Fuel Cell Product Certification / Listing
Lessons Learned

November 2010
Introduction to Altergy

• Who is Altergy?
  • HQ & manufacturing plant based in Folsom, California
  • Recognized by experts as World Class Cutting Edge Technology
  • Altergy designs & manufactures PEM Fuel Cell Power Systems - Branded as Altergy Freedom Power™
  • The world’s first automated, high-volume fuel cell assembly line

• Addressing U.S. and Internationally Markets
  • Initial market telecommunications/cell towers backup power market
  • Follow-on applications are being evaluated
Alteryg’s Product Offerings

- **Fuel Cell Engine**
  - Fully integrated power generator
    - Advanced Alteryg™ fuel cell
    - Integrated digital electronics and power management
    - Integrated thermal management
    - 5 to 100+kW plug and play capability
  - Modular subassemblies
  - Lightweight and compact footprint

- **Power cabinets**
  - Welded aluminum, all weather enclosure
  - House up to two 5kW fuel cell engines and up to two TPMs
  - Lightweight and compact footprint

- **Fuel cabinet/tank**
  - Welded aluminum, all weather enclosure
  - High pressure composite or standard high pressure steel
  - Hot swappable or refillable onsite
  - Lightweight and compact footprint

- **Transient Power Module (TPM)**
- **Wireless communication/monitoring**
Altergy’s Product Safety

• Altergy’s Fuel Cell products are fully tested, certified, and listed by CSA-America

• The products meets or exceeds the requirements of:
  – The State Fire and Building Codes
  – NFPA 1 – Uniform Fire Code
  – NFPA 55 – Standard for Storage, Use, and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders, and Tanks
  – NFPA 70 - The National Electric Code (NEC)
  – The International Fire Code (IFC)
  – CSA FC-1 – Standard for Stationary Fuel Cell Power Systems

• Each system is installed through the permitting and zoning requirements of a given jurisdiction

Altergy’s Product Meets or Exceeds all Required Codes and Standards
Altergy’s Certification Process

- Listing requirement driven by customer and AHJ expectations, and code requirements
- Interviewed CSA, UL, TUV, and ERTL
- Decided to work with CSA due to their experience / expertise and cost
- Initially, 4 products were certified and listed
- To date 12 systems have been certified and listed
- It has been a very positive experience
- Ability to sell mass quantities opened as soon as listing was complete.
  - Multiple quarters with MW+ deliveries since listing versus limited quantity evaluation systems prior to listing
Lessons Learned

• The first system is the hardest as you learn the process and what is required

• Bring the listing agency in early to get input before the design is locked

• Assign a certification engineer which obtaining and maintaining product listings is their sole responsibility

• Certify to FCC first, as changes required may require listing tests to be re-performed

• Do your homework and understand the requirements

• Perform a self-certification assessment to the standards to find deficiencies first

• Self-test before you witness test to ensure you will pass

• Try to build off of listed products to ease additional product listings
Why Require Product Listing?

• The industry is newly emerging and has a low tolerance to safety incidents due to the public perception of hydrogen
  – More public education and awareness is critical to removing this perception

• Listing ensures that the proper engineering has been performed and lowers risk to the community, the buyer, the manufacturer, and the industry

• Allows AHJ review and permitting to be obtained more easily

• Lowers risk

• Currently, not all applications require listing the fuel cell product
Buyer Beware

• Customers need to understand what they are buying
  – Listing parameters versus intended use
  – “Designed in Accordance With”
  – “Certification Pending”
  – “Meets the Requirements of”
  – False statement of product being listed

• Any false listing statements should be reported to the agency they claim to be listed under
  – Not doing so de-values the mark and puts the industry at risk

• Customers should ask for the listing file number or a copy of Declaration of Conformity

• Listings can be confirmed online
Open Session for Questions and Answers