Second Generation High Temperature Superconducting Coils And Their Applications For Energy Storage Springer Theses

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Second Generation High Temperature Superconducting

Second Generation High Temperature Superconducting ...
Second Generation High Temperature Superconducting Wire: Fabrication, Properties, and Potential Applications Andrei Rar, Yi-Yuan Xie, Drew Hazelton, Yimin Chen, Xuming Xiong, Ed Zhang, and Venkat Selvamanickam SR 2008, June 2008, Novosibirsk, Russia
Study of second-generation high-temperature ...
Study of second-generation high-temperature superconducting magnets: the self-field screening effect Min Zhang1,2, Weijia Yuan2, David K Hilton3, Matthieu Dalban Canassy3 and Ulf P Trociewitz3 1Newnham College, University of Cambridge, CB3 9DF, UK 2Department of Electronics and Electrical Engineering, University of Bath, UK 3Applied Superconductivity Center, National High Magnetic Field
Progress in fabrication of second generation high ...
generation, storage and transfer Second generation high temperature superconducting (2G-HTS) tapes are considered one of the most promising practical superconductors that can be used in power and magnet applications For typical applications, even just prototypes, several hundreds of kilo-meters of high performance and long length 2G-HTS tapes
Second-Generation High-Temperature Superconducting ...

development of Superconducting Magnetic Energy Storage (SMES) using second-generation (2G) high-temperature superconducting tapes This is a complex, interesting and important area of research The first part of the thesis provides an appropriate summary of existing knowledge about magnetic field penetration in superconductors (including the

Fast high-temperature superconductor switch for high ...

second generation high temperature superconducting wire is demonstrated The quench is induced by a burst of an ac field generated by an inductively cou pled radio-frequency coil The switch makes a superconducting-to-normal transition within 5ms and also has a rapid recovery to the superconducting ...

2013 Second generation high-temperature ...

Second-generation, high temperature superconducting coils have drawn great attention in recent years, owing to the highly developed fabrication technology for 2G HTS, and coated conductors Their potential operation at relatively high temperature makes them good candidates for power applications

The Development of Second Generation HTS Wire at ...

ECOND generation (2G) high temperature superconducting (HTS) wires have moved out of the laboratory and are now being produced in the quantity, and with the performance, required for large-scale commercial application demonstrations 2G wire is now supplanting first generation (1G) HTS wire, based on a multifilamentary composite in a

Superconducting Super Motor and Generator

Superconducting Super Motor and Generator 100 m of second generation high temperature superconductor (2G-HTS) wire is described, and its characteristics are measured and compared with a numerical simulation The ac losses in the superconducting wires, which dominate internal losses in this machine, are estimated at about 1 W/Hz at 77 K

High Field Magnet Made of Second Generation High Tc ...

High Field Magnet Made of Second Generation High Temperature Superconducting (2G HTS) Wire Yimin Chen, PhD Drew Hazelton, Venkat Selvamanickam 2008 International Conference on Electrical Machines and Systems Wuhan, China

Calculation of AC losses in stacks and coils made of ...

1 Calculation of AC losses in stacks and coils made of second generation high temperature superconducting tapes for large scale applications Victor M R Zermeno1,4,a, Asger B Abrahamsen2, Nenad Mijatovic3, Bogi B Jensen3 and Mads P Sørensen4 1Karlsruhe Institute of Technology, PO Box 3640, 76021, Karlsruhe, Germany 2Department of Wind Energy, Technical University of Denmark

HIGH-TEMPERATURE WIRE

second-generation high-temperature superconductor wire Alex Malozemoff American Superconductor Corporation Westborough, Massachusetts T he initial development in 1986 of high-temperature superconducting materials triggered an overwhelming global re-sponse Universities, private and govern-ment labs, and scores of corporations launched

Critical Current Simulation and Measurement of Second ...

Abstract: This paper studies the critical current of second generation, high temperature superconducting coils under an external magnetic field experimentally and numerically Two identical coils with different coated conductors are fabricated and tested under a direct current (DC) magnetic field along the axis of the coil

Introduction of SuperPower Inc. and High Temperature ...

and develops and manufactures the second-generation high-temperature superconducting (HTS) wire materials The predecessor of SPI was the Technology Development Organization (TDO) of Intermagnetics General Corporation (IGC) which was heavily focused on HTS research SPI was formed in 2000 as a wholly-owned subsidiary of IGC,

Schematic Comparing (a) standard HTS wire architecture ...

High Temperature Superconducting (HTS) Wire for Electric Motor Applications Advancing second generation technology to enable high efficiency electric machines High Temperature Superconducting (HTS) wire conducts approximately 200 times the current as copper wire of the same dimensions However, the current cost and performance of HTS wire

Exfoliated YBCO filaments for second-generation ...

The second-generation high temperature superconductor (2G HTS) wire is the most promising conductor for high-field magnets such as accelerator dipoles and compact fusion devices The key element of the wire is a thin Y 1Ba 2Cu 3O 7 (YBCO) layer deposited on a flexible metal substrate

2 igh-Performance YBCO-Coated Superconductor Wires

of high-performance wire in a continuous process; thus, ISD is not discussed in-depth 534 MRS BULLETIN/AUGUST 2004 High-Performance YBCO-Coated Superconductor Wires Figure 1Schematic illustrations of (a) first-generation and (b) second-generation high-temperature superconducting (HTS) wire architectures

Second Harmonic Generation in the Cuprate Family of High ...

Second Harmonic Generation in the Cuprate Family of High Temperature Superconductors Charlie Bevis Advisor: Steven T Cundi University of Colorado at Boulder Summer Physics REU 2011 August 6, 2011 Abstract We outline and summarize the work completed …

Grid 2030 - A national Vision for Electricity's Second 100 ...

“Grid 2030” — A National Vision for Electricity’s Second 100 Years v standardized architectures and techniques for distributed intelligence and “smart” power systems, and cleaner power generation systems, including nuclear, clean coal, renewable, and distributed energy devices such …

Status of High Temperature Superconducting Magnet ...

second-generation tapes, open attractive topologies In addition to reduced cryogenic loads and increased superconducting stability, the HTS tapes may allow demountable magnets that could be very helpful in the long term (for reactor maintenance) and in the intermediate term, for component-testing machines which require large access

Progress in scale-up of second-generation high ...

SuperPower is focused on scaling up second-generation (2-G) high-temperature superconductor (HTS) technology to pilot-scale manufacturing The emphasis of this program is to develop R&D solutions for scale-up issues in pilot-scale operations to lay the foundation for a framework for large-scale manufacturing Throughput continues to be