Direct Drive Solar, Solar Electric Cooking, and the Global Learning Community

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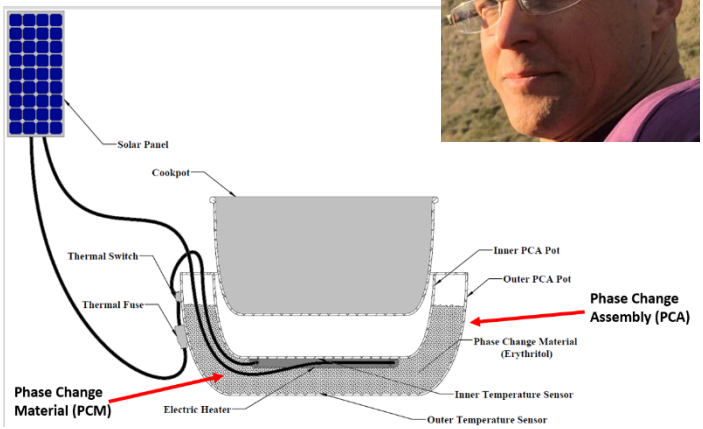

The least expensive electricity is likely "direct drive solar": when a solar panel is directly connected to the load… no batteries, no inverter… nothing. This is particularly true for communities that are not on the grid.

Since 2015, my students have been developing Insulated Solar Electricity Cooking (ISEC), when the solar electric load is a heater for cooking; a low cost and safer alternative to combustion and grid electricity cooking. ISEC is ideal for "boil and simmer" cooking (beans and stews) as well as baking. For increased versatility and power, the energy can be stored by batteries, or inexpensively by melting a phase change material (PCM). A major challenge for ISEC is optimizing power to the resistive load from the solar panel under varying solar intensities and we are looking to electrical engineers to design an Arduino-controlled buck converter.

Rather than producing ISECs in a large factory, we received funding to support a global learning community of small enterprises interested in promoting direct drive solar and ISEC. As the community grows, the global learning community may extend beyond just cooking.