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Coupling flexible solar cell with parabolic trough solarconcentrator-prototype design and performance ALEXANDER PANIN, JONATHON BERGQUIST, Utah Valley State College — Solar cells are still too expensive (\$5-\$20/watt) to compete with traditional fossil fuel power generating methods ($\sim\$1$ /watt). Parabolic trough solar concentrator has the advantage of modest concentration ratio (10-100) which is well suited for coupling with solar cell. Thus using small area solar cell placed in the focal line of parabolic trough may be economically viable alternative to flat solar panels. We experiment with flexible solar cell (backed by water cooling pipe) placed in the focus of parabolic trough reflector. Another advantage of parabolic trough concentrator is very relaxed tracking requirement. For example, east-west oriented concentrator (aligned with the ecliptic plane) does not even need any tracking during core 4-6 hours around noon (when maximum illumination is available). The design and the performance of the prototype, as well as possible economical benefits of full scale projects are discussed in the presentation.

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