0.0 General Cell Specifications

Please describe your existing battery cell technology that is most suitable for a high power HEV, for a mixed power/energy PHEV or for a high energy EV application by filling out the following table. (Please use separate tables for more than one cell type

Item #	Parameter	Data
0.0.1	Supplier Company Name:	**Automotive Energy Supply Corporation**
0.0.2	Cell Model/Part Number:	**E5**
0.0.3	Cell Chemistry (anode/electrolyte/cathode/separator type):	Graphite/Organic Solvent/LMO+LNO/PP
0.0.4	Cell Construction (can vs. soft packaging; cylindrical vs. prismatic shape; plates vs. wound; laminated vs. non-laminated; etc.):	Soft packaged laminated plates
0.0.5	Cell Safety Components (internal disconnect or fuse; vent (type of?); shut-down separator; etc.):	shut-down separator
0.0.6	Total Coated Surface Area of Smallest Size Electrode (cm^2):	N/A
0.0.7	Cell Weight (g):	798g
0.0.8	Cell Dimensions, without terminals (mm):	261 x 216 x 7.1mm
0.0.9	Cell Dimensions, with terminals (mm):	286 x 216 x 7.1mm
0.0.10	Cell Voltage, nominal (V):	3.75V
0.0.11	Capacity, 1C rate, 25ºC (Ah):	33.9Ah
0.0.12	Specific Energy, 1C rate, 25ºC (Wh/kg):	159Wh/kg
0.0.13	Energy Density, 1C rate, 25ºC (Wh/l):	237W/l
0.0.14	Cell Impedance, 1 kHz (mΩ):	1.07mΩ
0.0.15	Cell Resistance, 10 sec., 50% SOC, 25ºC (mΩ):	1.49mΩ
0.0.16	Specific Power, 10 sec., 50% SOC, 25ºC (W/kg):	1930W/kg
0.0.17	Power Density, 10 sec., 50% SOC, 25ºC (W/l):	2864W/kg
0.0.18	Were the above discharge pulse power values calculated based on a current limit or voltage limit and what were the current or voltage limit values used?	voltage limit 2.5V
0.0.19	Cycle Life, 1C rate, 100% DOD, 25ºC to 80% of Initial Capacity (cycles):	1200 cycle
0.0.20	Calendar Life, 60% SOC, 45ºC to 80% of Initial Capacity (specify if other temperature or SOC was used) (years):	2.6 years

0.0.21	Operating Temperature Range, Discharge (ºC):	-30 - 60
0.0.22	Operating Temperature Range, Charge (ºC):	-30 - 60
0.0.23	Storage Temperature, Recommended Long-term (ºC):	20 - 40

Item #	Parameter	Data
0.0.24	Nail Penetration Abuse Test Results (SAE Modified EUCAR Hazad Level and Max. Cell Temperature)	Hazard level 2
0.0.25	Crush Abuse Test Results for all Axis (SAE Modified EUCAR Hazad Level and Max. Cell Temperature)	Hazard level 2
0.0.26	For prismatic can and soft-packaged cells, what is their rate of thickness expansion to end of life at 45°C. Define the loading conditions (constraint pressures) and measurement technique.	Not Available about cell expansion. Module absorbe the cell expansion and module effective dimension will not change. Our intension is to supply the battery as modules and/or pack not as cells.
0.0.27	For prismatic can and soft-packaged cells, have you tested them under compression/constraint? If you have done so, what starting constraint pressure do you use?	Yes.
0.0.28	Please summarize any unique advantages that your technology has over competing technologies.	Life,Safety,Power
0.0.29	What key requirements for your cell technology must be considered when incorporating them into a battery pack (e.g. thermal management, special packaging, safety devices, venting, special energy control strategies, cell balancing, etc.)?	Temperature detection, Water prevention, Cell ballancing, Voltage limit method, Current limit method, Power limit method, Thermal management in some case.
0.0.30	Are the battery cells described here in production? If yes, in what products are they used and what is their production volume? If no, when will prototypes be available and when is their production scheduled to begin and at what volume?	We are going to start mass production for Nissan EV "Leaf" in this summer. Production capacity of EV battery will be 90K packs/year by 2011.
0.0.31	Do you also manufacture a complete battery pack system, including control software and electronics? If no, does your company have any plans to produce complete systems or form an alliance with a second party that would produce the system?	Yes, we assemble a complete pack system in our plant.

0.0.32	**Photo of Cell:**