



## Fuel-Cell Based True Uninterruptible Power Supply for DC Powered Devices

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### Inventors

#### **Dr. Govindasamy Tamizhmani**

Associate Professor  
Department of Electronic Systems

#### **Dr. Bradley Rogers**

Associate Professor  
Department of Mechanical & Manufacturing Engineering Technology

#### **Dr. Liang Ji**

Associate Research Professor  
Department of Electronic Systems

#### **James Gonzales**

Graduate Research Assistant  
Department of Electronic Systems

### Intellectual Property Status

Patent Pending

### Contact

*Bill Loux*

Director of Business Development

Arizona Technology Enterprises, LLC (AzTE)

480.884.1996 main

480.884.1992 desk

Email: [bloux@azte.com](mailto:bloux@azte.com)

### Background

Reliable electrical power is necessary for mission-critical computers and other systems in military and commercial applications. Inclement weather, natural disasters, and other events can disable the local power grid. When grid power is unavailable, an uninterruptible power supply (UPS) can keep key systems powered and operational. However, these systems are generally expensive, inefficient, inadequate, and providing only a small amount of power for a limited time.

### Invention Description

Researchers at Arizona State University have developed a highly efficient fuel-cell based true UPS. Combining proven, reliable battery technology with fuel-cell driven charging and advanced electronic control, this UPS can operate for significantly longer time periods than current solutions. It eliminates the need for multiple voltage conversions and offers substantially higher system efficiencies than other fuel-cell solutions – better than 90% system efficiency overall. This system produces stable, reliable DC power and comes online instantly when needed. An efficient, powerful true UPS solution is now available.

### Development

This fuel-cell based UPS is up and running on the Arizona State University East campus. Significant testing has been completed, and the results have been published. At this time, AzTE is seeking potential partners and licensees for this technology.

### Potential Applications

- **Desktop Computers** - The typical AC power supply is easily replaced with a wide voltage input DC supply. This is especially well suited for enterprise-wide deployment where maintaining power for numerous computers is critical.
- **Medical Devices**
- **Other Critical Electronics**

### Benefits and Advantages

- **Longer Life** – Reliable backup power can be provided for at least 60% longer.
- **High Efficiency** – The system eliminates the need for AC / DC inverters and DC / DC converters, allowing high-efficiency operation.
- **Spike / Sag Free Power** – The output of the UPS is a smooth, stable DC voltage free of damaging spikes and sags.
- **No Downtime** – The true UPS system immediately picks up the load when the grid power fails.