Center for Power Optimization and Electro-Thermal Systems

The Center for Power Optimization and Electro-Thermal Systems is an engineering research center run by the University of Arkansas, the University of Illinois at Urbana Champaign, Stanford University and Howard University. These four universities include a multidisciplinary team that will create new paradigms for power flow in complex systems.

The center's long-term goal is to increase the power density of current mobile electrified systems by 10-100 times over current state-of-the-art systems. While ambitious, this would have a profound impact on a mobile electrified infrastructure of the United States and beyond. On-highway vehicles could save between 100-300 million liters of fuel per year and could nearly double the range of all-electric vehicles. Off-highway vehicles could save on the order of 100 billion liters of fuel since their electrification is starting from a less mature point than current on-highway vehicles. Similarly, aircraft could see 10-30 billion liters of fuel saved as well as prevention of up to 10 million tons of carbon dioxide from going into the high altitude atmosphere.

These economic and environmental impacts are just the beginning of the art of the possible with the achievement of the center's vision. This center is a multi-disciplinary center involving several fields of study including mechanical engineering, electrical engineering and physics. The center functions under the assumption that a single discipline could not achieve the goals set by this team and must integrate multiple disciplines and domains to achieve such success.