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Batteries



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BATTERIES

Supplier capability in China

EXECUTIVE SUMMARY

Battery suppliers in China will continue to ramp up production amid positive forecasts for the industry, strengthening the country's position as the world's largest supplier of the product. The line is projected to experience at least 20 percent annual output growth in the next few years, driven mainly by the consumer electronics, automotive, computer, toy and mobile phone sectors.

The lithium battery segment is expected to lead development, riding at the back of the environmental protection trend. It has been rising 20 percent YoY and will remain buoyant in years to come as applications widen in portable electronics, computers, power tools and electric vehicles.

NiMH is also poised for steady growth. Although lithium has dominated the majority of applications, the former will maintain its stronghold in the global HEV segment until 2020. Aside from HEVs, local suppliers are eyeing the markets originally for NiCd as the cadmium-containing variant continues to dwindle in supply.

Primary batteries such as dry-cell units still have a significant market share because of their many everyday applications and low prices. Environment-friendly rechargeable rivals, however, are expected to catch up and turn the tables on them in future.

Projections for lead-acid batteries remain rosy, buoyed by the robust global automotive industry. The line is forecast to expand 20 percent annually in the next few years, with output reaching \$10.3 billion by 2015.

The following are some of the key trends in China's battery industry:

- Prices in coming months will likely remain at current levels because of a similar trend in material costs.
- R&D will focus on lithium

variants amid rising emphasis on "green" initiatives. Makers are likewise improving waste management practices to minimize environmental hazards.

- Future releases will highlight larger storage capacity to meet various power requirements, and longer life span to extend product use and cut down rate of disposal.

- Development efforts also revolve around enhanced safety features, wider operating temperature and lower self-discharge rate to improve battery performance. Toward this end, new cathode and anode materials are being eyed as well.

- China companies continue to improve operating efficiency to close the gap with foreign counterparts in terms of automation. Upbeat projections are encouraging plans to boost annual capital expenditure this year.

This report covers lithium, NiMH, lead-acid and dry-cell batteries manufactured in China. Each category has its own product section that details the mainstream features, prices and R&D plans for the main types. Raw materials and components are also discussed.

The Industry Overview elaborates on the status of each segment, covering key growth drivers, major challenges and strategies to address them, and projections for the line in coming years.

There are more than 2,000 suppliers of various batteries in China. The majority of the companies are engaged in the manufacture and export of lithium variants.

Guangdong province plays host to the most number of enterprises, which benefit from the area's abundant supply of zinc, manganese oxide, carbon and steel. The others are located in Jiangsu, Zhejiang, Hubei, Fujian and Shandong provinces.

In this report

- 29 in-depth company profiles
- 36 additional suppliers
- 124 top-selling export products
- Supplier demographics
- Supplier survey
- Industry statistics & charts

METHODOLOGY

To produce this report, Global Sources surveyed a wide range of suppliers. Rather than focus simply on high-profile makers, we compiled a representative sample of large, midsize and emerging manufacturers. All profiled companies are export-oriented professional suppliers that may or may not be clients of Global Sources.

The selection of suppliers is designed to reflect the composition of the industry in China in terms of geographic spread, business type and company ownership.

For each company profile, our research teams interviewed senior executives and export managers who discussed their recent performance and provided price, R&D, production and export forecasts for the next 12 months. The interviews were done in-person, by phone or e-mail.

In each case, companies were required to answer specific questions designed to verify their manufacturing and export credentials, including their production and export statistics, and a breakdown of exports by product type and market. Our production checklist details the product-specific manufacturing capabilities of each supplier.

All suppliers participated in a survey designed to provide insight into product and price trends, and challenges facing the industry. All survey questions are single choice. Results were calculated based on the actual number of valid responses to each question.

CONTENTS

INDUSTRY OVERVIEW	7
Supplier summary	
Global Sources online metrics	
Main production center	
Supplier demographics	
Lithium	11
NiMH	13
Lead-acid	15
Dry-cell	17
Supplier survey	18
Export prices, price increase, export sales, target markets, capital expenditure, challenges, export capability, R&D focus	
SUPPLIER PROFILES	21
Supplier locations	
Industry composition	
Exporter ranking	
Supplier matrix	
In-house processes	
Supplier profiles	
PRODUCT GALLERY	91
Top-selling export products	
ADDITIONAL SUPPLIERS	115
Key products, contact details	

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INDUSTRY OVERVIEW

The world's largest battery producer, China experienced an 11 percent decrease in 1H09 exports as suppliers received fewer overseas orders due to the global economic crisis. Strong demand in the domestic market, however, resulted in an 8 percent rise in total output during the same period.

With major economies around the world starting to recover, 2010 prospects are brighter, driven by rising demand from the consumer electronics, mobile phone, computer, toy and automotive sectors. The projected annual growth is at least 20 percent in the next few years. In anticipation of an upswing, the majority of suppliers have put expansion plans into place.

To complement production plans, R&D will increasingly focus on lithium as the technology advances and finds broadening applications amid "green" trends.

Already accounting for more than 40 percent of global yield, China's lithium battery industry is poised for steady growth. Rising 20 percent YoY, output reached 1.9 billion units in 2009, according to the China Industrial Association of Power Sources or CIAPS. The upturn is expected to persist this year and next as various applications continue to generate robust demand for the line. Mobile phones, notebook and netbook computers, digital cameras, mobile Internet devices, MP3/MP4 players, power tools, RC toys and electric vehicles are the major R&D drivers.

Another factor boosting the segment is the country's Eleventh Five-Year Plan, which promotes the development of lithium batteries and their raw materials, and the industrialization of power lithium batteries by 2010.

The combustion issue faced by Japan- and South Korea-made laptop battery packs in the past two years has also helped shape China's lithium battery segment. The reduction in the first two countries' output created more opportunities for domestic suppliers

to reach a larger customer base. But although many have benefited from this development, local players still lag behind their overseas counterparts in terms of automation. To catch up, several are planning to introduce fully automated production lines to ensure better quality and consistency. Some domestic equipment providers are in turn accelerating R&D to match the needs of China manufacturers of lithium batteries and packs.

In the NiMH category, yield is expected to grow at an annual rate surpassing 15 percent in coming years. The line in fact saw an 8 percent increase in terms of output in 2009, despite the economic downturn. The volume reached 1.4 billion units from 1.3 billion in 2008, according to CIAPS. Export sales, however, dropped as overseas orders declined. Most makers reported a more than 10 percent dip in total revenue in 1H09, with foreign trade lower by over 20 percent. Nevertheless, they were able to recoup this in the second half as buyer inquiries started picking up.

While sustaining a stronghold in portable electronics, suppliers are eyeing traditional and potential applications originally for NiCd and primary types, including power tools, emergency lighting and hybrid electric vehicles.

Particularly for HEVs, companies are leveraging NiMH technology maturity to compete with lithium, which is still developing. Hybrid vehicles will represent more than 95 percent of about 1.5 million electric transport units worldwide by 2010, based on estimates by China Electronic News. In another decade, HEVs may capture 50 percent of the overall automotive industry. Similarly, primary batteries present a huge opportunity, currently comprising a \$14 billion market globally. In the mobile phone battery sector, however, NiMH's share is steadily diminishing. Currently at 10 percent, it may decline further

Supplier summary

Suppliers surveyed	29
Export sales	\$641.7mn
Export ratio	67%
OEM business	57%
Capacity utilized	64%
Annual R&D spending	\$102.1mn
Full-time employees	28,637

Data: All surveyed suppliers

within the next two years.

Suppliers of lead-acid types are also riding on the robust global automotive industry to boost declining sales. About 80 percent of the local production goes to this segment. Two-thirds of such models target the replacement market, and the rest are sent to carmakers to be installed during vehicle assembly.

The sector also hopes to benefit from rising demand from electric bikes, motorcycles and railway gas engines. E-bikes, in particular, are seen as a catalyst, especially for replacement batteries because existing models have a service life of only 12 to 14 months.

Overall, makers expect China's lead-acid line to expand 20 percent annually in 2010-15, with production hitting \$10.3 billion by 2015. In a bid to shore up support, especially for small operations hit by the crisis, the China Electric Equipment Industrial Association is working to reinstitute the export tax rebate. It is also negotiating for financial assistance and the inclusion of high-end valve-regulated lead-acid batteries for solar and wind power, and gel types into the list of products backed by the national government.

In the dry-cell segment, companies continue to strengthen overseas business even if the product now constitutes a secondary line. The country after all accounts for 70 to 80 percent of global output. Although relatively low power compared with other battery types, nonrechargeable and nonrecyclable, the variant still has a significant market share because of

Baoding Fenfan New Energy Co. Ltd

Lithium battery specialist Baoding Fenfan produces an average of 400,000 units monthly out of a 600,000 capacity. It exports 25 percent worldwide, mainly to the Asia-Pacific region.

The supplier expects international sales to increase by more than 20 percent as it boosts presence in North America, which currently has only 10 percent share of overseas deliveries. It will shorten development time as well to attract more buyers.

Last year, total revenue from the line reached \$30 million, with

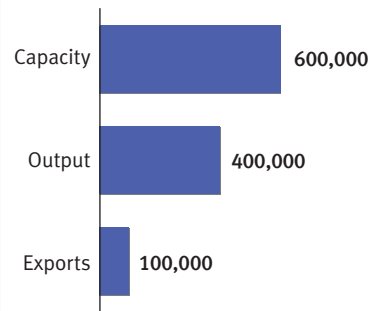
\$5 million coming from exports. OEM orders account for 5 percent of outbound shipments. The bulk is shipped under the in-house Sail brand.

ISO 9001:2000-compliant production is conducted in a 120,000sqm factory. This covers all processes except for anode/cathode material and metal parts making.

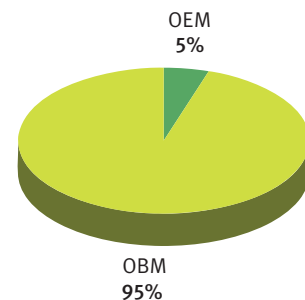
The supplier employs 300 workers, including 30 dedicated to QC and 50 to R&D. The latter group receives a 30 percent allocation from total sales. Its current efforts revolve around the use of new anode/cathode materials.

Profile

Production
units/mth



Exporting profile



Contact details

Business contact

PAN Jessie

Phone

(86-312) 332-7785

Fax

(86-312) 332-8797

E-mail

jessie@sailli.net.cn

bdfengfan@globalsources.com

URL

www.sailli.com.cn

www.globalsources.com/

bdfengfan.co

Address

199 Lugang Road, Hi-Tech Zone, Baoding, Hebei, China

Company facts

Year established	2006
Business type	Manufacturer
Company ownership	Publicly listed/SOE
Head office location	Baoding (Hebei)
Number of factories	1
Factory location(s)	Baoding (Hebei)
Total factory area	120,000sqm
No. of full-time employees	300
No. of R&D/design staff	50
No. of QC staff	30
Annual sales (all products)	\$30.0mn
Annual R&D spending	\$4.5mn
ISO certification	Yes

Sales & output: Batteries

Annual sales	\$30.0mn
Share of total sales	100%
Annual export sales	\$5.0mn
Total monthly capacity	600,000 units
Average monthly output	400,000 units
Capacity utilized	67%
Average monthly exports	100,000 units
Export ratio	25%
OEM % of exports	5%
ODM % of exports	—
OBM % of exports	95%

Capability

In-house processes

Anode/cathode material making	No
Battery case making	Yes
Metal parts making	No
Electrode terminal construction/assembly	Yes
Electrolyte injection/flooding	Yes
Plate insertion	Yes
Plastic injection	Yes
Battery sorting and grading	Yes

Exports by product

Alkaline	—
Lead-acid	—
Lithium	100%
NiCd	—
NiMH	—

Exports by market

North America	10%
European Union	10%
Europe (non-EU)	10%
Asia-Pacific	55%
Middle East	10%
Other	5%

Survey

- **Export prices**
Increased
- **Export price increase**
Less than 5%
- **Export sales**
Increase more than 20%
- **Target market**
North America
- **Capital expenditure**
Increase up to 50%
- **Major challenge**
Stricter overseas standards
- **Export capability**
Shorten design/development time
- **R&D focus**
Use new anode/cathode materials

Popular export models



Lithium

Model	26650
MOQ	3,000 units
Packaging	Carton
Delivery	21 days
Price	•

Description: Li-ion battery; 2,800, 3,000mAh capacity; 3.2, 3.7V; -20 to 60 C operating temperature; 26x65mm; 75g; for electric bikes



Lithium

Model	14.8V 14_AH
MOQ	50 units
Packaging	Carton
Delivery	21 days
Price	•

Description: Li-ion battery pack; 14Ah capacity; 14.8V; 151x94x98mm; 900g; for mobile radio power supplies



Lithium

Model	14.8V 24_AH
MOQ	50 units
Packaging	Carton
Delivery	21 days
Price	•

Description: Li-ion battery pack; 24Ah capacity; 14.8V; 151x94x98mm; 1.5kg; for mobile radio power supplies

• Information not disclosed

PRODUCT GALLERY

Lead-acid



Guangdong Gemake

(profile page 40)

Model: 6FM7

MOQ: 2,000 units

Packaging: Carton and pallet

Delivery: 25 days

Price: •

Description: Valve-regulated lead-acid battery; 7,000mAh capacity; 12V; 25 C operating temperature; 152x65x94mm; 2.1kg; for UPS, emergency lighting, electric toys, power tools, medical instruments



Guangdong Gemake

(profile page 40)

Model: 6GFM150T

MOQ: 60 units

Packaging: Carton and pallet

Delivery: 25 days

Price: •

Description: Valve-regulated lead-acid battery; 150Ah capacity; 12V; 483x170x240mm; 700g; for large computer UPS, and telecom and solar energy systems



Guangdong Zhicheng Champion

(profile page 42)

Model: GM1500-2

MOQ: 1 unit

Packaging: Carton

Delivery: 7 days

Price: •

Description: Valve-regulated lead-acid battery; 1,500Ah capacity; 2V; 10yr service life; no memory effect, maintenance-free, sealed construction, leak-resistant; 401x351x343mm; 98.5kg



Guangdong Zhicheng Champion

(profile page 42)

Model: GM800-2-G

MOQ: 1 unit

Packaging: Carton

Delivery: 7 days

Price: •

Description: Valve-regulated lead-acid battery; 800Ah capacity; 2V; 15yr service life; no memory effect, maintenance-free, sealed construction, leak-resistant; 410x175x330mm; 58.5kg



Guangdong Zhicheng Champion

(profile page 42)

Model: NP250-12

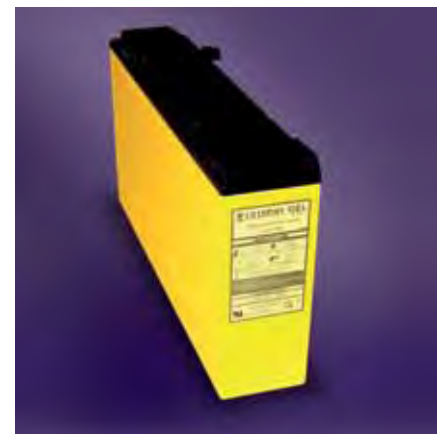
MOQ: 1 unit

Packaging: Carton

Delivery: 7 days

Price: •

Description: Valve-regulated lead-acid battery; 250Ah capacity; 12V; 5yr service life; no memory effect, maintenance-free, sealed construction, leak-resistant; 520x269x220mm; 76kg



Guangdong Zhicheng Champion

(profile page 42)

Model: NP155-12-FG

MOQ: 1 unit

Packaging: Carton

Delivery: 7 days

Price: •

Description: Valve-regulated lead-acid gel battery; 155Ah capacity; 12V; 12yr service life; no memory effect, maintenance-free, sealed construction, leak-resistant; 551x109x288mm; 50kg

• Information not disclosed

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