Towards PV&STE full integration...

Topping combines high-T PV and CSP

- Harvests exergy from 5500 °C sun better than CSP
- Collects PV losses for dispatchable heat

[Graph showing solar electricity efficiency vs. temperature with curves for CSP at 2/3 Carnot, FOCUS developing 300-450°C PV, and PV at 1-Jct S-Q limit practical 2-Jct. The diagram illustrates hybrid topping electricity and dispatchable electricity from heat after PV.]
ARPA-E’s FOCUS programme
Full-Spectrum Optimised Conversion and Utilisation of Sunlight
Hybrid solar converters for maximum exergy and inexpensive dispatchable electricity

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How to develop hybrids?

• The future of solar energy in areas with good direct sunlight...
• ARPA-E’s FOCUS programme: 12 contractants, 30 million USD, some progress made on various concepts, to be continued...
• Research and development need to expand to other countries
• Requires PV and CSP research and industry communities to interact
• What about a new sub-task, common to PVPS and to SolarPACES programmes?