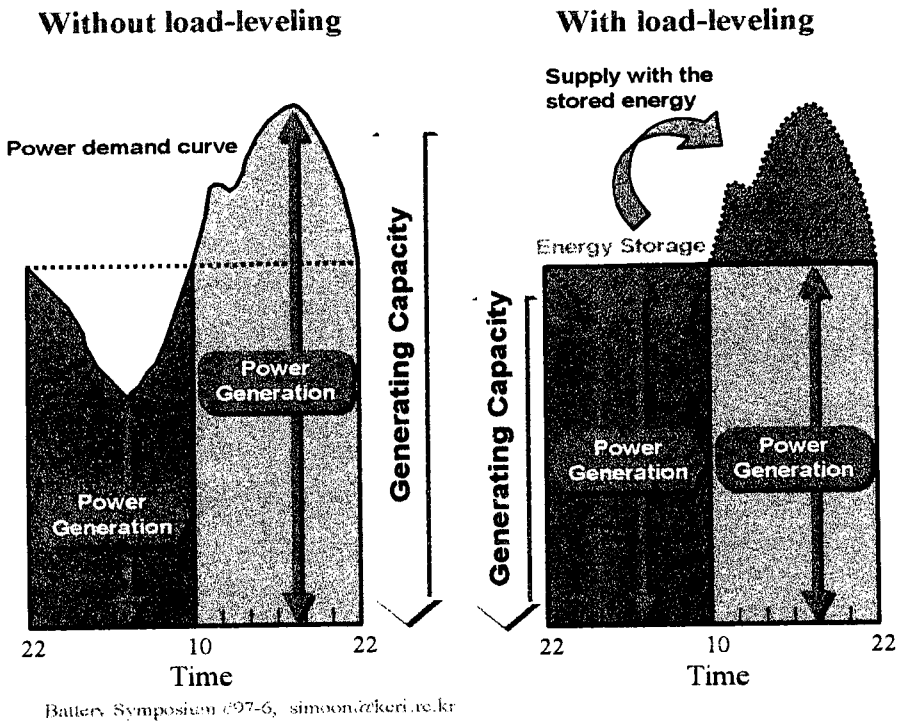
Gel 전해액을 사용한 밀폐형 연축전지 개발

윤연섭, 김규태, 노형도, 조철우

(세방하이테크(주) 기술연구소)



Battery Symposium '97-6, simoon@keri.re.kr

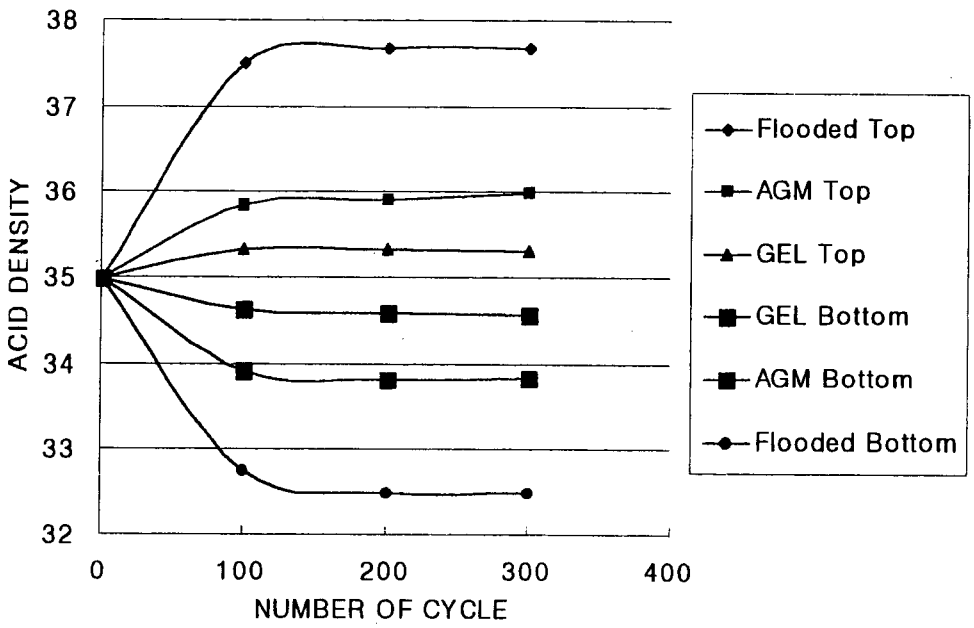
BESS (Load Leveling) 용도

GENERAL CHARACTERISTICS
OF TYPICAL FLOODED BATTERIES Vs VRLA BATTERIES

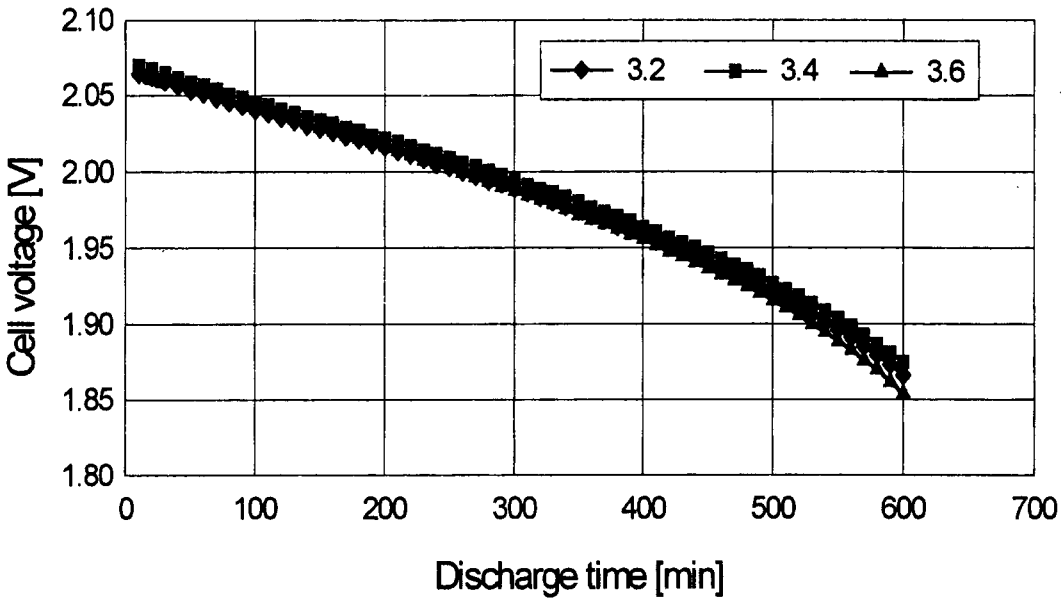
	FLOODED BATTERIES	VRLA BATTERIES
ELECTROLYTE	LIQUID	LIQUID, GEL or SOL
SEPARATOR	FLAT TYPE (WITH/WITHOUT GLASS MAT)	AGM or FLAT TYPE (WITH/WITHOUT GLASS MAT)
VENT CAP	OPEN TYPE	SEALED TYPE
ALLOY FOR GRID	Sb or Ca	Ca
MAINTENANCE	HARD	EASY or NO NEED
CHARGING VOLTAGE	TO 3V/CELL	GENERALLY BELOW 2.4 V/CELL
INSTALLATION	VERTICAL	HORIZONTAL and VERTICAL (POSITION FREE)
SELF-DISCHARGE	HIGH (OVER 3%/MONTH)	LOW (BELOW 3%/MONTH)
STRATIFICATION OF ELECTROLYTE	HIGH	LOW
COST OF CELL	LOWER THAN	HIGHER THAN
TRANSPORT	HARD	EASY
STORAGE WITHOUT RECHARGE	LESS THAN TREE MONTH	MAX. 2 YEARS

GENERAL CHARACTERISTICS VRLA BATTERIES

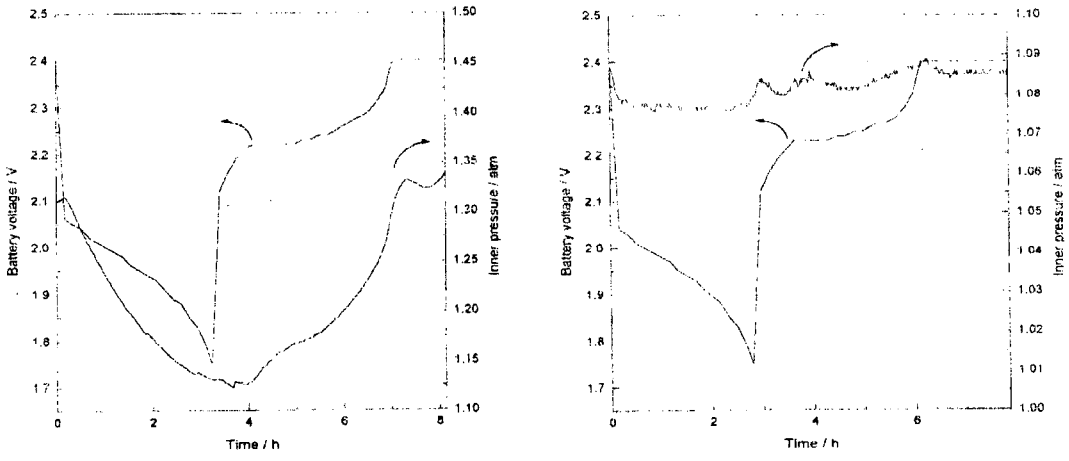
	AGM TYPE	GEL TYPE
ELECTROLYTE	LIQUID or SOL	GEL or SOL
SEPARATOR	ABSORBED GLASS MAT	FLAT TYPE (WITH/WITHOUT GLASS MAT)
MAINTENANCE	HARD	EASY or NO NEED
INSTALLATION	BE RESTRICTED WITHIN	POSITION FREE
SELF-DISCHARGE	HIGH	LOW
STRATIFICATION OF ELECTROLYTE	HIGH	LOW
COST OF CELL	HIGHER THAN	THAN LOWER
STORAGE WITHOUT RECHARGE	MAX. 1 YEAY	MAX. 2 YEARS
AREA FOR INSTALL.	LARGER THAN	SMALLER THAN



전지별 전해액 성층화 특성

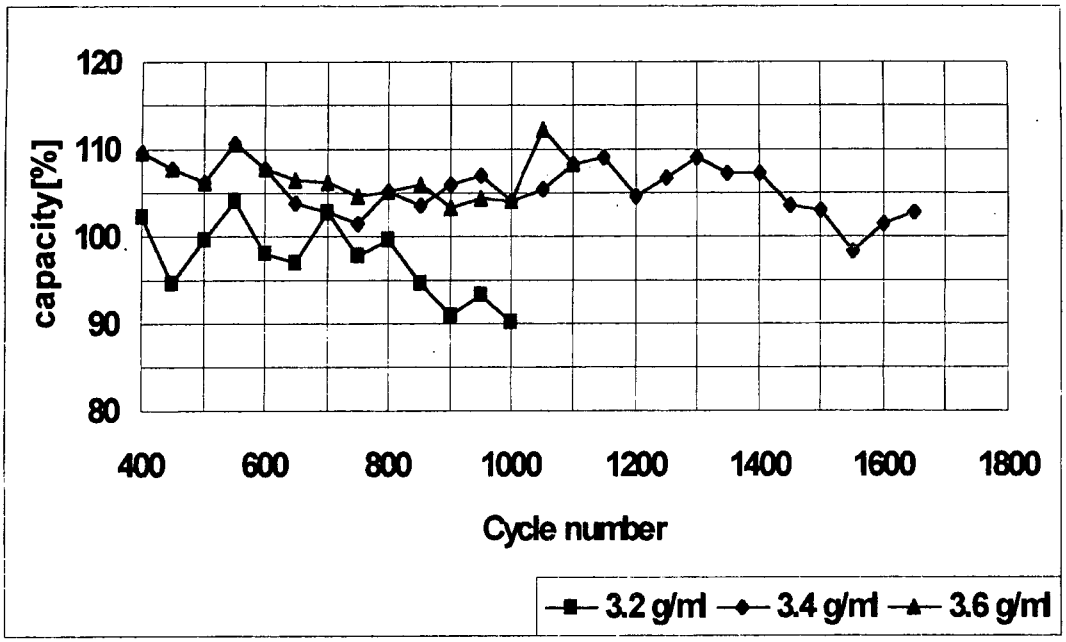


Initial capacity variations at C_{10} capacity test.

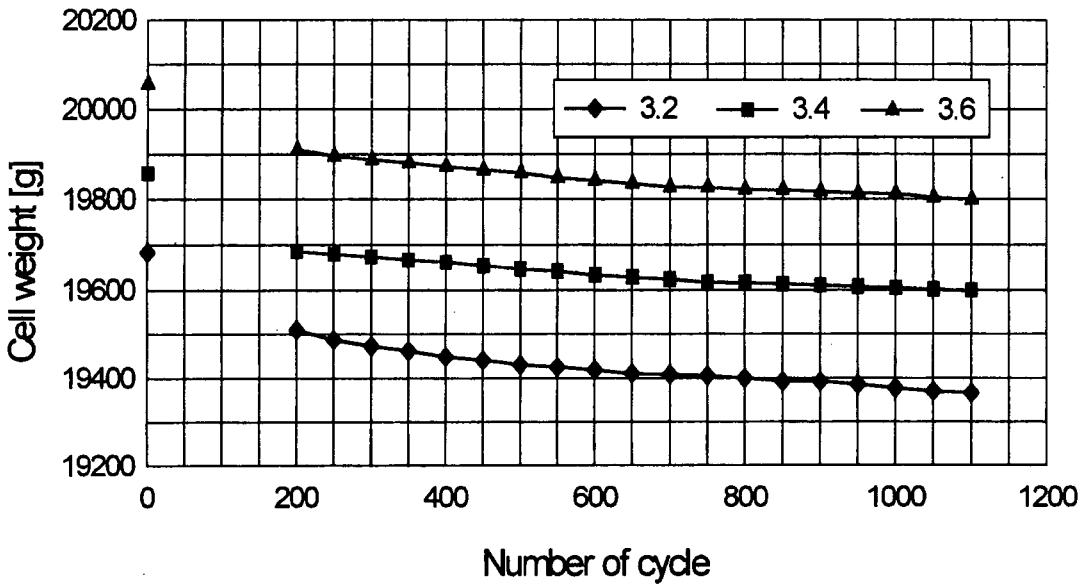


(a) 내압력 2.0atm, (b) 내압력 1.2atm

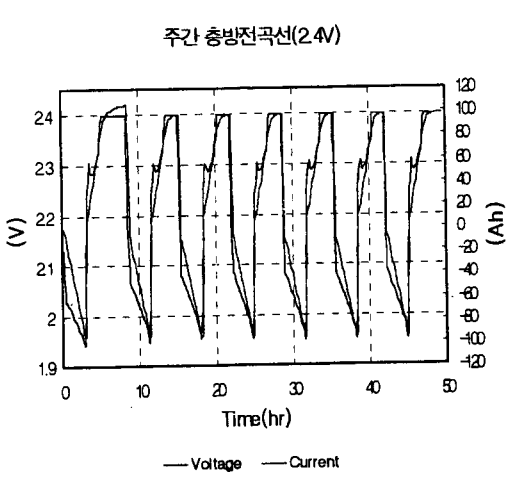
고율 수명시험한 전지의 내부 압력 변화

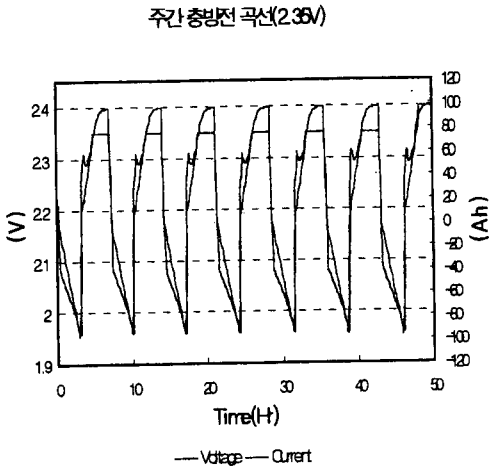


The result of life-cycle test (at dod100%/5HR)



Water-loss during the cycle-life test.





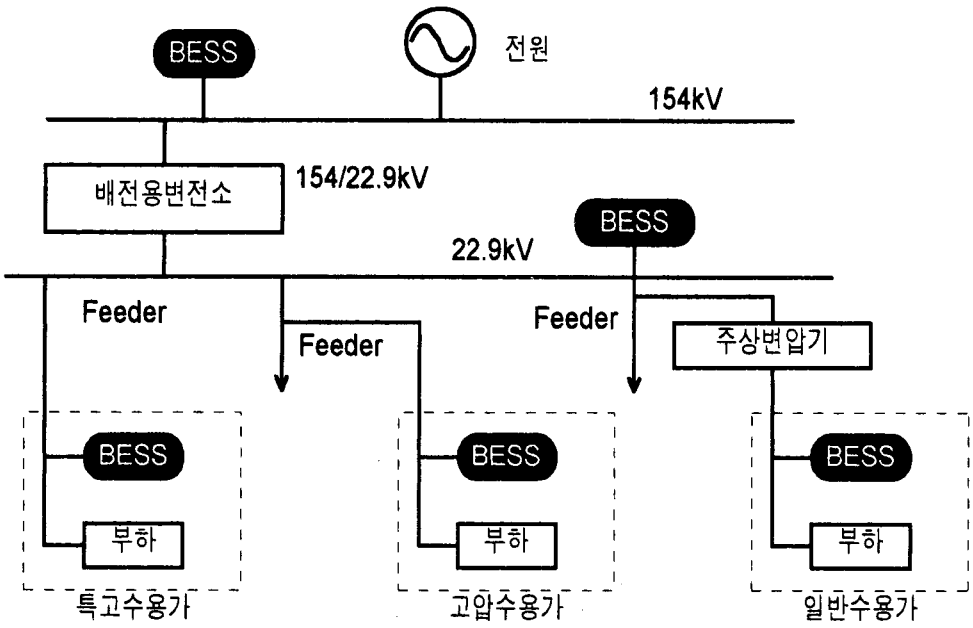
충전전압에 따른 용량특성 변화

전지 제원 (BL 4000 - 2V 4000AH ; VRLA type)

Type	Model	Voltage	Capacity [Ah]				spec. Energy (5H.R.)		Dimension (L/W/H)	Weight
		[V]	C_{10}	C_5	C_3	C_1	Wh/kg	Wh/l	[mm]	[kg]
2V 4000	DIN	2	4000	3360	2976	1984	26	84	472×212×772	250

Discharge time(h)	10h	5h	3h	1h
Capacity(Ah/25℃)	C_{10}	C_5	C_3	C_1
	4000	3360	2976	1984
Discharge current(A)	400	672	992	1984
Final discharge voltage(V)	1.80	1.77	1.75	1.67

설치가능장소


BESS
전원
154kV
배전용변전소
154/22.9kV
BESS
22.9kV
Feeder
Feeder
Feeder
주상변압기
BESS
부하
특고수용가
BESS
부하
고압수용가
BESS
부하
일반수용가