (Useful)

2c. Electrode Printing and Production

The EDS electrodes are parallel and interdigitated, currently printed on polyester films which would be included as the optical surface of solar panels. Using innovative designs, the transparency of the EDS currently produced is high, but we are always looking to further optimize. We are interested in alternative methods and materials for printing the electrodes with high reliability and high transparency, using methods that have a high production volume potential.

Ask: Transparent electrode printing process with inks such as silver nanowire, which are environmentally durable enough for solar panels
Need: Low (Nice to Have)