

RECIRCULATING NOBLE GAS INTERNAL COMBUSTION POWER CYCLE

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PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,830,185	11/10/2020	2015-019

BRIEF DESCRIPTION

Conventional power conversion cycles which turn fuel into heat and heat into power are constrained by basic thermodynamic considerations. The most modern technologies have been limited to 60% even with multiple cycles combined (i.e. Brayton and Rankine combined cycle). Recent demonstrations have shown relative efficiency gains of 30% in both spark-ignited and compression-ignited regimes. Researchers at the University of California, Berkeley, are working to outdo these efforts by working on an ultra-high efficiency power cycle framework using argon as the working fluid. Early laboratory results suggest the argon engine could easily achieve 70% or greater thermal efficiency. Under such research the argon replaces nitrogen as the working fluid and is recycled in the closed-loop system.

SUGGESTED USES

- » Transportation power systems
- » Stationary power systems

ADVANTAGES

- » Higher thermal efficiency than conventional heat engine
- » Low-cost alternative to common fuel cell and power plant technologies
- » Scalable for various transportation and stationary power applications
- » Leverages industry standard platforms and low-cost parts
- » Air- and climate-friendly approach

RELATED MATERIALS

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OTHER INFORMATION

KEYWORDS

engine, heat engine, power, power generation, hydrogen, electrical production, internal combustion, Miller cycle, Brayton cycle, Rankine cycle, power plant, engine cycle, electrical storage, IC, batteries, flywheels, compressed air energy storage, hydrogen energy storage, fuel, carbon, methane, coal gasification

CATEGORIZED AS

- » **Energy**
 - » Hydrocarbon
 - » Hydrogen
- » **Engineering**
 - » Engineering

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