

Is micro gas turbine a range extender for electric vehicles?

Application of micro gas turbine in range-extended electric vehicles Energy, 147 (2018), pp. 351 - 361, 10.1016/j.energy.2018.01.051 Experimental and numerical investigation on micro gas turbine as a range extender for electric vehicle Appl. Therm. Eng., 173 (2020), Article 115236, 10.1016/j.applthermaleng.2020.115236

What is a range extender?

A range extender is basically a device to aid the recharging of an electric vehicle battery whilst on the move. There are areas where these categories of power plant cross over for instance RC turbines may be used in professional applications as propulsion for military of civilian drones and un-manned aircraft.

Which technology is suitable for a range extender?

There are a few different technologies suitable for REs, such as reciprocating engine generators, micro gas turbines (MGTs), and fuel cells , , , and the selection depends on vehicle characteristics . At the moment, MGTs are seen as one viable option for range extenders.

What is a single shaft gas turbine?

A gas turbine featuring one shaft that connecting the compressor to the turbine and an additional load is known as a single shaft or single spool engine. An alternative arrangement is possible where by a second turbine wheel known as a power turbine is placed in the exhaust stream of the engine and is used to extract power to supply a load.

How long does a main shaft bearing last?

achieve an operation life of 25 years or more. Main shaft bearings of various types and sizes are required to support the diverse wind turbine designs and the ever increasing size of both onshore and offshore wind turbines. JTEKT is committed to answering the needs of its customers through high reliability and speedy development.

How a compressor turbine rotor group is supported?

The compressor turbine rotor group is supported by special high speed bearings. In conventional small gas turbines ball race bearings are common place that are lubricated by oil jets from a re-circulating oil system. Synthetic turbine oil is stored in a reservoir and that may also form a sump beneath the bearing assembly.

A micro turbine generator (MTG) based range extender has several advantages over conventional IC engine range extender. It is has a high power density, a clean combustion process, and is ...

The proposed work aims to generate electricity by utilising the air flowing around the vehicle through the

Generator range extender accessories shaft oil wind

micro wind turbines (MWTs). In this case, the electricity produced can be used to charge up the battery or power ...

The Free-piston linear generator (FPLG) is a novel energy converter which can generate electrical energy and is regarded as a potential technology for solving the restriction of the short driving range of electric ...

A wheel-based generator of a range extender and recharger for an electric vehicle is characterized by comprising an armature winding, wheel cover, wheel well, tire, permanent ...

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Applications include automotive gas turbines for electric vehicle range extenders, combined heat and power (CHP) applications and stand by or emergency power. Micro gas turbines offer advantages in terms of size, weight and engineering ...

Microturbines generally do not employ any kind of accessory gearbox unlike an aero-derivative engine or APU. Accessory gearboxes may be used to drive the gas turbine accessories such as oil pumps (if oil lubricated), fuel pumps and ...

As it has already been described in [9], the range extender consists of four parts: a combustion engine, a generator, a power electronic converter and a fuel tank (see Fig.1). ...

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generator as a range extender using an automotive drive cycle for series hybrid electric vehicle application Bin Raja Ahsan Shah, R. M., McGordon, A., Rahman, M. M., ... shaft normally ...

Keywords Electric vehicle, micro wind turbine, range extender technology, efficiency, battery, driving cycles
Date received: 9 June 2022; accepted: 7 March 2023 Handling Editor: Chenhui Liang Introduction The transportation industry ...

So there's a new product class out there, it's called an EV range extender. A regular generator makes 120v AC, whereas an EV range extender makes DC voltage (48v, 72v, etc) and ...

Compact, Lightweight, High Efficiency Rotary Engine for Generator, APU, and Range-extended Electric Vehicles, Shkolnik, et al. Page 2 of 13 engine, funded by the Defense Advanced ...



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