Thermophotovoltaics

Consider a concentric cylindrical system including a central tube covered by cryogenically cooled back surface reflective photovoltaics surrounded by an emitter consisting of a rotating porous layer of yttria and ytterbia stabilized zirconia microballoons also used to transfer heat from the exiting products to the incoming reactants via gas flow normal to the cylinders axis provided by a crossflow blower.

The central tube is a boiler for a Micro Combined Cycle (MCC) with TPV topping cycle and SuperHero microturbine bottoming cycle. "Local" systems can also benefit from combined heat and power. See SuperHero Microturbines at johnpopovich.net

Carnot efficiency can be very high for cryogenically cooled photovoltaics.

Liquid air is attractive for TPV cooling, for engine operation, and for energy storage. See "A Liquid Air Economy" at johnpopovich.net

Microspheric PhotoVoltaics (MPV) offer further improvements and Perovskites offer low cost, tailored wavelengths, and accommodate curved surfaces.