



LI-ION

BATTERY FORKLIFT

“your eco-friendly solutions.”



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#1 INTRODUCTION.

Start with successful development of **SONY CORPORATION** in Japan, 1991.

- ✓ high operating voltage
- ✓ long-cycle life
- ✓ large specific energy
- ✓ environmental friendliness
- ✓ no memory effect

DAILY USAGE



 **Lead-acid batteries, as the most widely used power battery for electric forklifts, are also closely related to pollution and environmental protection.** In recent years, lithium batteries have also become the main batteries for forklift applications.



With the advancement of human beings and the development of society, especially the requirements for the living environment have become higher and higher.



polluting power sources represented by **lead-acid and cadmium-nickel batteries** becoming less and less acceptable.



Li-Ion batteries have developed and applied in the electric and military fields due to their advantages of charging and discharging.

#2 LI-ION BATTERY ADVANTAGES.



no maintenance

2 hours charging time
1 battery per truck

100% fleet availability :
opportunity charging

2500 cycles
no battery replacement needed

no battery room needed

15% energy saving



lead-acid

maintenance personnel

8-10 hours charging time
2 batteries per truck

<100% fleet availability :
STD charging

800 to 1500 cycles,
periodic replacement

battery room needed,
expensive

power loss



#3

LI-ION

VS

LEAD-ACID

INDICATOR

voltage

3,2 V

2 V

energy ratio

> 120W-h/kg

30-40W-h/kg

lifespan

>2000 to 2500 times, capacity >80%,
longer service lifespan

800 to 1500 times, capacity max
70%, shorter service lifespan

battery capacity

Larger battery capacity

Limited by the size

size - weight

Size 2/3, Weight 1/3
of Lead-Acid Battery

Large Battery Size & Weight

memory capacity

NO, Opportunity Charging

YES, Fully charged & discharged



#3

LI-ION

VS

LEAD-ACID

INDICATOR

charging plug

Electric Vehicle
national standard charging head

REMA power plug

charge

Charging time 2-4hrs

Charging time 8-12hrs

discharge

Small voltage variation
Good power stability

Battery voltage continue to
decrease during usage

self-discharge rate

Monthly self-discharge rate <10%

<15-30%

ambient temperature

Charging: 0~45°C
Discharging: -20~60 °C

Charging: 0~45°C
Discharging: -20~60 °C

control system

Current, Voltage, Temperature,
SOC can be monitored with BMS

No



#3

LI-ION

VS

LEAD-ACID

INDICATOR

safety

YES

YES

forklift usage

Getting popular

Very popular

maintenance

Maintenance free, but high cost for cell repair/replacement

Higher maintenance, but relatively cheaper in repair & replacement

cost

Higher cost (price continue decrease in recent years)

Low cost but price continue increase in recent years

environment impact

No pollution & emission in production, degradable & recyclable in usage

Danger of lead pollution, release acid mist

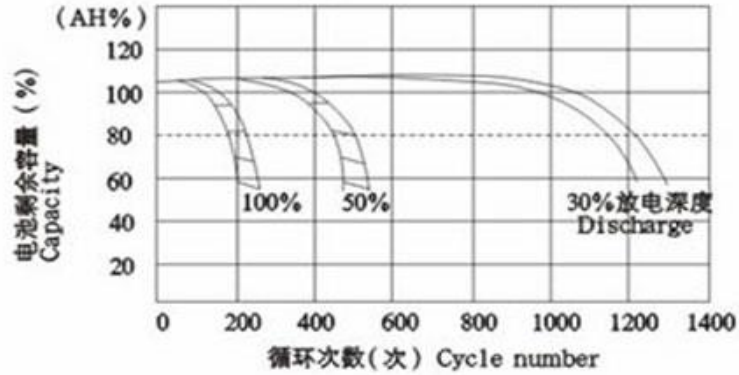


#4 LIFE-CYCLE COMPARISON

LEAD ACID BATTERY

LIFE CYCLE ONLY
800 – 1.500 TIMES
& LIFE EXPECTANCY WILL BE REDUCED

(图6) 电池循环寿命曲线图
Battery's service life



Ncdiy.com小刀在线



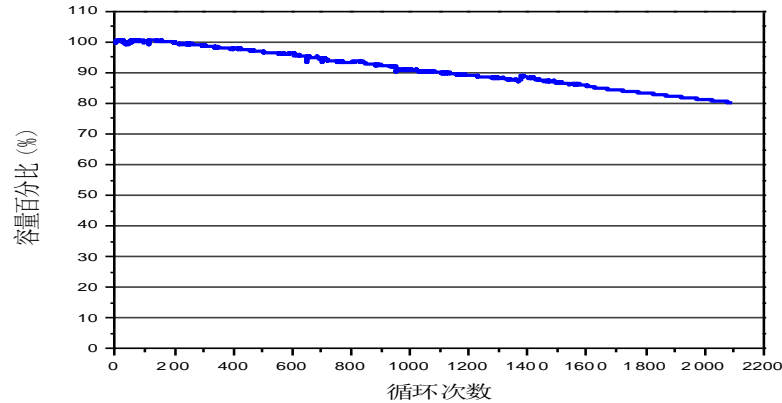
CELL LIFE CYCLE > 5.000 TIMES
BATTERY PACK 2.500 TIMES



BATTERY CAPACITY OVER 80%



REPLACEMENT 5 YEARS =
10.000 HOURS



LITHIUM ION BATTERY



LITHIUM BATTERY FORKLIFT

#5

JMO | XILIN LI-ION MODEL RANGE.

PALLET MOVING

BUDGET MODEL



CBD15W-LiX



CBD20W

INDOOR
WAREHOUSING
NEEDS



JAYA MACHONE INDONESIA



#5

JMO | XILIN LI-ION MODEL RANGE.

PALLET MOVING UP TO 3.5 TON



INDOOR / OUTDOOR
WAREHOUSING
NEEDS



COLD STORE MODEL AVAILABLE



CBD20R-II



FB20R/25R



FB30H



FB35



JAYA MACHONE INDONESIA



#5

JMO | XILIN LI-ION MODEL RANGE.

PALLET STACKING UP TO 2 TON | 6.5 M



INDOOR / OUTDOOR
WAREHOUSING
NEEDS



COLD STORE MODEL AVAILABLE



CTDK15-II



CDDK15/20-II



CDDR15-II



CPD15R



CQD15R



CQDH20A



JAYA MACHONE INDONESIA



#5

JMO | XILIN LI-ION MODEL RANGE.

PALLET STACKING UP TO 2TON | 12M

INDOOR
WAREHOUSING
NEEDS



COLD STORE MODEL AVAILABLE



CQD15/20/20H



CQDH20C



JAYA MACHONE INDONESIA



#5

JMO | XILIN LI-ION MODEL RANGE.

ORDER PICKING & TOWING UP TO 3 TON

INDOOR
WAREHOUSING
NEEDS



CBD30Q



QDD30H



JAYA MACHONE INDONESIA





UNIQUE CHARACTERISTICS



OPPORTUNITY CHARGING
FAST CHARGING



LONGER LIFESPAN
5Y OR 10,000 HRS WARRANTY



NO MAINTENANCE

#6 SUMMARY.

XILIN Li-Ion battery forklift could **meet any customers' requirements for different working condition, different workload configurations and different working hours**, especially multiple shifts using only **1 LITHIUM BATTERY.**



THANK YOU



JMO INDONESIA



XILIN
NINGBO RUYI JOINTSTOCK CO.,LTD