A123 Overview
A123 Systems, LLC

Corporate Profile

A123 Systems LLC is a leading developer and manufacturer of advanced high power, safe and long-life lithium-ion energy storage solutions for applications in the transportation, electric grid and consumer markets.

- Wholly owned member of the Wanxiang Group
- Corporate headquarters: Livonia, Michigan
- 1,700 employees worldwide, $200M+ revenue
  - 1000 China Based Employees
- Mass producing millions of batteries per year since 2006
- >1,000,000 square feet of manufacturing facilities in the United States and China
  - Invested > $400M in capacity expansion
- 400+ patents and patent applications
A123 Systems LLC:

Our Goal:
• Profitable growth ($1B in revenue by 2023) focused on technology

Our Strategy:

Focus on Markets: Transportation and Commercial
• Provide solutions (chemistry) matched to the market needs
• Transportation ($3.1B Market 2013)
  + Micro-Hybrids: Low Voltage Systems (12 and 48V)
  + Truck and Bus: Leverage A123 leadership position
  + China Market: Largest and most active EV market
  + Motorsports: High power cells for elite racing series
• Commercial ($3.8B Market 2013)
  + Global expansion: China and Europe
  + Target OEM Projects in Medical and Small Motive
  + Develop Value Added Reseller Market
  + Vertically integrate through acquisition(s)
A123 Systems Global Locations

Global Headquarters, Design and Manufacturing
- Livonia, Michigan

Coating, and Cell Plants
- Livonia, Michigan
- Romulus, Michigan
- Changzhou, China

Wanxiang A123 Asia, Coating and Cell Plants
- Hangzhou, China
- Wanxiang battery business in Hangzhou has been renamed A123 Systems Asia

European Sales and Engineering
- Stuttgart, Germany

Research and Development
- Waltham, Massachusetts
- Hopkinton, Massachusetts
A123 Corporate Structure

Transportation Systems
- Micro-Hybrids to Electric Vehicles, both in Passenger and Comm. Vehicle Markets
- Powder to Cell Production optimized for cost globally with Wanxiang EV

Commercial Solutions
- Commercial Applications including cells and Lead-Acid Replacement

Research & Development
- Materials, Cell Devel & Testing for A123, Wanxiang EV and non-competitive 3rd parties

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Commercial Products Strategy

• **Cells**
  + Cylindricals
  + Prismatics
  + Different Technologies
    – Nano Lithium Phosphate, Nano EXT, NMC, LTO

• **ALM’s**
  + Standard Modules – Lead Acid Replacement
  + Featuring Safety, Power and Life
  + Battery Management Systems available
  + Twice the run-time and half the weight of similar sized lead acid battery modules

• **Custom Packs**
  + Cell Selection
  + Circuit and Firmware Design
  + PCB Layout and Assembly
  + Packaging/Testing/Manufacturing
Transportation Strategy

**Micro-Hybrids (Low Voltage Systems)**
- Most growth potential – feature already moving from option to standard equipment in Europe, forecasted to penetrate 50% of global vehicle production by 2017
- Economics offer good payback for consumers
- A123 has differentiated technology and first-mover market advantages
- Portfolio includes Li-ion alone or combined with lead-acid up to 48V
- Investment: New, low cost design optimized for this application

**High Voltage Passenger Car (EVs & Hybrids)**
- Higher forms of electrification offer higher revenue per vehicle
- China is widely expected to become the most active EV market
- Investment: Funding R&D for higher energy density

**Commercial Vehicles**
- A123 has market leadership in this segment
- Wanxiang also has an important EV bus business in China
- Investment: 14Ah cell which has demonstrated market leading performance
MotorSports (2014/15)

- Mercedes AMG HPP uses A123’s highest power product yielding 40,000 W/kg at 100 °C.

- 70% of the grid are using A123 cell technology.

- Porsche LMP1 debuted in the World Endurance Championship at Silverstone in the UK on April 20th and has featured A123 as a partner.

- Initial contact with two Formula e Teams, internal discussions underway on strategy to secure supply of leading energy dense solutions.
A123 Research & Development Capabilities

✓ Electrochemical and Thermal Modeling

✓ Next Generation Materials Development
  • Cathode – Powder Synthesis, Electrode Formulation
  • Anode – Powder Processing, Electrode Formulation
  • Electrolyte – Additive Synthesis, Composition Development
  • Separator – Characterization, Treatments, Coatings

✓ Cell Design / Package Engineering
  • Cylindrical
  • Stacked / Wound Pouch Prismatic
  • VDA Compliant Metal Can

✓ Engineering Services – 120,000+ SF of Labs
  • Cell Build & Test – high throughput test facility
  • Electrode Coating and Development
A123 Systems Cell Roadmap

• Production Cell Roadmap
  + Cells currently in production and available for sale
# Production Cells

<table>
<thead>
<tr>
<th>Product</th>
<th>2.5Ah 26650 Nanophosphate</th>
<th>8Ah Ultra Nanophosphate</th>
<th>14Ah Nanophosphate</th>
<th>20Ah Nanophosphate</th>
<th>20Ah NMC</th>
<th>38Ah NMC</th>
<th>50Ah LFP</th>
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<tbody>
<tr>
<td><strong>Chemistry</strong></td>
<td>Nanophosphate®</td>
<td>UltraPhosphate™</td>
<td>Nanophosphate®</td>
<td>Nanophosphate®</td>
<td>NMC/LMO 7:3</td>
<td>NMC</td>
<td>LFP</td>
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<tr>
<td><strong>Nominal capacity (Ah)</strong></td>
<td>2.5</td>
<td>8</td>
<td>14</td>
<td>20</td>
<td>20</td>
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<tr>
<td><strong>Nominal voltage (V)</strong></td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
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<td><strong>Nominal energy (Wh)</strong></td>
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<td>26</td>
<td>45</td>
<td>65</td>
<td>78</td>
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<td><strong>Mass (g)</strong></td>
<td>76</td>
<td>320</td>
<td>510</td>
<td>496</td>
<td>500</td>
<td>850</td>
<td>1200</td>
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<td><strong>Dimensions (mm)</strong></td>
<td>φ26 x 65</td>
<td>161 x 227 x 4.7</td>
<td>161 x 227 x 7.25</td>
<td>161 x 227 x 7.25</td>
<td>136 x 240 x 7.25</td>
<td>240 x 268 x 7.25</td>
<td>240 x 268 x 11.4</td>
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<tr>
<td><strong>Volume (cc)</strong></td>
<td>34.5</td>
<td>172</td>
<td>265</td>
<td>265</td>
<td>237</td>
<td>372</td>
<td>690</td>
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<tr>
<td><strong>Specific power (W/Kg)</strong></td>
<td>2,600</td>
<td>6,700</td>
<td>3,900</td>
<td>2,400</td>
<td>2,500</td>
<td>1,800</td>
<td>1,200</td>
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<tr>
<td><strong>Power density (W/L)</strong></td>
<td>5,800</td>
<td>6,800</td>
<td>7,600</td>
<td>4,500</td>
<td>4,800</td>
<td>4,200</td>
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<tr>
<td><strong>Specific energy (Wh/Kg)</strong></td>
<td>107</td>
<td>81</td>
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<tr>
<td><strong>Energy density (Wh/L)</strong></td>
<td>235</td>
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<td>170</td>
<td>245</td>
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Production Cell Roadmap

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<tr>
<th>Cell model</th>
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<th>2018</th>
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<tr>
<td>2.5Ah</td>
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<td>C-Sample</td>
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<td>Premium</td>
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<td>Nanophosphate</td>
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<td>26650</td>
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<td>8Ah</td>
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<td>Gen 2.0</td>
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<tr>
<td>Premium</td>
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<tr>
<td>UltraPhosphate</td>
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<td>Pouch</td>
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<td>38Ah NMC</td>
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Summary:

• Markets are expanding and revenue is growing
  + We are on our way to be a $1B company

• Our plants are full and expanding near-term
  + $200M capital expansion in process

• Ownership is investing heavily in ‘green technologies’
  + A123, Fisker, EV bus production, small motive, etc.

• Our global footprint and diverse chemistries are a key strategic advantage

• Our Commercial business / organization is ramping and expanding

• We are focused on markets – we will offer the best solution for our target markets
  + LFP / NMC / LTO

• We continue to over-invest in R&D to support our long-term business

• We are growing headcount globally to support this growth
CHARGED FOR THE FUTURE
LEADING TECHNOLOGY FOR TRUSTED BRANDS
SOLUTIONS TO POWER INNOVATION