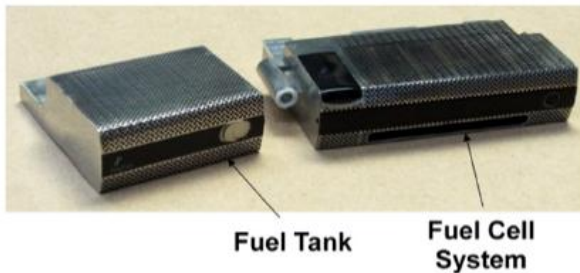


Ultra-Compact Fuel Cell Power Supplies



The University of North Florida and the University of Florida are collaborating to develop and commercialize portable power supplies for mobile electronics applications. The core of the power supply technology is a novel direct methanol fuel cell (DMFC). The advantages of DMFC systems are many, primarily their potential for high compactness, efficiency, and quiet operation, as evidenced by several commercial products. However, the competing products in the target power range (20 to 100 W) lose much of their potential compactness advantage due to large auxiliary components.

The new technology uses a much simpler system that eliminates many of the large components, thereby achieving great advantages in compactness. A novel membrane-electrode assembly, the heart of a fuel cell, enables water management inside the unit, rather than requiring bulky water collection and storage components external to the fuel cell. This in turn enables use of such systems where compactness is at a premium, such as small portable electronics.

The DMFC energy source is methanol, a common liquid fuel. Like other alcohols, it can be made not only from natural gas, but also from any alternative energy source, such as solar or wind. In fact, methanol is the easiest and most efficient liquid fuel to make, and being a liquid, it is easily distributed and stored. The high energy density of methanol relative to batteries make this DMFC system attractive for long-time operation, replacing batteries.