Ultra micro turbine Japan

What is an ultra-micro scale gas turbine (umgt)?
1. Introduction An ultra-micro scale gas turbine (UMGT) is a miniaturised microscale gas turbine that generates electricity,and it is comprised of 5 main components: a radial turbine,a radial compressor,bearings,a combustor,and an electrical generator .

Is a micro gas turbine engine possible?
At Onera, a research program called DecaWatt is under development in order to realize a demonstrator of a micro gas turbine engine in the 50 to 100 Watts electrical power range. A single-stage gas turbine is currently being studied.

How efficient is a micro gas turbine engine?
With realistic hypotheses,we could obtain an overall efficiency of about 5% to 10%,which leads to around 200 W/kg when taking into account the mass of the micro gas turbine engine,its electronics,fuel and packaging.

This paper will provide an insight into the ongoing development of an ultra micro gas turbine rated for an estimated electrical power output of 1 kW. For a safe operation of this gas turbine with hydrogen as a fuel a new combustion chamber has to be developed and tested using the proven micromix burning principle. Detailed investigations on the burning characteristics ...

The outcome of NEDO supported international research project led by University of Tokyo is reviewed, with respect to developing key technologies for ultra-micro gas turbines (UMGT). ...

OS-106 Structural Analysis of Rotating Parts of an Ultra-micro Gas Turbine M. Ishihama (Kanagawa Institute of Technology), Y. Sakai, K. Matsuzuki, T. Hikone

Organized Session 3 Ultra Micro Gas Turbine 3 OS-108 Concepts and Combustion Characteristics of an Ultra-micro and a Micro Combustor S. Yuasa (Tokyo Metropolitan Institute of Technology), K. Oshimi, M. Uehara OS-109 Internal Heat Mixing and External Heat Losses in an Ultra Micro Turbine Y. Ribaud (ONERA, France)

for Ultra Micro Gas Turbine Toshiyuki Hirano1, Hoshio Tsujita2, Ronglei Gu2 and Gaku Minorikawa2 ... 2Department of Mechanical Engineering, Hosei University 3-7-2, Kajino-cho, Koganei-shi, Tokyo, 184-8584, Japan Abstract In order to investigate the design method for a micro centrifugal compressor, which is the most important component

The present authors, who belong to Gas Turbine Society of Japan, regard such ultra micro gas turbine engine systems as being crucial for mobile and environmentally friendly energy utilization ...

Int. Gas Turbine Congress, Tokyo, Japan, Nov. 2-7, 2003. [7] Iandoli C.L., ... In a high range/endurance mission the ultra-micro-turbine can provide the energy required for the cruise phase (the ...

Electric power can make an enormous difference in quality of life and opportunities, but over one billion people still go without. One Japanese innovator has...

As micro gas turbines are expected to offer the highest power density, several research groups launched programs to develop ultra micro gas turbines: IHI firm (Japan), PowerMEMS Consortium (Belgium). At Onera, a research program called DecaWatt is under development in order to realize a demonstrator of a micro gas turbine engine in the 50 to ...

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an ultra micro gas turbine engine of the present invention includes a rotating disk which has a compressor, a wave rotor and a turbine, a first stationary member which includes an inlet and a first wave rotor port end plate, a second stationary member which includes an outlet and a second wave rotor port end plate and a combustion chamber which includes a fuel inlet and an igniter.

Van den Braembusche, R. A., 2001, "ThermoFluid-Dynamic Design of Ultra Micro Gas Turbine Components. Collaborative Research About Thermo- Fluid-Dynamic Design of Ultra- Micro Gas Turbine", Journal of the Gas Turbine Society of Japan, 2002, Vol. 30, No 4, pp 42-49. Int. J. of Thermodynamics, Vol. 9 (No. 2) View publication stats 91

We experimentally investigate the feasibility of a 500-W class ultra-micro gas turbine power generator. System specifications include a design rotational speed of 400,000 rpm, a compressor ratio of 3:1, and a turbine inlet temperature of 1200 K. In a previous study, we used an integrated test rig to examine the feasibility of start-up and self-sustaining capabilities.

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The confluence of market demand for greatly improved compact power sources for portable electronics with the rapidly expanding capability of micromachining technology has made feasible the development of gas turbines in the millimeter-size range. With airfoil spans measured in 100"s of microns rather than meters, these "microengines" have about 1 millionth ...

Experimental Campaign Tests on Ultra Micro Gas Turbines, Fuel Supply Comparison and Optimization . × Close Log In. Log in with Facebook Log in with ... (International Gas Turbine Congress), Tokyo, Japan, 2-7 November 2003. Epstein, A.H. Millimeter Scale Micro Electro Mechanical Systems Gas Turbine Engines. ASME J. Eng. Gas Turbines Power ...

Ultra micro turbine Japan

The overall thermodynamic model of an ultra micro turbine engine has been established and applied in different situations in this tiny engine where heat transfer is dominant. ... International Workshop on Power MEMS. Tsukuba, Japan, nov. 2002. Spadaccini, C M, Lee, J. Luckachko, S, et al. High Power Density Silicon Combustion Systems for Micro ...

This paper presents an overview of the background behind the development of ultra micro gas turbines, key technologies and applications, as well as describing our palm top-gas turbine ...

Ultra Micro Gas Turbines Roberto Capata Department of Mechanical and Aerospac e Engineering, University of Roma 1, Faculty of Engineering, Roma Italy 1. Introduction 1.1 State of art Object of the present work is the detailed study, in every its aspect, of Ultra-Micro-Gas-Turbine Generator, that is a power device with high power density.

on ultra micro turbine was also launched in Japan (Isomura, 2002), (Matsuo, 2002). At ONERA, in France, a watch over was conducted under the sponsorship of the D.G.A. (Armament General ...

(Video: "Ultra-Small Water Power Generator" featured on Japan Video Topics sponsored by Ministry of Foreign Affairs of Japan) Spiral PicoPica Hydraulic Power Unit is a promising pico-hydro power generation equipment which has potential for dissemination in non-electrified areas, with its characteristics including low-head generation and dust-resistance.

Hydrogen-Fueled Ultra-micro Combustor for UMGT SHIMOTORI Shoko, YUASA Saburo and SAKURAI Takashi Tokyo Metropolitan University Asahigaoka 6-6, Hino-city, Tokyo, JAPAN syuasa@sd.tmu.ac.jp Keywords: UMGT, Flat-Flame Combustor, Engineering-Model, Hydrogen, Insulating Structure ... The dime sized Ultra-micro Gas Turbine (UMGT)

Article "Development of Micro Motor-Generators for a Ultra Micro Gas Turbine" Detailed information of the J-GLOBAL is an information service managed by the Japan Science and ...

Several research groups have been involved in the development of micro gas turbines from two perspectives. One is the Micro-Electro-Mechanical Systems (MEMS)-based micro gas turbine engine proposed by a group at Massachusetts Institute of Technology (MIT) [2], [3], [4].A nickel (US coin)-sized gas turbine with a mass less than 1 g has been developed ...

3-4-1, Okubo, Shinjuku, Tokyo, 169-8555, Japan Leaf waste has the potential to be converted into energy because of its ... are the simulation of an ultra-micro gas turbine at a lower power output

Nomadic portable systems, such as micro drones, require a micro power generation system. Among the potential systems, the micro turbine seems interesting. However, at this scale, thermal fluxes involve a decrease in the performance of the turbine. Hence, we study a unique architecture of two stage ultra micro

turbine, called "cocoon architecture". This paper presents ...

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Among all the micro power generation systems such as micro fuel cell [5,6], micro gas turbine [7], micro free-piston engine [8], micro thermoelectric system [9e11] and micro-thermophotovoltaic ...

the turbine inlet appears to be moderate (between 1500 and 1700K). Doubling the size of the micro turbine The size of the micro turbine was multiplied by two in order to recover a correct power. The design air mass flow was multiplied by 4 (m=0.4g/s) and the rotation speed was divided by 2 (N = 1.25106 rpm). With this new

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