The worldwide xEV market 2012-2025
Battery is the Key

Christophe PILLOT
Director, AVICENNE ENERGY

The Worldwide xEV market
2012-2025

September 2013
AVICENNE ENERGY: RENOWNED TO HAVE REALISTIC FORECASTS

HEV powered by Lithium ion battery forecasts from 2008 to 2012

EV sold, in million units, worldwide, 2010 - 2020

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THE BATTERY MARKET IS REALLY DYNAMIC

Cellular Phones sold per Year (Million)

- Li-ion
- NiMH

Portable PC sold per Year (Million)

- Li-ion
- NiMH

Tons of Li-ion Cathode per year

- 2000
- 2012

Li-ion 18650 cell price ($/Wh)

Source: AVICENNE ENERGY Analyses 2013
THE WORLDWIDE BATTERY MARKET 1990-2010

Lithium Ion Battery: Highest growth & major part of industry investments

Source: AVICENNE ENERGY Analyses 2013
THE WORLDWIDE BATTERY MARKET
1990-2012

Lithium Ion Battery: Highest growth & major part of the investments
Lead acid batteries: By far the most important market (90% market share)

Source: AVICENNE ENERGY Analyses 2013
THE WORLDWIDE BATTERY MARKET
1990-2012

50 BILLION US$ in 2012
5% AVERAGE GROWTH PER YEAR (1990-2012)

Source: AVICENNE ENERGY Analyses 2013

1- Pack level
LI-ION IN 2012
MAIN APPLICATIONS: CELLULAR, NOTEBOOK

4 450 M cells – 32 000 MWh
10 500 M$

CAGR 2002/2012
+25 % per year in Volume
+14% per year in value

Source: AVICENNE ENERGY Analyses 2013
LI-ION IN 2012
MAIN APPLICATIONS: CELLULAR, NOTEBOOK

4 450 M cells – 32 000 MWh
10 500 M$

CAGR 2002/2012
+25 % per year in Volume
+14% per year in value

Source: AVICENNE ENERGY Analyses 2013
HEV, P-HEV & EV
DEFINITION & SEGMENTATION

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Note: Micro HEV are not in the HEV statistics & HEV forecast
HEV WORLDWIDE IN 2012
1,5 M HEV

HEV sold per year, M units, worldwide, 2000 - 2012

Penetration of hybrids in the global sales, 2000-2012

Source: TOYOTA, HONDA, NISSAN, FORD, GM, HYUNDAI, MERCEDES, GM, BMW, VW, PORSCHE... Compilation AVICENNE ENERGY
Micro hybrid not included
HEV WORLDWIDE IN 2012
BY CAR SUPPLIER

Total HEV Vehicles
+1.5 M in 2012

HEV sold per year, M units per car manufacturers, 2000-2012

- TOYOTA
- HONDA
- FORD
- GM
- HYUNDAI
- PORCHE
- Others

Source: TOYOTA, HONDA, NISSAN, FORD, GM, HYUNDAI, MERCEDES, GM, BMW, VW, PORSCHE... Compilation AVICENNE ENERGY
Micro hybrid not included

Others: Nissan, Mercedes, Mazda, VW, Audi
HEV WORLDWIDE IN 2012 BY CAR SUPPLIER

TOP 3: TOYOTA, HONDA, HYUNDAI

OTHERS: FORD, GM, ...

Source: TOYOTA, HONDA, NISSAN, FORD, GM, HYUNDAI, MERCEDES, GM, BMW, VW, PORSCHE... Compilation AVICENNE ENERGY
Micro hybrid not included
HEV WORLDWIDE IN 2012
BY COUNTRY

Total HEV Vehicles
+1,5 M in 2012

HEV sold per year, M units per country, 2004-2012

Source: AVICENNE ENERGY Analyses 2013

Micro hybrid not included

USA
29%

EUROPE
10%

OTHERS
7%

JAPAN
54%

USA
EUROPE
OTHERS

HEV WORLDWIDE IN 2012
BY COUNTRY

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HEV FORECASTS 2012-2025

HEV MARKET: 2.5 Million units in 2015 – 5 M in 2020

Source: AVICENNE ENERGY Analyses 2013

Micro hybrid not included
LI-ION BATTERY DEVELOPMENTS FOR HEV, P-HEV & EV

LIB >>> NiMH but

SAFETY & COST ISSUES

<table>
<thead>
<tr>
<th></th>
<th>PRIUS III NiMH</th>
<th>PRIUS x - Li-ion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volts</td>
<td>201.6</td>
<td>201.6</td>
</tr>
<tr>
<td>Cells</td>
<td>168 (28*6)</td>
<td>56</td>
</tr>
<tr>
<td>Capacity</td>
<td>6.5 Ah</td>
<td>3.8 Ah</td>
</tr>
<tr>
<td>Energy</td>
<td>1310 Wh</td>
<td>766 Wh</td>
</tr>
<tr>
<td>Weight</td>
<td>38 kg</td>
<td>25 kg</td>
</tr>
<tr>
<td>T°C Range</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Cyclability</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Recall slash battery profit

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SAFETY ISSUES

Li-ion and LMP are not thermally stable what raises serious safety concerns

In the 80’s, lithium metal batteries were put into the markets (Moli Energy). Their further development has for a long time been slow because of a low cycle efficiency and safety issues: High chemical reactivity and a low melting point enable strong chemical reactions, even explosions. In the charging-discharging process, lithium metal can form dendrite and accumulate on electrodes. The growing lithium dendrite could puncture the separator and result in an internal short circuit.

- **CONSEQUENCES:** Except BOLLORE, all the companies developing Li metal batteries cancelled their projects

Li-ion batteries for mobile devices mostly used a Lithium Cobalt Oxide Cathode and liquid electrolyte.
In case of overcharging or short-circuit (contact between anode & cathode) a chain reaction starts -> heating & gasing -> fire (“Thermal runaway”)

**CONSEQUENCES:** In 2006, SONY had to recall millions of portable PCs for total costs of 400 million USD, more than there profit-to-date

With new cathode chemistry, most of the automotive today on the markets experienced safety concerns:
(1) BYD Taxi in China with a lithium iron phosphate cathode
(2) GM Volt in the US with a LG Chemical battery using LMO cathodes (as a result of a crashed tested Chevrolet Volt caught three weeks after the testing !)
(3) PRIUS P-HEV in the US (converted from HEV Prius by a local engineering company without any authorisation by Toyota)

Boing 787: The fire that burned near the tail of a parked Boeing 787 in Boston was caused by an overheating Lithium ion battery pack. The battery fire could have been hot enough to melt the carbon-fiber reinforced plastic that makes up the plane’s shell.

**CONSEQUENCES:** All the 787 worldwide are grounded. Considerable losses for Boing.
SAFETY IS A SINE-QUA-NON SELECTION CRITERIA FOR BATTERY TECHNOLOGIES

Some technologies are already out of the game due to stability issues

<table>
<thead>
<tr>
<th>Cathode</th>
<th>LCO</th>
<th>NMC</th>
<th>LMO</th>
<th>LFP</th>
<th>High V</th>
<th>Sulfur</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFETY</td>
<td>No</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>xEV ?</td>
<td>YES</td>
<td>YES</td>
<td>?</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Anode</th>
<th>Graphite</th>
<th>Hard Carbon</th>
<th>Soft Carbon</th>
<th>LTO</th>
<th>SiC</th>
<th>Li Metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFETY</td>
<td>No</td>
<td>YES</td>
<td>YES</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>xEV ?</td>
<td>YES</td>
<td>YES</td>
<td>No (1)</td>
<td>?</td>
<td>?</td>
<td>?</td>
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</table>

<table>
<thead>
<tr>
<th>Electrolyte</th>
<th>Liquid</th>
<th>Additive</th>
<th>Gel Polymer</th>
<th>5V</th>
<th>Polymer membrane</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFETY</td>
<td>No</td>
<td>YES</td>
<td>YES</td>
<td>No</td>
<td>YES</td>
<td>&gt; 2025</td>
</tr>
<tr>
<td>xEV ?</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>&gt; 2025</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Separator</th>
<th>PE, PP membrane</th>
<th>+ coating</th>
<th>Non woven</th>
<th>Polymer membrane</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFETY</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>&gt; 2025</td>
</tr>
<tr>
<td>xEV ?</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>&gt; 2025</td>
</tr>
</tbody>
</table>

- Most of the BMS function is to manage the safety of the cell & the battery pack:
  - Overcharge management
  - Over voltage management

- Use “safer” material in the pack:
  - Flame retardant,
  - High shock resistance

- Thermal management improve both the safety and the life time

The lithium ion technologies that win will win partly on their safety argument, possibly sacrificing some energy density.
LIB FOR AUTOMOTIVE VALUE CHAIN

The largest share of the value (40%) comes from cell components.

Cell manufacturers & OEM alliance may be the winning model but comes with high risk if the wrong cell manufacturer is selected.

Tiers 1 - cell manufacturers alliance: most of them disappear (eg. Saft-Johnson Controls, Bosch-Samsung, Enerdel-Delphi...)

Tiers 1 - OEM alliance on Battery are not successful.

Panasonic and LG Chem, cell manufacturers develop raw-material in-house and make the pack integration for OEM.

On a different scale, Toyota, BYD or BOLLORE are fully integrate.

Comments
LIB MANUFACTURING INVESTMENTS 2009-2015

10-12 B$ WORLDWIDE

>50 GWh in 2015

Total Investment (M$) made for LIB manufacturing

- LiTec GmbH
- Panasonic EV
- SK Energy
- Mitsubishi H.I.
- NEC Tokin (Electrodes)
- AESC Japon
- Hitachi Vehicle Energy
- SAFT
- SAFT US
- BAK
- Lishen
- Nissan-Renault (Port)
- Blue Energy
- Toshiba
- Nissan - Renault (UK)
- LG Chem - Compact...
- Rusnano-Thunder Sky
- Lithium Energy Japan
- Hitachi Vehicle Energy
- SB Limotive
- GS YUASA
- Dow Kokam (KD ABG MI)
- Nissan-Renault (Fr)
- Ener1
- Sanyo
- A123
- JCI
- LG Chem
- BYD
- Sony
- NISSAN Motor US
- PANASONIC

Average Investments: 250 $ / kWh

Source: AVICENNE ENERGY Analyses 2013

A123 Michigan Plant - Photo courtesy of A123 Systems

Liotech Plant, Novosibirsk – 1.5 GWh production capacity

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BATTERY & POWER ELECTRICAL COST IN EV

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The Battery Show
The Expo for Advanced Batteries

AVICENNE ENERGY - CONFIDENTIAL INFORMATION
LI-ION BATTERY COST
2011-2020

LIB cell average cost
(EV design ; NMC cathode)

Source: AVICENNE ENERGY Analyses 2013

* For Production > 100 000 packs/year
EV FORECASTS 2011-2020

EV sold, in million units, worldwide, 2010 - 2020

EV impact on the LIB & raw material market is HUGE

IIT, March 2011 Fort Lauderdale
IIT, March 2010 Fort Lauderdale
Deutsche Bank, Electric Cars: Plugged In 2 – Nov 2009
Roland BERGER, Oct 2011, Batteries 2011 Cannes
AAB, AABC Europe, Mainz, June 2011

Source: AVICENNE ENERGY Analyses 2013
TOTAL BATTERY DEMAND 2025 FORECASTS

EV, HEV & P-HEV Battery needs (MWh)
CAGR 2012-2025: +20%

Total battery demand (MWh)
CAGR 2012-2025: +12%

Source: AVICENNE ENERGY Analyses 2013
The worldwide xEV market 2012-2025
Battery is the key

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Source: AVICENNE ENERGY Analyses 2013
The worldwide xEV market 2012-2025
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Micro-hybrids car market 2010-2020

Micro-hybrid batteries

- Powered today by Advanced lead acid batteries (sometimes in conjunction with super capacitors)
- LTO will also penetrate this market (Toshiba -> Suzuki)
- Panasonic develop new NiMH cell to address the micro-hybrid market

Advantages of micro-hybrid compare to HEV

- Much more profitable than full HEV: 8 to 10 times less expensive than full HEV to save 5% gasoline instead of 20% (4 times less)
- Much more impact on CO2

<table>
<thead>
<tr>
<th></th>
<th>Micro-hybrid</th>
<th>Full HEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>Advanced lead acid</td>
<td>NiMH or LIB</td>
</tr>
<tr>
<td>Cost ($)</td>
<td>300</td>
<td>3000</td>
</tr>
<tr>
<td>Fuel saving</td>
<td>5%</td>
<td>20%</td>
</tr>
<tr>
<td>Million Vehicle sold per year in 2020</td>
<td>35</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Source: AVICENNE ENERGY Analyses 2013
HEV, P-HEV AND EV REALITY OF THE MARKET WILL BOOST MICRO HYBRID AND ADVANCED LEAD ACID BATTERIES

THE BATTERY SHOW
The Expo for Advanced Batteries

September 2013

The worldwide xEV market 2012-2025
Battery is the key

source: AVICENNE ENERGY Analyses 2013
TAKEAWAYS

Battery Market 2010-2025
CAGR = +8%

- Li-ion battery is driven today by Portable PCs & electronic devices
- For HEV, the battery technology is today the NiMH
- In 2012, most of the car makers (except Toyota) switch to Li-ion
- P-HEV & EV will be powered by Li-ion: 6 B$ market in 2015 - 11 B$ in 2020 & 15 B$ in 2025
- EV expectations attract large Chemical companies
- New materials are needed to meet Automotive standards
- HEV will account for less than 5% of the automotive sales in 2020
- P-HEV & EV < 2% by 2020
- Micro-hybrid will achieve >50%
- Lead acid battery will be the first market in 2025 in volume & value
- A very small EV market in the automotive world will represent a huge market for batteries

Source: AVICENNE ENERGY Analyses 2013

RECHARGEABLE BATTERY MARKET WORLDWIDE 2000-2025

Note: Excluding Energy Storage batteries
The worldwide xEV market 2012-2025
Battery is the key

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THANK YOU
About AVICENNE ENERGY
AVICENNE PROFILE

Information for Growth - Powering your company’s market strategy with in-depth research

_creation: 1992, by Ali MADANI

_headquarter: Paris

 liaison Office: Japan, USA

 AVICENNE Energy Director: Christophe Pillot

 5 consultants
   _ a Madani
   _ C Pillot
   _ JP Salvat
   _ X Zhang
   _ A Yassari

September 2013

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OUR BUSINESS STORY

1992
• AVICENNE Creation

1994
• AVICENNE advised French Industry Ministry on the European battery business opportunities
• AVICENNE open its office in JAPAN

1999
• « BATTERIES » congress 1st edition in Paris

2003
• AVICENNE work on the due diligence process for the sales of SAFT by ALCATEL

2008
• AVICENNE: expert witness in the NTT-Hydro Quebec conflict

2009
• AVICENNE presented its market forecasts to industrials (CIAPS) in Beijing – China

2010
• Avicenne developed partnership with BATTERY JAPAN
• 20th Edition of “The rechargeable battery market worldwide 2010-2020

2011
• AVICENNE Energy division is created
• 13th Edition of BATTERIES Congress

2013
• 22nd Edition of “The rechargeable battery market worldwide 2012-2025
• 15th Edition of BATTERIES CONGRESS
The worldwide xEV market 2012-2025
Battery is the key

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**OUR METHODOLOGY**

**INFORMATION COLLECTION**

<table>
<thead>
<tr>
<th>Primary Research</th>
<th>Secondary Research</th>
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</thead>
<tbody>
<tr>
<td>Executive Interviews</td>
<td>Company News &amp; Financials</td>
</tr>
<tr>
<td>Vendor Briefings</td>
<td>Technology &amp; Product Specs</td>
</tr>
<tr>
<td>Product Demos and Tours</td>
<td>Government Data</td>
</tr>
<tr>
<td></td>
<td>Economic, Demographic Data</td>
</tr>
<tr>
<td>Consumer Surveys</td>
<td>Case Studies</td>
</tr>
<tr>
<td>Business Leader Surveys</td>
<td>Reference Customers</td>
</tr>
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</table>

**MARKET & STRATEGIC ANALYSIS**

<table>
<thead>
<tr>
<th>Qualitative</th>
<th>Quantitative</th>
<th>Strategic</th>
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<tbody>
<tr>
<td>Business Models &amp; Trends</td>
<td>Company News &amp; Financials</td>
<td>SWOT Analysis</td>
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<tr>
<td>Technology Issues</td>
<td>Technology &amp; Product Specs</td>
<td>Gap Analysis</td>
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<td>Policy &amp; Regulatory Factors</td>
<td>Government Data</td>
<td>Business Plan</td>
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<tr>
<td>Competitive Landscape</td>
<td>Economic, Demographic Data</td>
<td>Value Proposition</td>
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<td>Profiles of Key Players</td>
<td></td>
<td>Due Diligence</td>
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<tr>
<td></td>
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<td>Merger &amp; Acquisition</td>
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</tbody>
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**Track valuable Information's**

**Strategic Analysis**

**Presentation of the results**

**Q&A with customers**

**Customer Evaluation**
METHODOLOGY: EXTENSIVE FIELD RESEARCH TO RETRIEVE & CROSS CHECK INFORMATION

Top management contact network > 19 000 contacts

In Depth analysis Of applications

Cross Check Analysis

Battery Makers

OEM

Substitution technologies

BMS

Electronics

Raw materials suppliers

Environment & recycling
CUSTOMIZED & MULTICLIENT SURVEY FOR ALL THE VALUE CHAIN

- Raw Materials
- Materials
- Cells
- Pack
- OEM

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Source: Photo from BASF

Raw Materials
BMS & Electronics
Batteries
Cooling Systems
Power Electronics

Report 2011-2025
Worldwide Rechargeable Battery Market
MORE THAN 180 REFERENCES WORLDWIDE

- A123
- AIR LIQUIDE
- AIR PRODUCT
- AHLSTRUM
- ALCATEL
- AMPEREX (ATL)
- APPLIED MATERIALS
- ARoS SECURITIES
- ARC
- ARKEMA
- ASHLAND
- ATOFINA
- AT KEARNEY
- AXEON
- BAIN
- BASF
- BATTERY R&D ASSOCIATION OF KOREA
- B&D
- BHP BILLITON
- BRAND LICENCING PARTNERS (BLP)
- BOURNS
- BOSCH
- BUEHLER GMBH
- BYD
- CAP X
- CATELLA
- CARBONE LORRAINE
- CARLYLE
- CATELLA
- CATERPILLAR INC.
- CDN COBALT
- CEA/LITEN
- CELGARD
- CHEMETALL
- CHEMISHE FABRIK BUDENHEIM
- CIBA
- CIAPS CHINA
- COGEMA
- CONOCO PHILIPS
- CRU GROUP
- CSC CHALLENGE STRATEGY CHANGE
- DCN
- DELTA
- DGA
- DIALOG SEMICONDUCTOR
- DOW CHEMICAL
- DOW CORNING
- DUPONT
- DURACELL
- EDF
- ELECTRO ENERGY
- ENER 1
- ENERGIZER
- EOLITE
- EPCOS OHG
- ERAMET
- ETCAB
- FACOM
- FALCON BRIDGE
- FAIRCHILD SEMICONDUCTOR
- FAMEART
- FIST
- FLORIDENNE DE CHIMIE
- FMC
- FORTU POWER CELL
- FRANCE TELECOM
- FULTON INNOVATION
- GAIA
- GIL IMPORT BATTERIES LTD.
- GS MELCOTEC
- HC STARCK (BAYER)
- HILTI
- HITACHI MAXELL
- HOLLINGSWORTH & VOSE CIE
- HONEYWELL
- HPL (HIGH POWER LITHIUM)
- HUTCHINSON
- IER
- IGL EXPORT.
- INTERNATIONAL COMPONENT CORP.
- INTERNATIONAL RECTIFIER
- INTEK
- INTEL
- INTERSIL
- INCO
- ITRI
- ITS
- JBC
- JETRO
- JOHNSON CONTROLS
- KODAK
- KRUGER
- LAZARD
- LECLANCHÉ
- LEGRAND
- LG CHEMICAL
- LION CELLS
- LITTLE FUSE
- LILIPUCIAN
- LYNAS CORP
- MATUSHITA
- MICROSOFT
- MIT MICRO FUEL CELLS
- MOLTECH
- MOLYCORP
- MOMENTIVE
- MOTOROLA
- MUNSTER UNIVERSITY
- NANOYCL
- NCCP - RUSSIA
- NITECH
- NKPC
- NORILSK NICKEL
- NOVALED
- NTK POWERDEX
- OLIVER WYMAN
- OMG INC
- PANASONIC
- PHILIPS
- PHOTON
- PK & WISE
- POWER GENIX
- PRAYON
- PRISMARK
- PSA
- RAYOVAC
- RECHARGE
- RENAULT
- RHODIA
- ROLAND BERGER
- SAFT
- SAGENTIA
- SAINT GOBAIN
- SAKTI
- SAMSUNG SDI
- SANIK
- SCHRODER VENTURE
- SCOTENT ENTREPRISE
- SFPZ
- SHENZHEN HIGH POWER TECHNOLOGY
- SCHOTT AG
- SKC
- SVE - DASSAULT
- SOLVAY
- SONY
- STIBAT
- STORCK
- STRATEGY ANALYSIS
- TERRAROSSA CAPITAL
- TIGER GLOBAL
- TOTA KOGYO
- TOTAL
- TOTAL WIRELESS SOLUTION
- TOYO
- TOYOTA
- TYCO
- UMICORE
- UNIROSS
- URALELEMENT
- US NAVY
- VARTA
- VOLTRACK
- WACKER CHEMIE AG
- WARBURGPIRCHUS
- WORLD INDUSTRIAL INFORMATION CENTER
- WR GRACE & CIE
- YASLAMEN
- ZEBRA
- ZPOWER

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SPEAKER, CHAIRMAN OR WORKSHOP MODERATOR

Tens of INTERNATIONAL CONFERENCES per year

  Owner, chairman & speaker
  “The battery market 2010-2025”
- INTERNATIONAL Li-ion BATTERY SUMMIT – Dec 2011, Shenzhen, China
  “The Li-ion battery raw materials market 2010-2020”
- AABC Europe, Mainz (2012)
  “The Lithium ion raw material battery market 2010-2020”
- THE 28th INTERNATIONAL BATTERY SEMINAR - FLORIDA
  Fort Lauderdale, Florida, March 2012
  “HEV, PHEV & EV market 2010-2020 ; Battery is the key” (From 2004 to 2010)
- EVER 2009, MONACO
  “Challenges for EV market in Europe”
- EVS 20011,
  “Battery market for automotive industry”
- CIAPS (China Industrial Association of Power sources), BEIJING, Dec 2009
  “Advanced battery market & raw materials worldwide”
- Advanced Battery for Vehicles, IQPC, Frankfort, 2009-2010
  Chairman & speaker,
  “The battery business 2009-2020”
- EET-2008 European Ele-Drive, MOTOR SHOW GENEVA,
  International Advanced Mobility Forum – Geneva Motor Show
  (Professor Gaston Maggetto Award: C. Pillot as the best rated paper & presentation by EET-2008 Scientific Reviewing Committee)
  “The HEV & EV market trends & main challenges”
- China Industry Battery Fair 2006
  “The Chinese battery Industry”
...
BATTERIES 2013
OCTOBER 14TH-16TH

www.batteriesevent.com

- 3 days congress in France (Nice)
- 500 attendees
- 40 Booths
  - Battery makers, raw materials suppliers, IC & BMS suppliers, tests, machining, coating,
- 80 international experts:
  - Researchers, industrial process, marketing, financials,
SUMMARY

- A small team dedicated on the battery industry since almost 20 years

- Working with large group worldwide: FMC, Umicore, Dupont, Dow, Panasonic, LG, Samsung, JCI, Nokia, Bosch, Siemens, Toyota, Renault, ...

- Synthetic presentation to management & CEO of major groups

We will help and support your growth