

## High Efficiency Energy Conversion, Energy Management, and Low Power Systems for Aerospace/Military Electronics

**Aviation and Missile Research Development and Engineering Center (AMRDEC)** is proud to host this workshop on “High Efficiency Energy Conversion, Energy Management, and Low Power Systems for Aerospace/Military Electronics” to be held 14-17 September 2010 at the Rocket Auditorium, Redstone Arsenal, Alabama.

The objective for the *High Efficiency Energy Conversion, Energy Management, and Low Power Systems for Aerospace/Military Electronics* Workshop is to examine energy efficiency from a systems point-of-view, and study potential techniques to increase overall battery to actuator energy efficiency.

The steering committee for the *High Efficiency Energy Conversion, Energy Management, and Low Power Systems for Aerospace/Military Electronics* Workshop is requesting abstracts in the following and related areas:

### **(1) High Efficiency Power Conversion:**

- (1.1) Energy conversion techniques with greater than 95 % energy conversion efficiency.
- (1.2) Energy conversion techniques with greater than 90 % energy conversion efficiency over a power supply load range of 20 % to 90 %.
- (1.3) Low energy standby and shutdown power supply modes.
- (1.4) Adaptive switching power supplies which monitor power source and load characteristics.
- (1.5) High efficiency magnetics, inductors, and transformers.
- (1.6) High efficiency switched capacitor power supplies.
- (1.7) Real-time battery system characterization.
- (1.8) Real-time load characterization (linear, nonlinear, inductive, capacitive, etc.)
- (1.9) Characteristics of high performance, wide temperature range (-40°C to + 85°C) batteries
- (1.10) Ultra and Super Capacitors for energy storage and peak load handling

### **(2) Energy Management Techniques:**

- (2.1) Adaptive clock frequency and adaptive voltage control for electronics (microprocessors, FPGAs, and integrated circuits)
- (2.2) Techniques to reduce the number of computations required for algorithms (for example a coding technique to reduce the number of operations required for a Kalman filter)
- (2.3) Adaptive Algorithms to trade accuracy/performance for energy consumption
- (2.4) Energy Management and CPU Process scheduling
- (2.5) Active Power Factor Correction
- (2.6) Energy Regeneration and Energy Harvesting

### **(3) Low Power Systems for Data and Signal Processing:**

- (3.1) Parallel Processing Techniques
- (3.2) Asynchronous Digital Logic
- (3.3) Graphics Processor Unit (GPU)/Physics Accelerator for System Dynamics/Signal Processing
- (3.4) Low Power FPGA Techniques
- (3.5) Low Energy Data Transmission Techniques
- (3.6) Ultra Low Power Health Monitoring Systems
- (3.7) Ultra Low Power Electronics: Microprocessors, DSPs, Network Interface, and Integrated Circuits

**Please submit 250-500 word abstracts by Friday, 30 July 2010.**

**Security:** This workshop is UNCLASSIFIED / ITAR RESTRICTED / EXPORT CONTROLLED. Attendees must be US Citizens, and must either be a DoD contractor, military, or DoD civilian employee.

Attendees from industry and academia must also provide their organization's Militarily Critical Technical Data Agreement (Form DD2345) certification number. Please refer to the Defense Logistics Agency "DD Form 2345, Militarily Critical Technical Data Agreement, May 2008," at <http://www.dlis.dla.mil/JCP/forms/DD2345Form.pdf>

Submission Information: (The following must be included with all abstract submissions.)

- ◇ Title of Author (Dr., Mr., Ms., Mrs., Prof., Rank, etc.)
- ◇ Author Full Name
- ◇ Paper Title
- ◇ Author Company/ Organization
- ◇ Author Phone & Fax
- ◇ Author Email ◇ Presenter Name & Organization, if different from author
- ◇ POC Phone & POC Email ◇ Co-Author(s) (Include Full Name and Company/ Organization)
- ◇ For government funded work, please include the name, phone number, and email address for the contracting officer or contracting officer technical representative.

Government funded work must include a public release (unclassified/non-export controlled) or limited release (ITAR/Export Controlled) statement from the government contracting officer or appropriate official. Non-government sponsored work must include a statement for non-export controlled 'approved for unlimited release,' or ITAR / Export Controlled 'limited release' as appropriate. Please do not submit any proprietary material. Copyrighted works must provide a release statement for publication as workshop proceedings.

### **How to Submit Your Abstract**

Electronic submission is required by Friday, 30 July 2010. Please submit all files as Portable Document Format (PDF), Word 2003/2007 or Powerpoint 2003/2007 files. All abstracts must include complete submission information as listed above. All abstracts must be UNCLASSIFIED / Nonproprietary. Please email your abstract & submission information to Ms. Angie Cornelius at [angie.cornelius@us.army.mil](mailto:angie.cornelius@us.army.mil). Workshop website will be located at <http://smaplab.ri.uah.edu/SMAP-CENTER/Conference.html>.

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