고출력 리튬이온/리튬이온 폴리머전지의 개발 동향 및 시장 전망

노 환 진 대표이사

(주) 에너랜드)

고출력 리튬이온/리튬이온 폴리머전지의 개발 동향 및 시장 전망

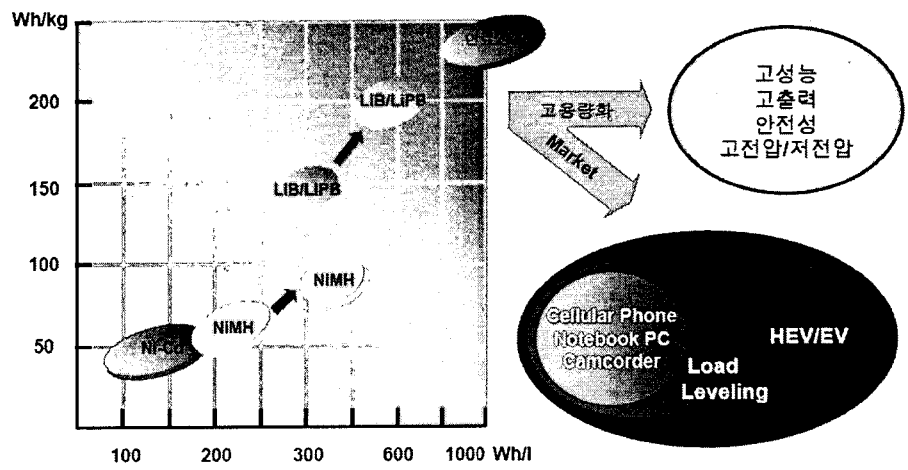
2004. 11.11

㈜ 에너랜드

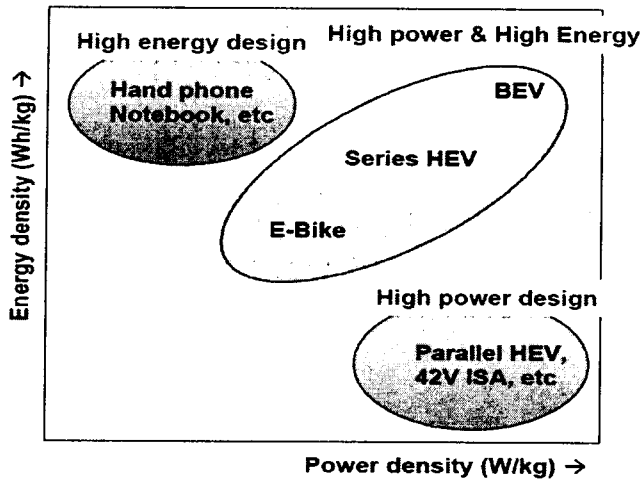
(www.enerland.com)

노 환 진

이차전지 개발 Trend



주요 응용분야별 요구 특성



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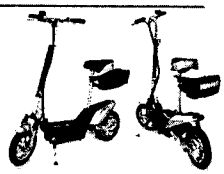
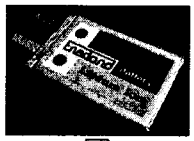
High Power Application

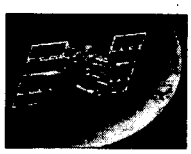
RC Airplane

Power Tool



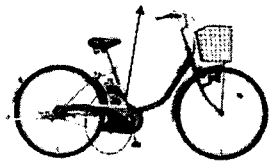
Electric Scooter





Space
Satellite

EV/HEV



E-Bike

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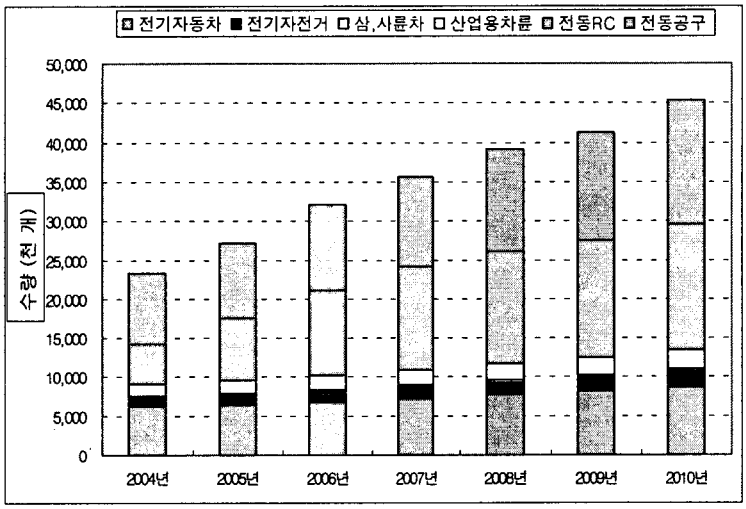
고출력 이차전지 시장전망



자료 : Yano Research Institute 2004

고출력 이차전지 시장전망

단위 :천개

	2004년	2005년	2006년	2007년	2008년	2009년	2010년
전기자동차	6,186	6,410	6,749	7,187	7,655	8,150	8,680
전동자전거	1,200	1,310	1,390	1,530	1,680	1,840	2,010
삼,사륜차	147	167	199	225	247	269	291
산업용차륜	1,620	1,720	1,820	1,965	2,120	2,280	2,450
전동 RC	6,000	12,000	20,000	-	-	-	-
전동공구	9,152	9,504	10,944	11,472	13,052	13,728	15,680

자료 : Yano Research Institute 2004

USABC GOALS

	Mid-Term Goal	Min. Goals for Long Term	Long Term Goal
Power Density (W/L)	250	460	600
Specific Energy (Wh/Kg) ; C/3 Discharge rate	80	150	200
Specific Power (W/Kg) ; Discharge,80% DOD/30sec	150	300	400
Cycle Life (Cycle) ; 80% DOD	600	1,000 to 80%DOD 1,600 to 50% DOD	1,000
Operating Environment (° C)	-30 to 65	-40 to 50	-40 to 85
Normal Recharge Time (h)	6	6 (4 h desired)	3 to 6
Cost (US$/KWh)	150	150	100

USABC : US Advanced Battery Consortium

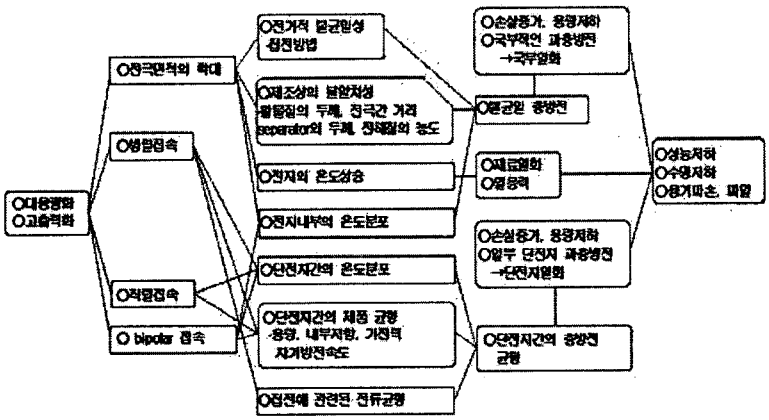
Goal : To develop advanced EV battery technology

Key Barriers to Application of Li ion in HEV

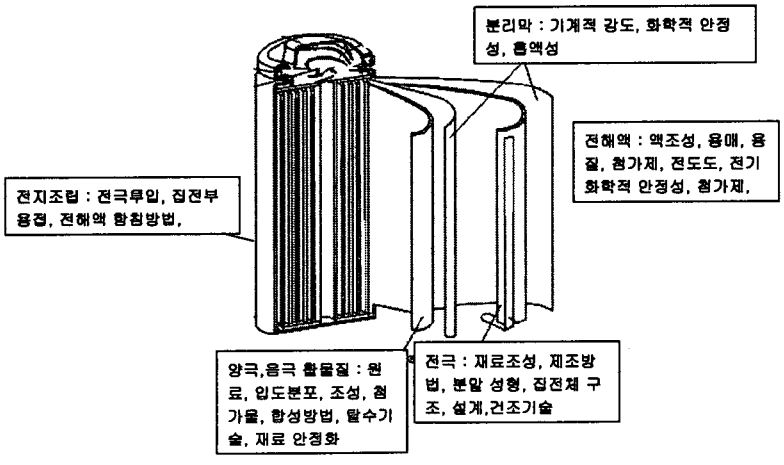
Power-Assist HEV

	Minimum	Maximum
Calendar Life	15 years	15 years
Production Cost	$500 (0.3 kWh)	$800 (0.5 kWh)
Abuse Tolerance	Meet normal automotive requirements for mechanical shock & vibration, containment exposure & FMVSS requirements	

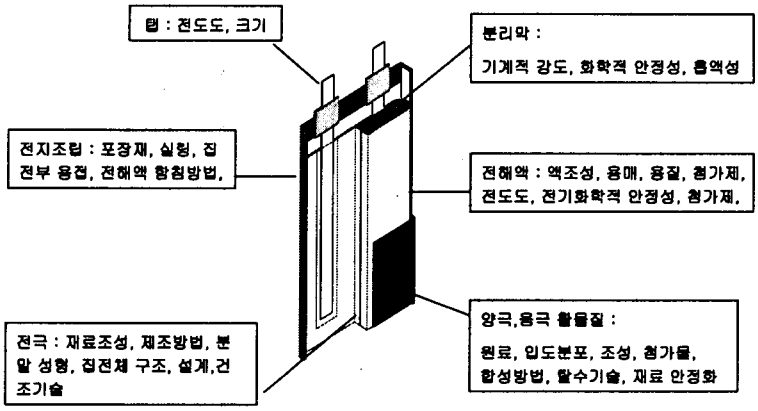
리튬 전지의 대형화, 고출력 전지의 성능, 신뢰성, 안전성과의 관련 인자



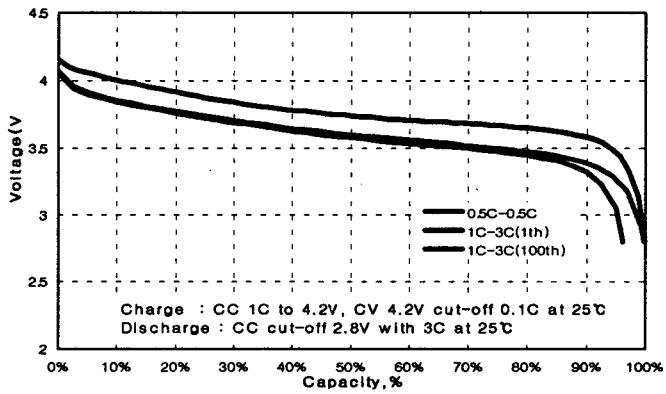
고출력 LIB 요소 기술



고출력 PLIB 요소 기술

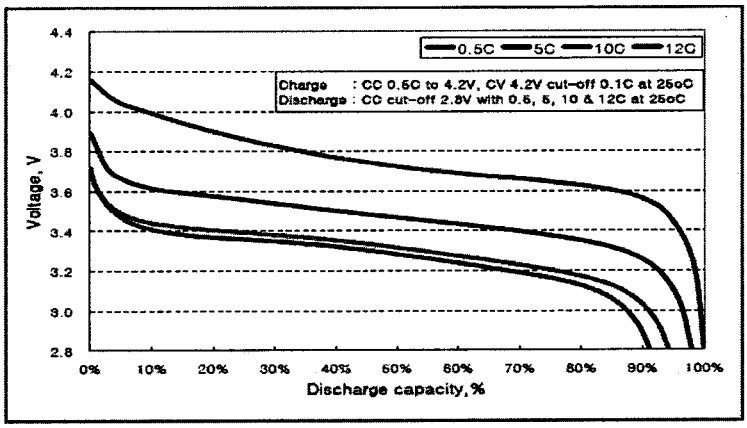


Performance of Enerland's Cell for E-Bike



Capacity	4500 mAh
Specific Energy	175 Wh/kg
Specific Power	450W/Kg

Performance of Enerland's Cell for Electric RC



Capacity	1800 mAh
Specific Energy	180 Wh/kg
Peak Power	1.9 Kw/Kg

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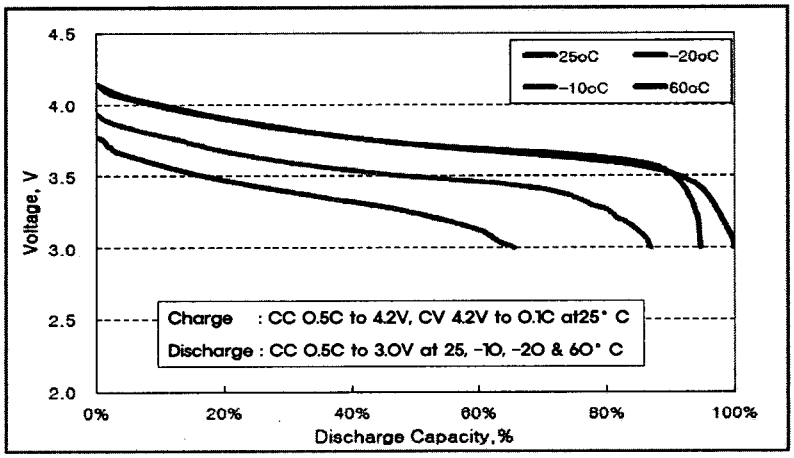
Temperature Performance of Enerland's Cell



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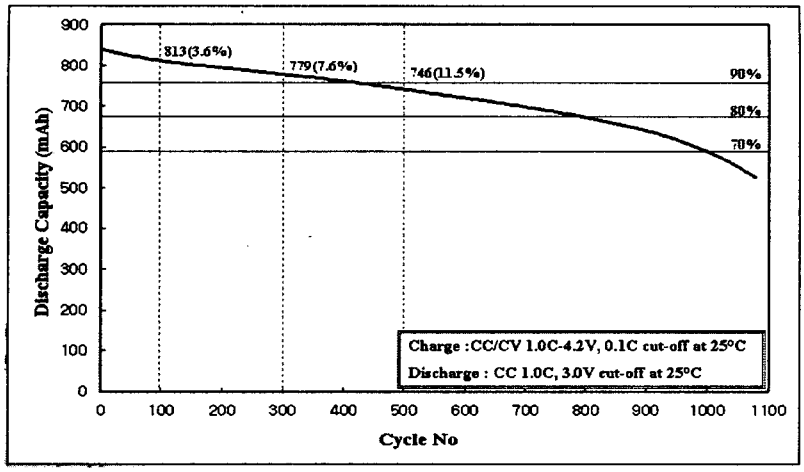
Cycle Performance of Enerland's Cell



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