

Forklift Battery Regeneration Sheet (48V)

Client	AM CELL	Phone	
Address	Mr. Min Ho Park - Second		

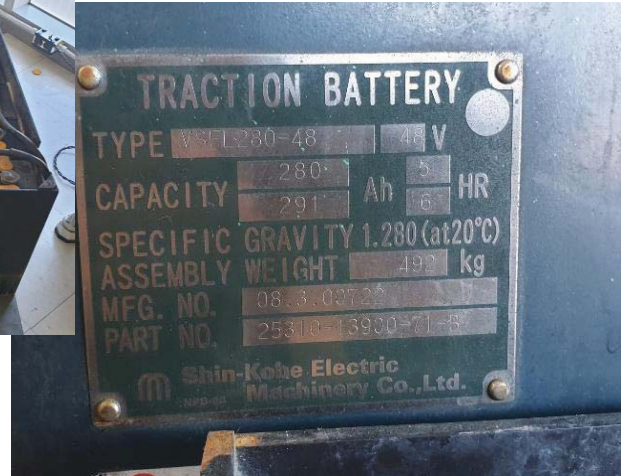
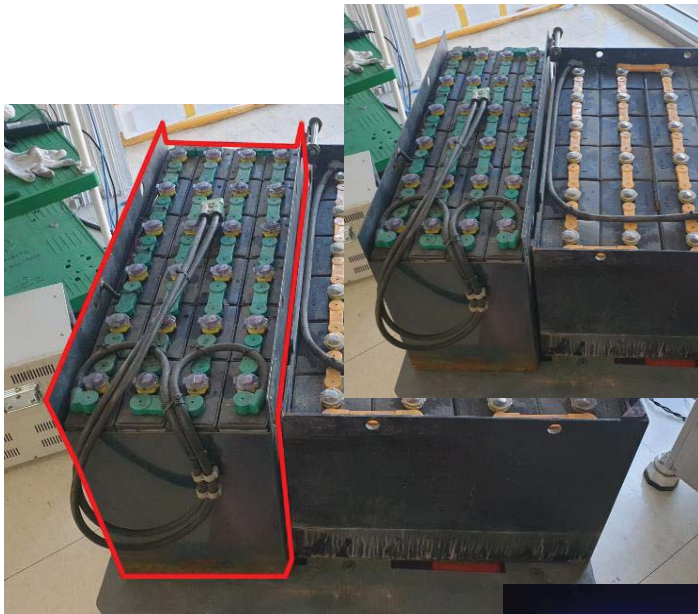
No.		Brand	Shin-KOBE	Type	VSFL280-48
Production Day	Mar. 2008		Work Period	09 Jan. 2019 ~ 14 Jan. 2019	
Voltage	48	Capacity (Ah)	280 / 5hr	Discharge Current	56A / 1hr

Cell	Initial Measurement		Discharge		1 st Regeneration		1 st Discharge		Current Status	Remark
	Voltage	Gravity	Voltage	Gravity	Voltage	Gravity	Voltage	Gravity		
1	2.12	1.250			2.15	1.280				
2	2.12	1.240			2.15	1.280				
3	2.05	1.150			2.08	1.215			Lower Cell / Corrosion	Cell replacement recommended
4	2.11	1.220			2.14	1.270				
5	2.10	1.220			2.13	1.250			Lower Cell	
6	2.11	1.220			2.13	1.255			Lower Cell / Corrosion	Cell replacement recommended
7	2.12	1.240			2.14	1.260			Lower Cell	
8	2.12	1.250			2.14	1.275				
9	2.12	1.240			2.14	1.270				
10	2.11	1.240			2.14	1.270				
11	2.12	1.250			2.15	1.280				
12	2.12	1.250			2.14	1.270				
13	2.12	1.240			2.13	1.270				
14	2.12	1.230			2.14	1.275				
15	2.12	1.240			2.14	1.280				
16	2.12	1.240			2.13	1.265				
17	2.12	1.240			2.13	1.250			Lower Cell / Corrosion	Cell replacement recommended
18	2.12	1.240			2.13	1.260			Lower Cell	
19	2.10	1.230			2.12	1.250			Lower Cell / Corrosion	Cell replacement recommended
20	2.12	1.240			2.14	1.265				
21	2.12	1.240			2.13	1.260			Lower Cell	
22	2.13	1.250			2.15	1.280				
23	2.12	1.230			2.13	1.260			Lower Cell	
24	2.12	1.240			2.14	1.270				
T	50.8	1.235	1:23		51.2	1.265	3:37			

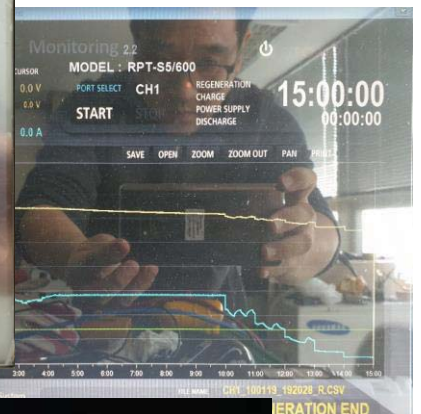
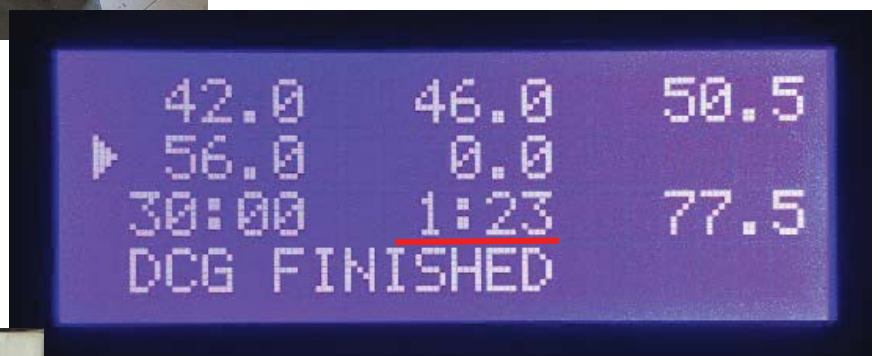
Discharging Time / Current	Initial Discharge	1:23 / 77.5Ah
	1 st Discharge	3:37 / 202.6Ah
	Remark	161.4% increased

% On the optimum	
100% ~ 80%	
80% ~ 60%	
60% ~ 40%	
40% ~ Defect	

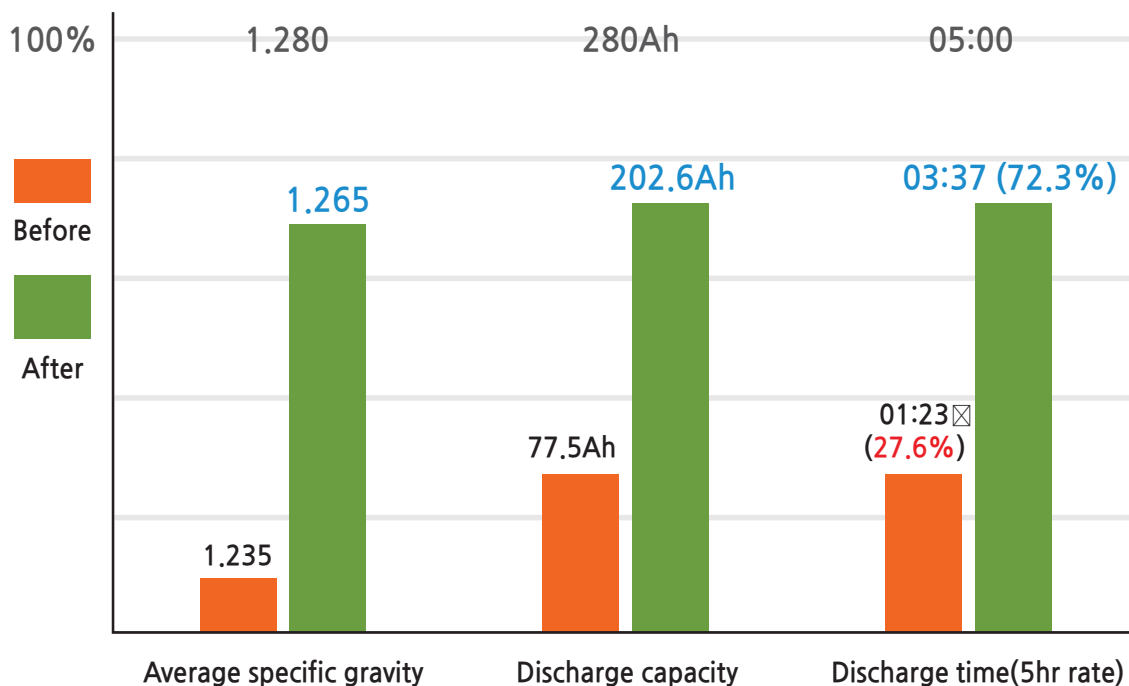
Comment : _____



Discharge value after full charging
with a conventional charger
(Before Regeneration)



Discharge value **after the 1st Regeneration**



- This forklift battery bank (48V, 2V x 24 cells) was produced in 2008 by Shin-KOBE in Japan.
- It is already 11 years old, so all cells have been somewhat corroded.
- We checked all voltage and specific gravity of this battery, after a fully charged by a conventional charger prior to the regeneration process.
- As you can see the pictures, externally, it looks like a general used-battery. As the result of measuring all initial values, there seems to be a problem in No.3 cell. The battery is used for more than 10 years and the initial capacity is not large (280Ah)
- All discharging process were completed by RPT-D10K of REPOWERTEK INC. (Temperature 9°C - Winter)
- The regeneration (one time) was completed by RPT-S500 of REPOWERTEK INC. (Temperature 4°C - Winter)
- Prior to the regeneration process, the battery was already fully discharged by a conventional charger. Forklift Reach Type - 280Ah / 5hrs. **It took 1:23 (1 hour and 23 minutes - 27.6%) by a discharge test before regeneration. This battery is a state that it cannot rent or sell anymore.**
- **After one regeneration (for 15 hours), The restored battery capacity is improved to 3:37 (3 hours and 37 minutes = 217 minutes) by a discharge test after the 1st regeneration. Discharge value on this battery has increased 161.4% comparing with 'before regenerating - 1:23 (83 minutes)'.**
- **After finishing the regeneration, most gravity values of these cells are still little low.** We should consider that the specific gravity does not rise is also related to the temperature of the battery. So the specific gravity of the battery can be maximized at 25°C. So, we expect that one more regeneration will be shown somewhat more improvement through removing a further hard sulfates.
- This battery is improved from 1:23 (27.6%) to 3:37 (72.3%). (New battery condition is 5 hrs - 100%) **Now this forklift battery can rent or sell.**
- If you replace No.3 cell immediately, the discharge time may be about 20 minutes extended after one more regeneration (equalization).