

## Batteries, Super Capacitors, Fuel Cells & EV's Seminar

June 12-13, 2019 – Savoie Technolac, Chambéry, France

### SEMINAR SCHEDULE & AGENDA

Wednesday , June 12, 2018

08:00 – 08:30	<b>Registration</b>
08:30 – 08:45	<b>Serma Presentation</b>
08:45 – 09:45	<b>Module 1: Battery Characteristics</b> This session introduces a historical prospective of batteries, detailed battery definitions and features (electrical, mechanical, standards, etc.). Module 1 lays the foundation for the attendants to share a common “battery language” and provides all the background needed for upcoming modules.
09:45 – 10:45	<b>Module 2: Primary cells &amp; Batteries</b> This session reviews and compares primary battery chemistries (Alkaline Manganese Dioxide, Zinc Carbon, Zinc Chloride, Silver Zinc, Nickel Oxyhydroxide, Lithium Iron Disulfide, Lithium Iodine, Lithium Manganese Dioxide, Lithium Carbon Monofluoride, Lithium Sulfur Dioxide, Lithium Thionyl Chloride, Lithium Sulfuryl Chloride, Lithium Bromine Chloride and High Power Organic Lithium).
10:45 – 11:00	<b>COFFEE BREAK</b>
11:00 – 12:30	<b>Module 3: Rechargeable cells &amp; batteries</b> This session reviews and compares rechargeable batteries chemistries (Nickel Cadmium, Nickel Metal Hydride, Rechargeable Alkaline, Lithium Ion and Lithium Polymer).
12:30 – 12:50	<b>Module 4: Lithium Rechargeable Cells Manufacturing Process</b> This session reviews manufacturing process techniques for conventional and pouch cells.
12:50 – 13:15	<b>Module 5: Chargers</b> This session reviews battery chargers, charging techniques per battery chemistry, charging problems and solutions, personal chargers, industrial chargers and charger types by charging time.
13:15 – 14:15	<b>LUNCH BREAK</b>
14:15 – 14:45	<b>Module 6: Military Batteries</b> This session reviews and compares Military batteries & Chargers (Primary, Rechargeable Batteries).
14:45 – 15:15	<b>Module 7: Thermal &amp; Reserve Batteries</b> This session reviews and compares Military batteries & Chargers (Primary, Rechargeable Batteries).
15:15 – 16:30	<b>Module 8: Battery Design Process &amp; Optimization</b> This session introduces battery design processes (cell and raw materials selection, cell level testing, battery design documents, battery electrical, mechanical and safety design and final verification tests (electrical, mechanical, safety)).
16:30 – 16:45	<b>COFFEE BREAK</b>
16:30 – 18:00	<b>Visit of INES &amp; SERMA Electricity Storage plant</b>
19h30 – 22h00	<b>Get together Dinner in Aix les Bains Riviera des Alpes</b>

Thursday, June 13, 2018

08:45 – 09:00	<b>INES Presentation</b>
09:00 – 10:30	<b>Module 9: Battery Safety</b> This session introduces the safety risks along the battery cycle life and provides safety guidelines for safety event elimination. This module also addresses the procedures involved in handling safety events, including first aid.
10:30 – 10:55	<b>Module 10: Battery Disposal</b> This session introduces battery disposal requirements and updates disposal status in Europe and the US.
10:55 – 11:10	<b>COFFEE BREAK</b>
11:10 – 11:35	<b>Module 11: The "Smart Batteries"</b> This session introduces the "Smart Battery" technology, including single wire and smart battery communications bus and its advantages.
11:35 – 12:15	<b>Module 12: Battery testing systems</b> This session introduces battery testing techniques, available systems and their features.
12:15 – 13:00	<b>Module 13: Energy Storage for the Grid</b> This session introduces and reviews the common energy storage systems for the grid.
13:00 – 14:00	<b>LUNH BREAK</b>
14:00 – 15:00	<b>Module 14: Fuel Cells</b> This session reviews and compares fuel cell types and their market status (Alkaline, Molten Carbonate, Phosphoric Acid, Proton Exchange Membrane, Solid Oxide and Direct Methanol).
15:00 – 15:45	<b>Module 15: Ultra Capacitors</b> This session reviews and compares ultra-capacitor types and their market status.
15:45 – 18:00	<b>Module 16: EV Energy Solutions</b> This session introduces EVs driving range problem and energy solutions. <ul style="list-style-type: none"><li>- The new electric automotive revolution</li><li>- EV Batteries</li><li>- EV Fuel Cells</li><li>- EV Metal Air systems</li><li>- EV Battery SWAP</li><li>- EV Charging infrastructure</li></ul>

## Pre-Registration Form - Energy Storage Seminar (June 12th-13th, 2019)

Please complete the registration form and return to: SERMA Technologies / Mr. Pascal Gouerec  
Email: [p.gouerec@serma.com](mailto:p.gouerec@serma.com) - Tel: +33 (0)4 79 79 20 21

### Contact Details (\*Required)

Company *:	First Name*:	Last Name*:
Title:	City*:	Zip Code*:
Street*:	Country*:	State:
Phone*:	Mobile:	Fax:
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