



ZHEJIANG HANGCHA IMP. & EXP. CO., LTD.

Factory site: 666 Xiangfu Road,
Hangzhou, Zhejiang, China (311305)

Tel: +86-571-88926735 88926755
Fax: +86-571-88926789 88132890

sales@hcforklift.com
www.hcforklift.com



Follow us on
Facebook



Follow us on
YouTube



Follow us on
WeChat



ISO14001
ISO14001:2015



ISO9001
ISO9001:2015



HANGCHA trucks conform
to the European Safety
Requirements.

HANGCHA GROUP CO., LTD. reserves the right to make any changes without notice concerning colors, equipment, or specifications detailed in this brochure, or to discontinue individual models. The colors of trucks, delivered may differ slightly from those in brochures.

2019 VERSION 1 / COPYRIGHT 2019 / 08



INNOVATIVE **LITHIUM-ION**

LITHIUM POWERED INNOVATIVE SOLUTIONS NEW POWER NOW

RELIABLE LITHIUM-ION TECHNOLOGY



LITHIUM POWERED



Innovative, reliable lithium-ion technology (Lithium Iron-Phosphate),
which are developed jointly by HANGCHA and CATL.
Battery cells and modules are from CATL, with reliable quality, exclusively for HANGCHA.

HANGCHA WARRANTY SERVICE

Integrated Battery Management System (BMS) continually monitors
energy management and ensures reliable operation.
HANGCHA provides Li-Ion battery (LiFePO₄) with **5 years** or **10000 hours** warranty.

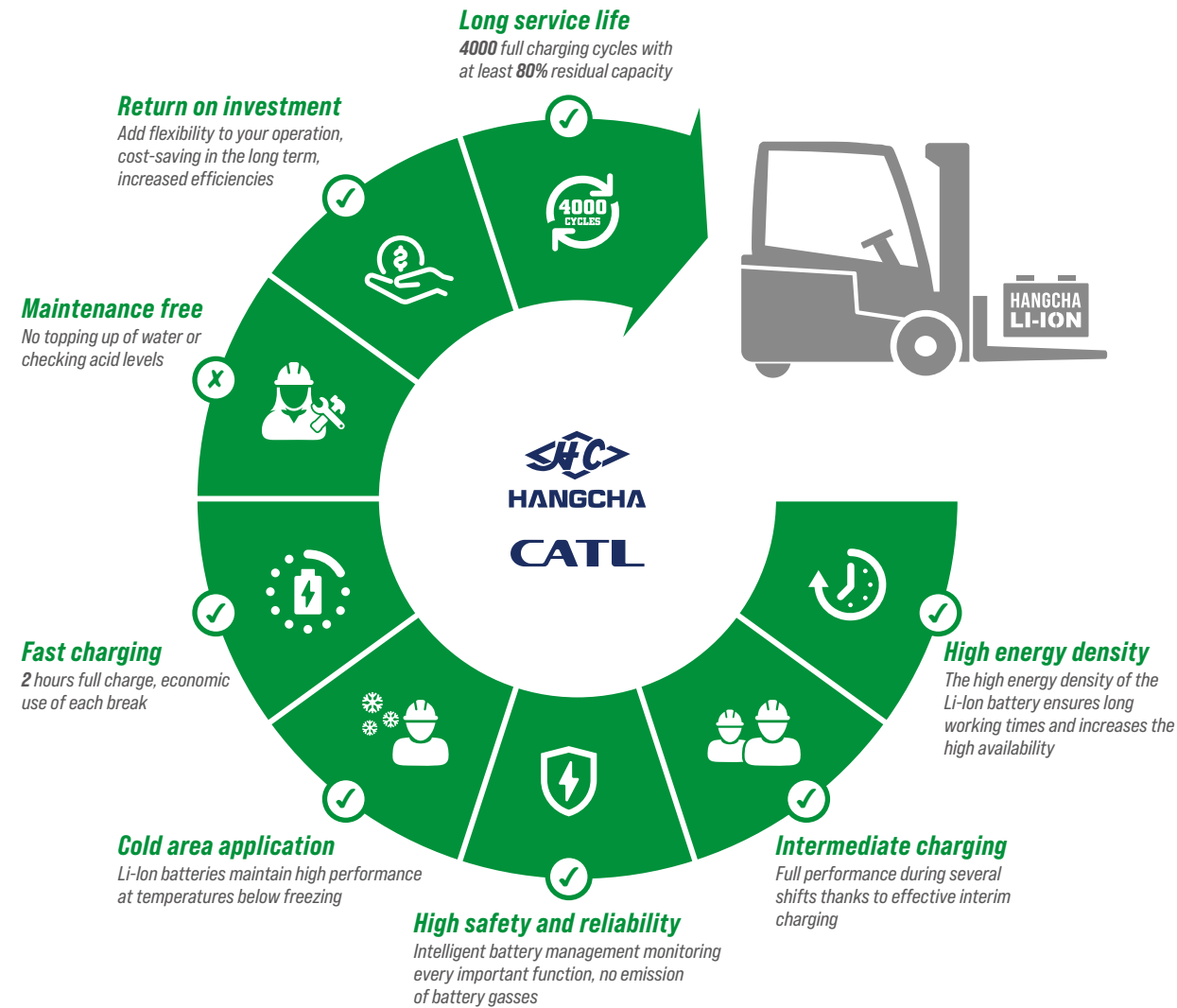


**5 YEARS
WARRANTY**

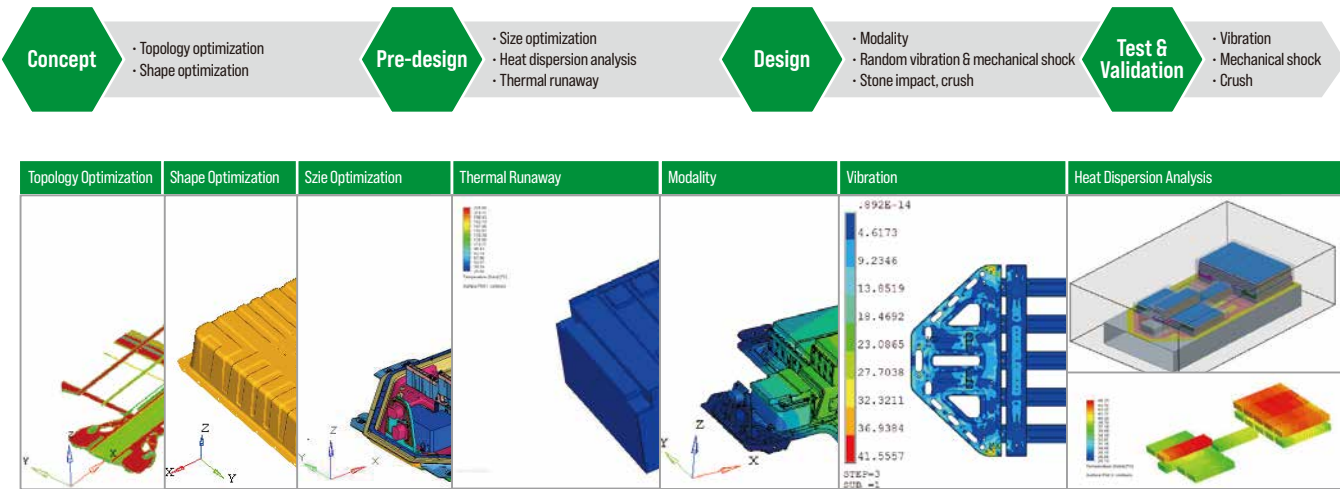


INNOVATIVE LITHIUM-ION

LITHIUM BATTERY ADVANTAGES



Safety Design



BMS Security Strategy

HANGCHA battery management system (BMS) monitors the li-ion cells at all time. As a result, our li-ion solution is the most reliable power option.





Comprehensive Test & Validation



Mechanical Shock Test



External Fire Test



IP Test



Crush Test



Nail Penetration Test



Vibration Test

With the biggest testing lab by area, largest number of charging & discharging equipment, most complete standards, CATL's testing is among the best domestically.

By December 2018, CATL is able to carry out 273 kinds of tests* including safety, reliability and performance tests.

***The 273 kinds of tests included 100 performance tests, 48 safety tests and 125 reliability tests.**

FEATURES & BENEFITS

Power

- / High energy density with an identical volume as a lead-acid battery, the Li-Ion battery contains twice as much energy.
- / High availability by quick opportunity charging without the need to change the battery.
- / Longer truck performance thanks to stable voltage supply throughout the discharging process.
- / Li-Ion batteries maintain their performance level also at temperatures below freezing making them ideal for use in cold areas.

Precision

- / The communication between truck and battery controller allows to efficiently use and deploy the Li-Ion battery.

Compactness

- / Higher energy density for compact battery dimensions.

Safety

- / Intelligent battery management monitoring every important function.
- / Higher user safety, thanks to acid-free use.
- / User friendly due to avoided battery change.
- / No emission of battery gasses.

Ecologic responsibility

- / Eco-friendly thanks to twice the service life.
- / Eco-friendly due to absence of acid.
- / Substantially higher efficiency of the Li-Ion battery when charging and discharging reduces energy costs.

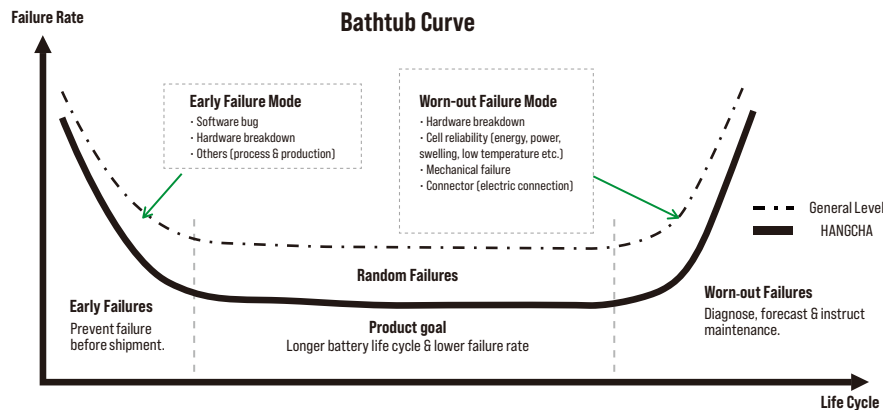
Ergonomics

- / Virtually no physical strain, because battery changes are not needed.
- / Maintenance free operation - no topping up of water or checking acid levels.
- / No organizational effort - pre-work checks and providing water are not needed.

Reliable gene from CATL

CATL has the largest volume, **0** safety accidents: In 2014-2017, the number of passenger cars supporting CATL batteries exceeded 95,000, and **0** safety accidents.

HIGH RELIABILITY THROUGHOUT THE ENTIRE BATTERY LIFE



0
SAFETY
ACCIDENTS

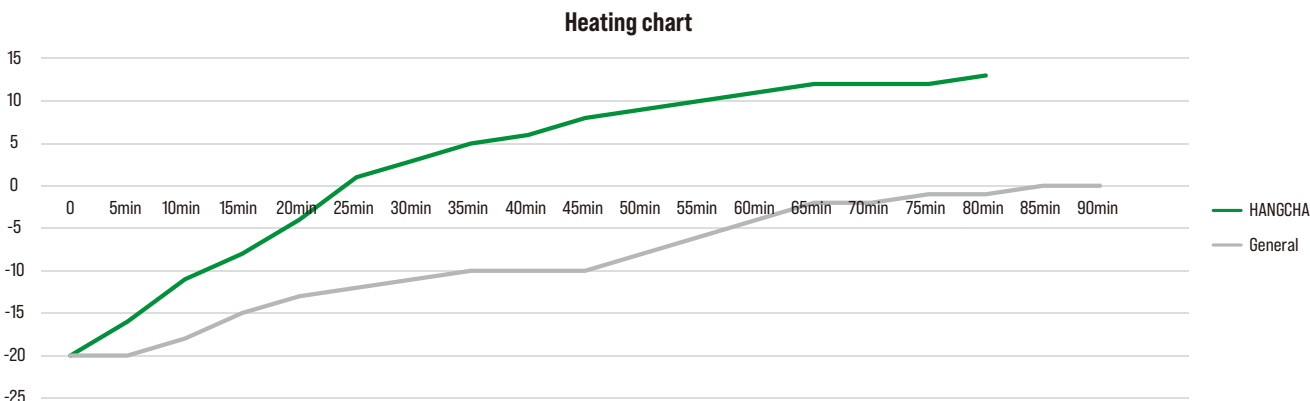


PERFECT PERFORMANCE IN COLD AREA



BATTERY PACK HEATING MANAGEMENT

HANGCHA battery pack with heating management during the discharge process, the temperature rises from -20 ℃ to 0 ℃ only takes **25-30** minutes.
General battery pack during the discharge process, the temperature rises from -20 ℃ to 0 ℃ will take 85-90 minutes.



☆ Note: Battery pack with LiFePO4 features heating management.

LONG CYCLE LIFE

BATTERY PACK CYCLE LIFE TEST

- Attenuation rate comparison

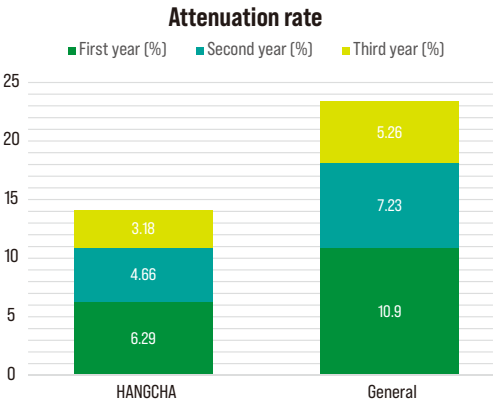
HANGCHA: First year 6.29%, Second year 4.66%, third year 3.18%

Total attenuation 14%

General: First year 10.9%, Second year 7.23%, third year 5.26%

Total attenuation 23.4%

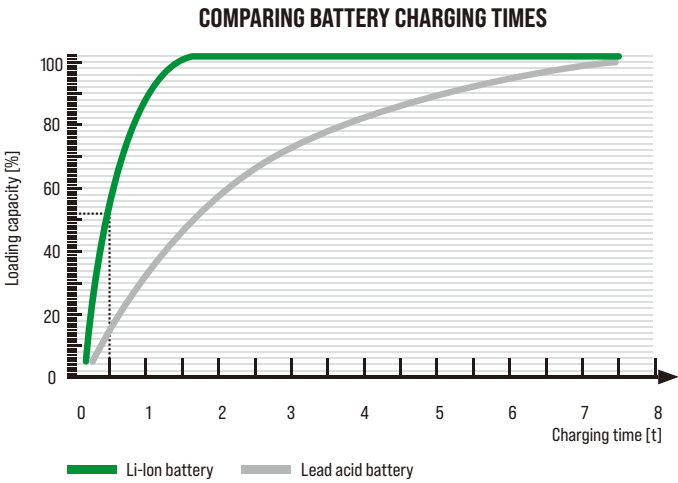
HANGCHA provides Li-Ion (LiFePO4) battery with 5 years or 10000 hours warranty.



CHARGING

Rapid charging and opportunity charging ensure continuous availability of vehicles.

Li-Ion powered forklifts are always available. They allow for fast full charging or boost charging **[100 % charge in 2 hours]**. They are maintenance free and do not require a battery change when used for multi-shift operations.



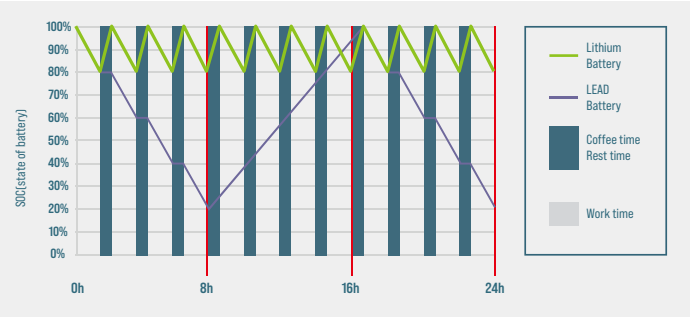
Li-Ion battery

PK

Lead acid battery

EFFICIENCY

The high-performance Li-Ion technology is especially suitable in cases where lead acid batteries are in use and have to be changed in two to three-shift operation. Lithium-ion batteries do not need to be replaced. By quick interim charging any downtime, such as a lunch break, can be efficiently used and the battery is recharged in a very short period of time. Interim charging does not affect the battery service life.
Lithium-ion technology supplies constant voltage throughout the entire application time. Accordingly, you can work under full power through several shifts without having to change a battery or do any kind of maintenance at all.

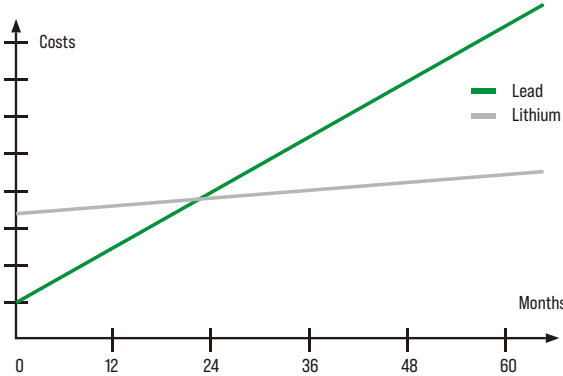


TCO

After taking a look at the complete total cost of ownership (TCO), currently high procurement costs are more than compensated for by HANGCHA's longer service times and significantly lower operating expenses.

Item	unit	Lithium battery	Lead acid battery
Voltage	V	48	48
Capacity	Ah	400	500
Battery energy	KW.h	19.2	24
Charge efficiency	%	95%	70%
Annual charge times	Time	300	300
Electricity price	USD/KW.h	0.14	0.14
Annual electric charge	USD	866	1469
Annual maintenance cost	USD	0	1429
Maintenance cost of ten years	USD	8661	28980
Purchase cost of ten years	USD	15714 (1 unit)	25286 (3~4 unit)
Total cost per forklift	USD	24376	54266
Lithium battery's cost reduction is about 55%			

☆ The above data refer to the case for actual use from lithium forklift.



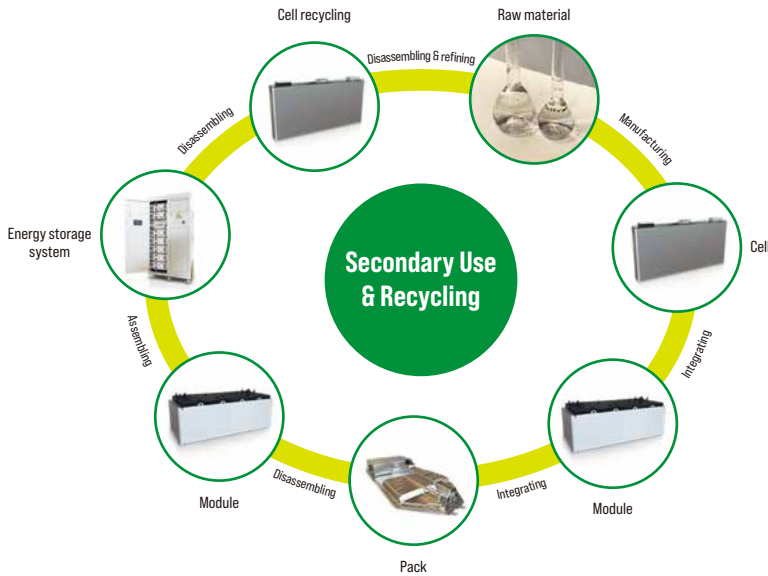
24/7 Service by Hangcha and CATL

Service Purpose: Leading the way with attentive service.

Service Concept: Results orientation and quick service.

Lithium-ion Battery Recycling Solution

In the future, battery components will not be sourced solely from mining; They will have to come from recycling and from applications utilising industrial side streams. HANGCHA has been committed to working with CATL to improve the secondary use technology. In doing so, we help to protect our environment.



HANGCHA Li-ION FAMILY

WAREHOUSE EQUIPMENT

Mini Pallet Truck

1.5t

24V/35Ah



Pallet Truck

1.2t

24V/20Ah



Pallet Truck

1.5/2.0t

24V/40Ah, 48V/20Ah



Pallet Truck

2.0/3.0t

24V/120[202]Ah, LiFePO4



Rider Pallet

2.0/3.0t

24V/120[202]Ah, LiFePO4



Pallet Stacker

1.2~2.0t

24V/120[202]Ah, LiFePO4



Tow Tractor

4.0/6.0t

48V/200Ah, LiFePO4



Reach Truck

1.6~2.0t

80V/271Ah, LiFePO4



COUNTERBALANCED TRUCK

XC series 4-W Electric Forklift

2.0~3.5t

80V/271- 404- 542Ah, LiFePO4



A series 3-W Electric Forklift

1.6~2.0t

48V/480Ah, LiFePO4



A series 4-W Electric Forklift

1.0~3.5t

80V/202- 271- 404Ah, LiFePO4



A series 4-W Electric Forklift

4.0~5.0t

80V/542Ah, LiFePO4



HANGCHA has started to work with Li-Ion batteries early on and being able to develop a large number of trucks with this technology.

Today we are ready to offer you a complete fleet of Li-Ion trucks. Low lift or high lift pallet trucks, counterbalanced trucks - our portfolio is constantly growing.

Let's find out more about the innovative Li-Ion family from HANGCHA.