

Angstrom Power Incorporated

Micro HydrogenTM for portable Power

Technology Overview



March 2011



Angstrom Power Overview

- Founded in 2001 to develop and commercialize high energy density micro-structured fuel cells for hand held electronic applications.
- Expertise in micro fuel cells, hydrogen generation, metal hydride hydrogen storage, micro-fluidics, hybridization, system integration and product design.
- >20 issued US patents and over 60 pending patent families.
- 45 staff in Vancouver



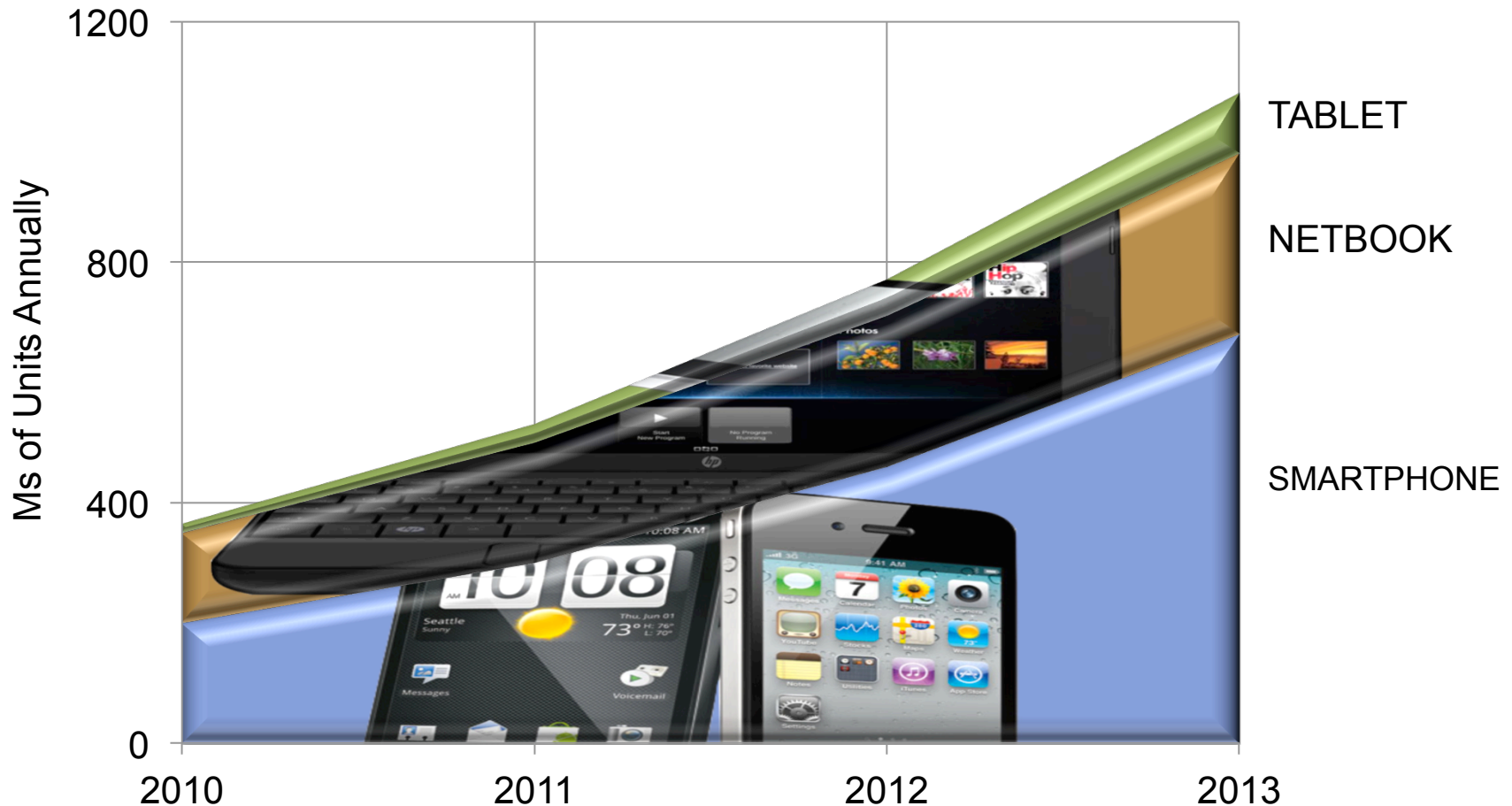
3 Motivations for Small / Portable Fuel Cells

1. Use Consumer Demand to pull Hydrogen Energy systems into the mainstream
2. Exploit the economies of scale that will come from mass manufacturing
3. Minimize Capital requirements to build a new industry

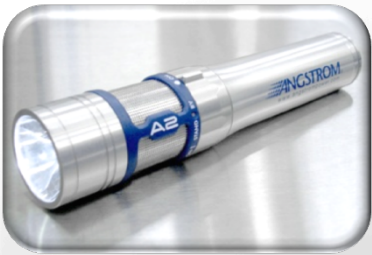
Can we exploit the latest fashion and biggest trends in consumer electronics to pull fuel cell technology into the mainstream of consumer awareness?

Smart phones, Cloud Computer Interfaces, Social Networking.... These trends are all hungry for more on board energy

MORE THAN 1 BILLION DEVICES SOLD ANNUALLY BY 2013



Angstrom's *Micro Hydrogen*[™] Technology enables performance and device integration not matched by any competitor



2004-5
**Fuel Cell
Powered
Lighting**



2007-9
**Fully
Integrated
Fuel Cell
Powered
Handsets**

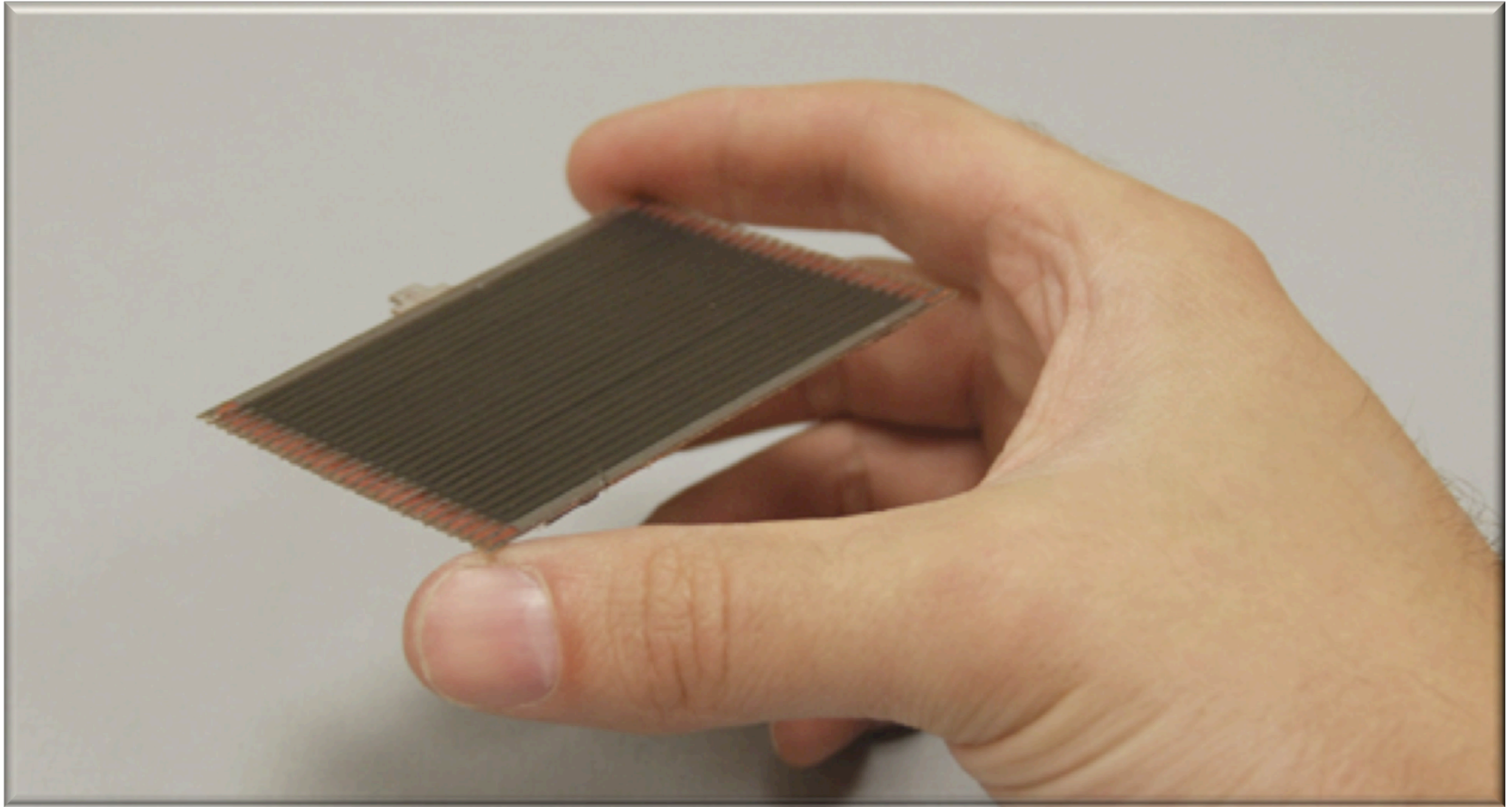


2006-10
**Fuel Cell
Powered
Battery
Chargers**

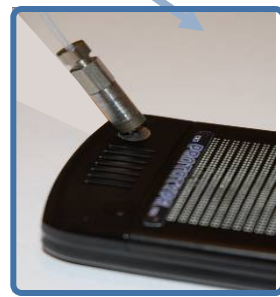
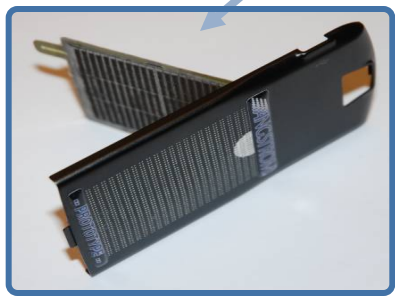
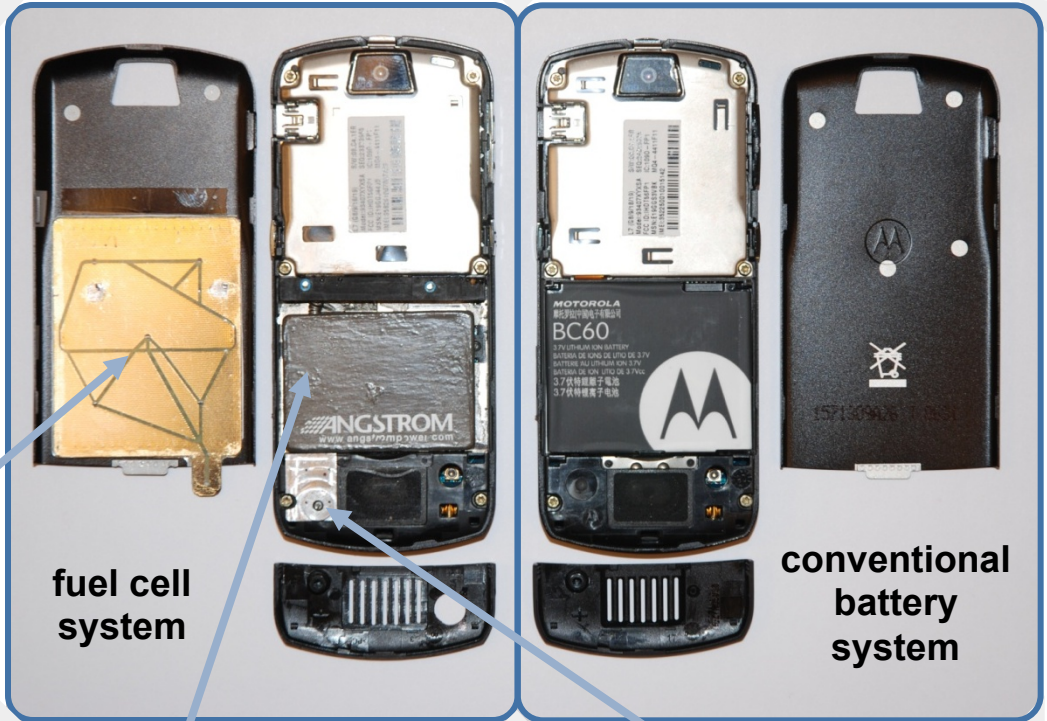


2009-11
**Integrated
Hydrogen
Generator
Fuel Cell
Battery
Chargers**

Hydrogen is the Fuel



Micro Hydrogen Phone (2008): >700 Whr/l in 11cc. NO BATTERIES



Hydrogen Refueling Solutions



Near term:

- Compressed gas is available worldwide
- Refueling appliances are easily made

Long term:

- Retail kiosks are deployed in dense environments (e.g. office, train station)
- Allow users to refuel while away from their home base
- Enhanced convenience, greater user options

Example System: iCharger / iFueler Combine high performance rechargeable Metal Hydride with Desktop Hydrogen Generator



- **iCharger / iFueler Solution was designed to meet the needs of a clearly defined market opportunity**
- iCharger is a clip-on iPhone range extender and provides >3x runtime increase
- iCharger couples to the iFueler, a hydrogen generator, to refuel in <20 minutes, provides off-grid operation

Fast Refueler is included with iCharger

Safe, simple user interaction with no tools or electricity required

1



3



2



1. Add tap water (no special purity requirements)
2. Insert safe, compact and lightweight Fuel cartridge
3. iCharger is fully refueled in under 20 minutes

Charger is ready to attach and go!



So Why can't I buy one?

- Cost is too high to drive serious retail volumes (i.e. >50,000 per year)
- Technology is immature, large OEM's unwilling to take risk
- Benefits of the technology insufficient to motivate required changes in user behaviour

IF #1: Hydrogen Storage

If we could get to 2% weight Hydrogen Storage then:

Micro Hydrogen would be the most energy dense rechargeable power source by both volume AND WEIGHT!



IF #2: Hydrogen Generation

If we could generate Hydrogen with no operating cost then:

Micro Hydrogen would present a true alternative to the conventional energy grid. Value to consumers would be significant



IF #3: Hydrogen Distribution



If we could package and distribute Hydrogen in a more user friendly / cheaper format:

Micro Hydrogen could be deployed in 'fleet' and dense urban environments using group refueling



It takes is just 2 grams of Hydrogen per day to feed a power hungry world..... will you help?



Angstrom Power Incorporated

Better than Batteries™



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