

Principal Researcher	Hiroyuki Yamasaki			Number of Researchers	5	
Research Institution • Department • Title	Professor, Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology			Location of Institution	Yokohama	
Title of Project	Study on Performance of High Efficiency Plasma MHD Generator under Continuous Operation					
Abstract of Research Project	<p>The plasma MHD electrical power plant has potential to provide a thermal efficiency higher than 60 % , because it has no rotating parts and as a result, an operating temperature of working gas is increased up to 2000 K. If this attractive power plant is realized, the emission of CO<sub>2</sub> and the consumption of natural resources are reduced by 20 %. In the past, experimental studies were carried out using facilities with short duration time from 3 msec to 60 sec. But, experimental efforts in the present study are focused on an investigation on performances of the plasma MHD generator under longer operation time than previous ones. The newly constructed closed loop facility is used for this purpose and it consists of the argon heater, the disk MHD generator, the regenerative heat exchanger, the argon cooler and the compressor. The main objectives of the present study are; 1) to establish the advanced technology for the continuous circulation of high temperature gas inside the closed loop, 2) to know both the performances of the disk MHD generator and the durability of material under long operation time, and 3) to obtain knowledge of the thermal and fluid-dynamical interaction between electrical load and each component. Through these researches, the most advanced energy and environment technology will be developed.</p>					
References	<p>1. H.Yamasaki, L.V. Uehara and Y.Okuno, ; "Performance Analysis of Closed Loop in CCMHD Single Power Generation System", (in Japanese), T. IEE Japan, Vol.122-B, No.3, pp.449-459, (2002)</p> <p>2. H.Yamasaki, Y.Okuno, et.,al.,; "Achievement of Highest Performance in Disk MHD Generator with Ar/Cs", Proc. of Int. Conference on MHD Electrical Power Generation and High Temperature Technology ' 99, Vol. 1, 233-241 (1999)</p>					
Term of Project	Fiscal years 2003-2007 . (5years)					
Budget Allocation (in thousand of yen)	FY2003	FY2004	FY2005	FY2006	FY2007	TOTAL
	16,200	17,700	15,600	10,800	7,300	67,600
Homepage Address	<a href="http://www.es.titech.ac.jp/~yamasaki/index.html">http://www.es.titech.ac.jp/~yamasaki/index.html</a>					