

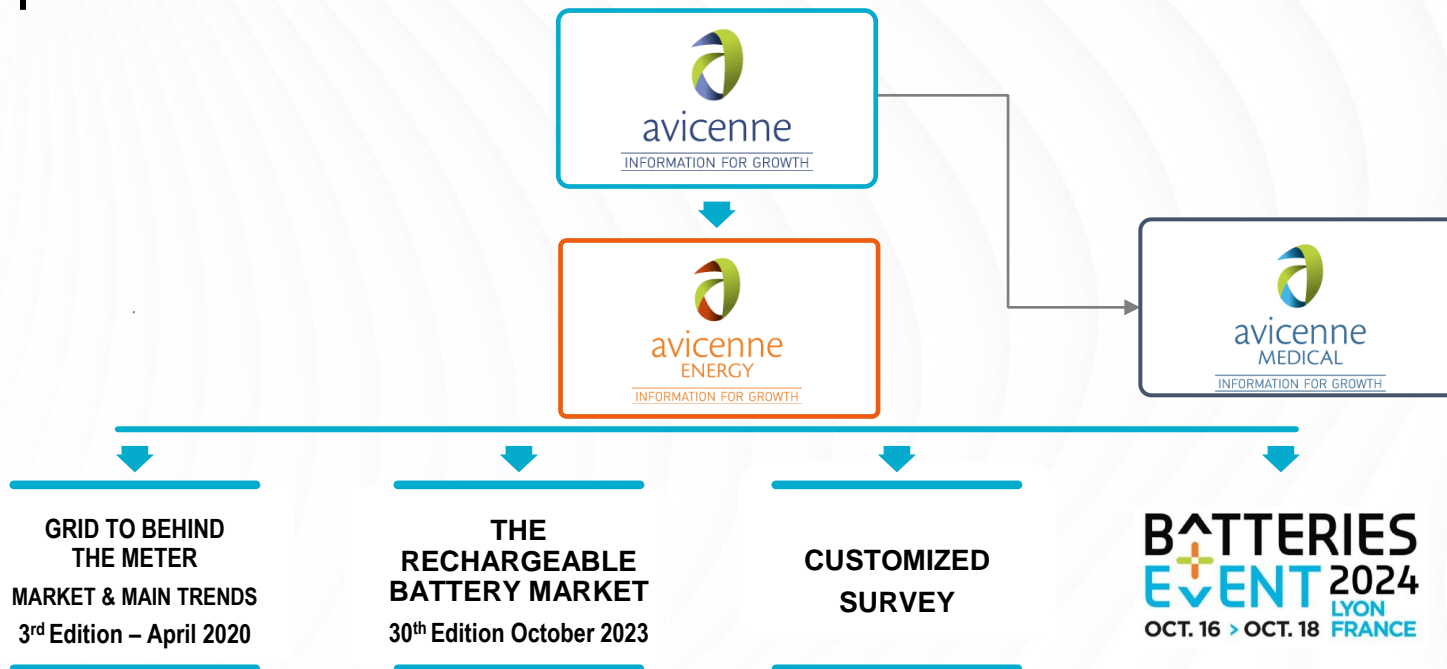
AVICENNE ENERGY

www.avicenne.com

2024

Avicenne profile

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





Avicenne Energy Team

Offices in Europe, US and China



Mike Sanders
Senior Advisor,
US manager



Olivier Noel
Advisor



Dave Sanders
Manager
Programs and Marketing



Christophe Pillot,
AVICENNE Energy Director



Ali Madani
Senior Advisor



Fabrice Renard
Senior Advisor



Jean-Philippe Salvat
Analyst



Frédéric Chosson
Advisor

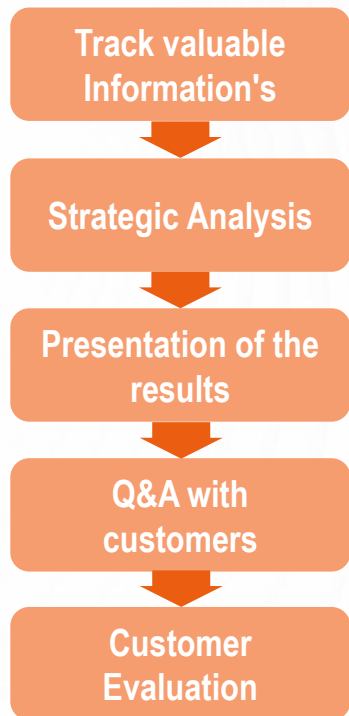


Hengfeng Cui
Advisor

Our business story

- | | | | |
|-------------|---|-------------|---|
| 1992 | AVICENNE Creation | 2014 | 16th Edition of BATTERIES Congress in NICE, France
1 month mission in China: Qinghai EV Rally, CIBF, 50 companies visited |
| 1994 | AVICENNE advised French Industry Ministry on the European battery business
AVICENNE open its office in JAPAN | | |
| 1999 | « BATTERIES EVENT » 1st edition in Paris | 2016 | 25th Edition of our Battery Market Survey – May 2016
18th Edition of BATTERIES Congress in NICE, France, Sept 2016
European Community Project ALISE: Dissemination & Exploitation Work Package leader |
| 2003 | AVICENNE work on the due diligence process for the sales of SAFT by ALCATEL | 2017 | 26th Edition of our Battery Market Survey – September 2017
19th Edition of BATTERIES EVENT in NICE, France, Oct 2017 |
| 2008 | AVICENNE: expert witness in the NTT-Hydro Quebec conflict | 2022 | 29th Edition of our Battery Market Survey – June 2022
24th Edition of BATTERIES EVENT in LYON, France, Oct 2022 |
| 2009 | AVICENNE presented its market forecast to industrials in Asia: CIAPS in Beijing – China , Battery Japan in Tokyo | 2023 | 30th Edition of our Battery Market Survey – October 2023
25th Edition of BATTERIES EVENT in LYON, France, Oct 2023 |
| 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 EVENT | | |
| 2012 | 21st Edition of “The rechargeable battery market worldwide 2011-2025 | | |

Our methodology



INFORMATION COLLECTION

	Primary Research	Secondary Research
SUPPLY SIDE	<ul style="list-style-type: none"> Executive Interviews (> 20 000 contacts in the battery value chain) Vendor Briefings Product Demos and Tours 	<ul style="list-style-type: none"> Company News & Financials Technology & Product Specs Government Data Economic, Demographic Data
DEMAND SIDE	<ul style="list-style-type: none"> Consumer Surveys Business Leader Surveys 	<ul style="list-style-type: none"> Case Studies Reference Customers

MARKET & STRATEGIC ANALYSIS

Qualitative	Quantitative	Strategic
<ul style="list-style-type: none"> Business Models & Trends Technology Issues Policy & Regulatory Factors Competitive Landscape Profiles of Key Players 	<ul style="list-style-type: none"> Company News & Financials Technology & Product Specs Government Data Economic, Demographic Data 	<ul style="list-style-type: none"> SWOT Analysis Gap Analysis Business Plan Value Proposition Due Diligence Merger & Acquisition

Methodology: Extensive field research to retrieve & cross check information

**Top management contact
network
> 40,000 contacts**

Conferences & Exhibitions

**BATTERIES
EVENT** | **THE BATTERY SHOW**

aabc

CeBIT

CIBF

CEVR

BATTERY JAPAN

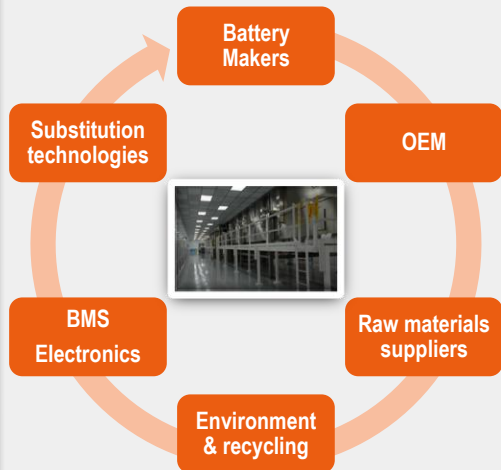
JAPAN ELECTRONICS SHOW

**International Battery
SEMINAR & EXHIBIT**
The Latest Technological Advances in Energy Systems for
Consumer, Automotive, Military & Stationary Battery Applications

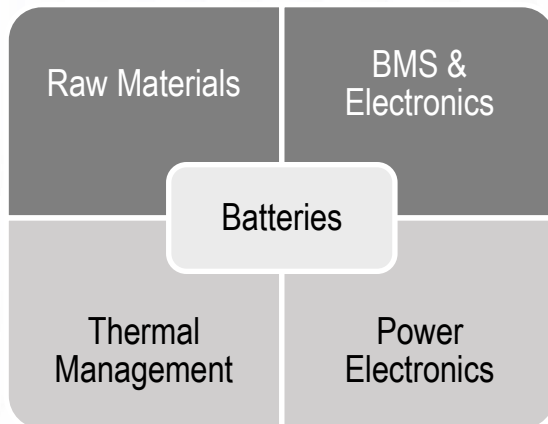
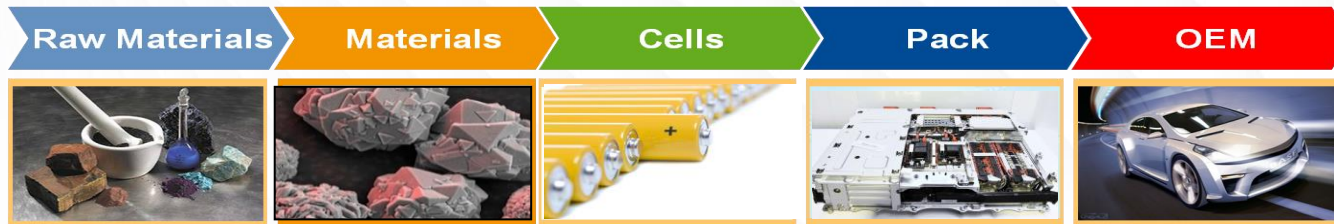
**In Depth analysis
Of applications**



**Cross Check
Analysis**



Customized & Multiclient survey for all the value chain





OCTOBER 2023 -30TH EDITION

2022-2030 Strategic Report Worldwide Rechargeable Battery Market

More than **650 pages** detailing the Worldwide Rechargeable Battery Market: Lead Acid, NiCd, NiMH & Li-ion



WWW.AVICENNE.COM

References

More than 400 customers all over the world



AVICENNE Team – Project steering – Project Director

Christophe PILLOT, Partner – AVICENNE ENERGY

Director, Battery and xEV expert



Christophe has built up considerable expertise in the area of battery market. He joined AVICENNE 30 years ago and Spend 3 years in Japan making analysis on the Electronic, Mobile & Japanese battery market. Christophe gained large experience in marketing, strategy analysis, technology and financial studies for the battery and power management fields. He developed the Battery market analysis for AVICENNE which counts more than 350 customers worldwide. Christophe published several annual surveys like “The rechargeable battery market and trends 2035”. He is also the founder & chairman of Batteries congress in France since 1999. He is now Director at AVICENNE ENERGY.

He has recently lead or participated in missions such as:

- Lithium ion battery suppliers' profile
- PSA-SAFT project expert analysis for ADEME
- Detailed lithium ion cell cost analysis
- Lithium ion battery cost analysis for different OEM (Nissan, Ferrari, GM)
- Additive for Lithium ion Electrolyte
- Anode market for Li-ion battery market & roadmap
- Lithium carbonate & hydroxide market
- xEV and E-bus battery market in China
- Lithium ion battery Cathode and Anode market and value chain analysis
- Lithium ion battery market beyond electronic devices & automotive: industrial batteries (UPS, Telecom, Back-up, Energy Storage systems...)
- Analysis of the flow battery suppliers worldwide: large group & start-up analysis
- Industrial battery market worldwide 2015-2025
- TESLA, BOLLORÉ analysis: battery choice, battery pack, cost curve, partnership, business model
- Lithium iron phosphate cathode market details and forecast – China Focus
- Detail profile of anode, cathode, electrolyte and separator makers
- Gel and solid electrolyte market and forecasts
- Automotive battery market related opportunities
- Opportunities in Lithium ion batteries for an US Speciality Chemical company
- SWOT analysis of 20 separator makers
- Li-ion pack makers market and business plan
- Expert Witness in the NTT DoCoMo Vs. Hydro-Quebec IP dispute negotiations
- Expert Witness in the UMICORE Vs. BASF IP dispute negotiations
- Battery pack analysis – Opportunities to integrate power electronics & chargers in the pack

Christophe is Speaker, chairman or workshop moderator at +20 international conferences worldwide each year (BATTERIES France, IBS Florida, AABC US and Europe, CIBF China, LBIS Shenzhen, BATTERY JAPAN, INTERTEK KOREA,

Globally, he has been involved in more than 300 projects for 350+ customers in the Battery Value Chain.

Before joining AVICENNE, Christophe PILLOT held key position in FRANCE TELECOM innovation division.

Degree in Chemistry & MBA in Innovation Management from Paris IX Dauphine.

His mother tongue is French, and he speaks fluent English

AVICENNE Team – Project steering

Ali MADANI

Director- Battery, power electronics, automotive expert



Ali MADANI is founder and Director of AVICENNE.

He will bring a strategic vision to the project. He will discuss the project with the team and ask strategic questions during the project to bring an “out of the box” vision and perspective.

He has recently led missions such as:

- Due diligence for a key battery player
- Lithium carbonate & hydroxide market
- Development of AVICENNE Automotive market studies
- Lithium ion battery market beyond electronic devices & automotive: industrial batteries (UPS, Telecom, Back-up, Energy Storage systems...),
- Participation to the recent AVICENNE study: The rechargeable battery market
- Li-ion pack makers market and business plan
- Battery pack analysis – Opportunities to integrate power electronics & chargers in the pack
- Battery market analysis for Automotive applications
- ...

Before creating AVICENNE, Ali MADANI held key position at DL See Consultants in Paris.

Degree from École Normale Supérieure de Cachan, MBA in Innovation Management from Paris IX Dauphine University. 30 years Experience in conducting, strategic and financial studies, technology watch projects for large corporations and small companies.

He is fluent in French and English.

AVICENNE Team - Senior Advisor

Michael SANDERS

Battery and Automotive expert



Mike is our US expert in Batteries and Materials. He is working at Sanders Group Enterprises, AVICENNE US Agent. He is responsible for proprietary projects supporting customers growth efforts, completing the interviews, writing the reports and mainly solicited for his knowledge on the US market. He has recently participated in missions such as:

- Battery Show, AABC and Solid State Market Presentations
- Strategy Workshop for potential entrance into Lithium Ion Battery materials
- Market connections and validation of opportunities in Lithium ion batteries for a US Speciality Chemical company
- Strategy and Market advisor to all levels of the value chain: minerals, materials, cell makers and OEMs
- Recycling, LIB Cathode, anode, separator and other analysis
- Diligence programs for DOE and other acquisition or market entrance activities
- High Si Loading Lithium Ion Battery roadmap
- Anode market for Li-ion battery market & roadmap
- Business development for new clients based on his network

Before forming the Sanders Group and becoming an agent for Avicenne, he had a long career with DuPont in multiple roles. Mike has significant energy storage materials value chain understanding with an emphasis on lithium ion batteries and systems with 10 years of market knowledge and relationships. Successful program leadership experience with significant business growth in ventures and existing businesses with a proven track record leading mergers and acquisition team to enter the lithium ion battery materials market. Most recent role with DuPont was the Global Marketing Director – Energy Storage Venture where he developed significant understanding and insights for the energy storage materials market, device manufacturing and systems while leading global marketing and customer interface efforts to establish programs to enter the \$20B energy storage materials market. Executed strategic and market planning for opportunity evaluation, research, and choices for entry into rapidly growing new market.

Education

Bachelor - Chemistry, University of Delaware, Newark, Delaware

Affiliations

Society of Automobile Engineers, Electrochemical Society

AVICENNE Team - Senior Advisor

Fabrice RENARD

Battery and Advanced materials expert



With more than 25 years of experience in business consultancy and management of chemical and advanced materials business in Belgium, Morocco and China, Fabrice gained strong experience on strategy, M&A, manufacturing, marketing, finance and innovation on high growth new technology business. He joined AVICENNE in 2020.

He is responsible for proprietary projects supporting customers growth efforts, completing the interviews, writing the reports and mainly solicited for his knowledge on economical and industrialization of existing and future materials alongside the battery value chain.

■ Prior AVICENNE, Fabrice was Chief Innovation Officer of the Prayon group. Over 10 years, he was in charge of the global R&D and Innovation strategy based on sustainable major trends and declined on nutrition, water, precision farming, rare elements recovery and energy. He led various up and downstream complex high-level international negotiations and partnerships including business or technology acquisitions. One of his core focus was the development of cathode materials. In this field, he earned a strong expertise on the battery value chain and served as COO of Belife, a joint venture with Umicore and as a Director of Prayon Pulead Technology, a Chinese-based LFP manufacturer.

Additionally, Fabrice holds different positions in Belgium and Morocco for Eklo, a consulting firm for emerging new business as managing director, for IDCampus, a creative lab as CEO and for Prayon as financial controller, marketing and business development manager, process and plant manager. He holds a Master in Chemical Engineering, a Postgraduate Diploma in Business Administration, an Executive Degree in Tax Law and an Executive Master in Management.

His mother tongue is French and he is fluent in English.

AVICENNE Team - Consultant

Hengfeng CUI Battery expert



Hengfeng is our expert in the field of electrochemistry and APAC countries battery market. He is responsible for completing the interviews especially in China, South-Korea & Japan and writing the reports. He joined Avicenne 1 year ago.

He has recently participated in missions such as:

- Lithium-ion battery Cathode market and value chain analysis
- The Chinese rechargeable battery market
- Cathode, anode and electrolyte provider company profiles in China
- Recycling battery market trends in China
- Hybrid Solid-State Battery recent development in China

Before joining AVICENNE, Hengfeng held International Business Development Manager position at Pulead Technology Industry, one of the major Cathode Active Material producer, for 5 Years.

Bachelor's degree in Chemical Engineering & Technology in Beijing, China.

Master of Engineering Science in Chemical & Bioprocess Engineering in Dublin, Ireland.

His mother tongue is Chinese, and he speaks fluent English.

AVICENNE Team - Consultant

Jean Philippe SALVAT

Battery expert



Jean Philippe is our expert in the field of electrochemistry. He is responsible for completing the interviews, writing the reports and mainly solicited for his technical input. He joined AVICENNE 30 years ago.

He has recently participated in missions such as:

- Lithium carbonate & hydroxide market
- xEV and E-bus battery market in China
- Lithium ion battery Cathode market and value chain analysis
- The rechargeable battery market
- Lithium ion battery market beyond electronic devices & automotive: industrial batteries (UPS, Telecom, Back-up, Energy Storage systems...),
- Opportunities in Lithium ion batteries for a US Speciality Chemical company
- LIB Cathode, anode, electrolyte & separator cost analysis
- SWOT analysis of 20 separator makers
- Li-ion pack security needs: PPTC
- Li-ion pack makers market and business plan
- Battery pack analysis – Opportunities to integrate power electronics & chargers in the pack

Before joining AVICENNE, Jean Philippe held Analyst position in DL See Consultant (3 Years) and Research Center Pont à Mousson SAINT GOBAIN (2 Years)

Degree in Material Science.

His mother tongue is French, and he speaks fluent English.

AVICENNE Team – Senior Advisor

Olivier NOEL

Consultant, Energy Storage and Industrial Films Expert



Olivier is our US expert in Energy Storage and Industrial Films. He is working for the Sanders Group Enterprises, AVICENNE US Agent. He is responsible for proprietary projects supporting customers growth efforts, completing the interviews, writing the reports.

He has recently participated in missions such as:

- Industry Market Reports for Energy Storage
- Opportunity Assessments for Energy Storage
- Strategy Workshops for potential growth into Lithium-Ion Battery materials for multiple materials companies
- Business development for new clients

Olivier had 15-year career with DuPont in different roles in Marketing and Sales. As a Six Sigma Black Belt resource, Olivier has led over 18 projects as New Business Development Leader for renewable energies and energy storage. With thousands of hours spent as project manager, he grew his knowledge in materials, different value chains with an emphasis on lithium-ion batteries.

With a solid track record of successful growth programs , Olivier increased his leadership experience with significant business growth in new film technologies destined to the energy storage market. In his most recent role, Olivier has been leading global marketing and customer interface efforts to establish programs to enter energy storage materials market. He has executed strategic and market planning for opportunity evaluation, research, and choices for entry into rapidly growing new market.

Education: Master in Economy specialized in International markets from CNAM, France

AVICENNE Team – Program Management

Dave SANDERS

Manager, Programs & Marketing



Dave supports clients throughout the North American battery value chain – conducting market intelligence, leading opportunity assessments, research studies and interviews while contributing to business strategy development. He supports Avicenne's digital marketing and business development efforts, and is also responsible for data collection and analysis as well as resource identification and management.

He has recently participated in missions such as:

- Global battery supply chain market scoping, covering everything from mining, material processing, component production, cell assembly, module/pack assembly, research facilities and recycling plants
- The recycling and 2nd use battery markets
- Cathode and anode market outlooks and trends
- Regional ESS segmentation for UPS, Telecom, Microgrids, Behind and In Front of Meter
- Various applications beyond automotive including powersports, marine, people movers, power tools
- Exploring strategic options in the battery value chain

Before joining Avicenne, Dave was a strategic partner related to digital marketing and market intelligence for many healthcare companies and managed a team responsible for market assessments, advertising strategy development, and campaign management. He drove innovation through partnering with clients to achieve many industry and organizational firsts. He also has experience in the IT and data privacy/data security fields.



Batteries Event 2024

- 3 days congress in France (Lyon)
- October 16–18, 2024
- 26th Edition (first edition in 1999)
- +1,000 attendees
- +100 Booths
Battery makers, raw materials suppliers...
- IC & BMS suppliers, tests, machining, coating,
- +160 international speakers:
Researchers, industrial process, marketing, financials



Avicenne Energy: what else can we do for you?

Avicenne Energy Competencies

Avicenne Energy has provided deep market understanding, insights, strategic support and consulting in the rechargeable battery market for nearly 30 yrs.

We recognized the major challenges for many projects moving forward and to help drive growth in the battery industry: Availability of experienced people with battery and materials capabilities, along with resources to fill current organization gaps until the programs progress to have internal resources and to support governmental funding programs.

Avicenne Energy began to fill these gaps with our clients with very experienced resources both from our core team and subcontractors in 2018, this has continued to expand in the EU, US and AP to support clients.

Examples of projects underway and completed:

- M&A and Investment support – Target development, strategic fit, pre-diligence, and diligence
- DOE Submissions and Loan Validation Diligence
- Engineering Plans for Cell Plant – Pilot And Giga-scale
- RFI/RFP for materials and equipment
- Cell Plant Start-up Validation and Quality Audits
- Deep technology and process expertise in many areas of the battery value chain

- Detailed market opportunity and mapping analysis by segment, region and globally
- Our experts include a major engineering firm, ex-cell manufacturing and technology leaders, battery pack manufacturing and technology leaders, deep materials experts, etc. Our team continues to grow as our clients are driving more projects forward.
- **If you are interested in learning more, are facing experienced resource challenges or becoming part of our team, please let us know.**