

## **Fully Operational Prototype of a 1 kW Thermo-Magnetic Motor for Generating Electricity from <80°C Heat**

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Based on (i) the success of a small demonstrator scale thermo-magnetic motor / engine having an output power of 80 W, and (ii) significant industry and regulatory interest in the development of viable solutions for utilising low temperature heat sources in power generation; funds were made available to pursue the specifically set challenge of designing, manufacturing and reliably operating a 24/7 industrial level prototype having a power output of at least 1 kW. While the basic approach was to scale up the existing 80 W demonstrator, doing so involved a wide range of engineering tasks including designing, manufacturing, testing, revising / refining and the sourcing of materials as well as know-how. At time of writing, the resulting prototype machine has an output power of approximately 1 kW, a rotary speed ranging from zero to 150 revolutions per minute and torques up to 200 Nm. Its operation is reliable in the sense that it can be run continuously for hours without developing any problems requiring operator intervention. Despite the present achievement, the potential for improvement is vast, both in terms of classical engineering (mechanics, heat transfer, ...) and with respect to the development of favourable magneto-thermally switching materials.

**Key Words:** Thermo-magnetic (Curie) motor / engine, power generation, energy conversion