

# Chilled electricity

October 15 2019, by David Bradley

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It should be possible to generate electricity and refrigerate simultaneously using low-grade waste heat from industry, according to research published in *Progress in Industrial Ecology, An International Journal*. The key is a system based on an ammonia-water mixture.

Mechanical engineer Kolar Deepak of Vardhaman College of Engineering, in Hyderabad, India, has proposed a system that exploits thermodynamic phenomena encapsulated in the Kalina cycle to generate power and cool a system at the same time using evaporation and condensation of an ammonia-water working fluid. The system does [mechanical work](#), which can drive a dynamo type device to generate electricity, while the refrigeration effect is produced by the working fluid from the turbine exit.

Deepak's computations suggest a [thermal efficiency](#) of almost 20 percent at an operating temperature of 135 degrees Celsius, which is the sort of temperature for "waste" heat streams from industrial plants and gas turbine exhaust, as well as municipal incinerators, or [renewable energy sources](#), including geothermal brine.

**More information:** Kolar Deepak. Aqua-ammonia-based thermally activated combined power and cooling system, *Progress in Industrial Ecology, An International Journal* (2019). [DOI: 10.1504/PIE.2019.102844](#)

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