Fuel Cell Mobile Lighting System

Organizations: Sandia, Multiquip, Altergy Systems, Luxim, Stray Light Optical Technologies, Ovonic Hydrogen Systems

Awards:

2011 Most Innovative Product Award, World of Concrete Editors Choice Award for General Tools and Equipment, Fuel Cell Mobile Light (H_2LT),

2010 Federal Laboratory Consortium Award "Mid-Continent Region" for "Notable Technological Achievement", Sandia National Laboratories, Fuel Cell Mobile Light Project, September 2010.

2011 DOE Hydrogen and Fuel Cells Program R&D Award, presented to Lennie Klebanoff "In recognition of outstanding contributions to Fuel Cell Market Transformation Activities," Sandia National Laboratories, May 11, 2011, for the Fuel Cell Mobile Light Project

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Problem:

Current mobile lighting typically uses diesel generators. Diesel-based technology suffers from well-known problems including release of toxic air contaminants and particles into the air (threatening human health), and also emission of CO_2 and other greenhouse gases (GHG) (contributing to global climate change). These diesel systems are also comparatively inefficient in their use of energy, as well as distractingly loud, which is a safety issue for those using them.

Innovative Edge:

The hydrogen fuel cell-powered mobile lighting system is a clean, quiet, and efficient alternative to traditional technologies commonly powered by diesel-fueled generators. The system features a Altergy Systems 5kW proton-exchange membrane (PEM) fuel cell running on pure hydrogen, resulting in zero-emissions electrical power. The fuel cell produces electricity for an advanced, power-saving Light Emitting Plasma™ (LEP) lighting system from Luxim and additional auxiliary power up to 2.5 kW, which allows additional equipment, such as power tools, public address systems, and security metal detectors, to be powered by the unit at the same time the system is providing illumination.

It is estimated that a single hydrogen fuel cell-powered lighting system would offset 900 gallons of diesel fuel per year and completely eliminate soot, NO_x and CO_2 emissions at the point of use. As a result, the system can also be used indoors. This increasingly portable and efficient environmentally friendly alternative to current diesel technology offers a "very real potential to drastically reduce dependence on diesel-fueled mobile lighting across the U.S. and abroad," said Lennie Klebanoff, Sandia National Laboratories' project lead.

Commercialization and Industry Impact:

Sandia National Laboratories led a team of 14 partners of technology holders, manufacturers, and end users including The Boeing Company, Multiquip Inc., the California Department of Transportation, Altergy Systems, Stray Light Optical Technologies, and others. Boeing and the U.S. DOE Office of Energy Efficiency and Renewable Energy provided funding. The development team conceived, designed, built and field-tested five Fuel Cell Mobile Lights as a clean, efficient alternative to traditional technologies powered by diesel fuel generators. The Fuel Cell Mobile Light is the first product in the new EarthSmart^{TM} power technology platform recently introduced by Multiquip Inc.

Currently, Luxim and Stray Light Optical Technologies manufacture and design the plasma lighting sources and reflectors used in the Fuel Cell Mobile Light System, which has been used to construct the Red Carpets and provide illumination at a variety of prominent entertainment events including the 2010 Academy Awards, 2011 Grammy Awards, the 2011 Golden Globe Awards, and the 2011 Screen Actors Guild Awards. In addition, the Fuel Cell Mobile light was deployed in the International Press area for the final NASA Space Shuttle Launch. Full production for the Fuel Cell Mobile Light as the Multiquip model H_2LT is scheduled for early 2012.