

THE LEAD/ACID BATTERY INDUSTRY IN SINGAPORE

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Background

The Singapore automotive battery market has passed through three distinct phases in its development. These are as follows.

(i) Colonial Era: up to mid-1960s

This period was dominated by the Chloride Electrical Storage Company selling the EXIDE brand. The batteries were imported from the UK to service the motor trade which was overwhelmingly British at that time.

(ii) Protection/local assembly/manufacturers: 1970s

In the mid-1960s, Singapore gained Independence and embarked on a period of industrialisation. The pioneer industries of the 1960s were import-substitution based, such as textiles and automotive batteries.

In 1969, Jurong — the main industrial zone — was established. Two major international battery companies — Chloride and Yuasa — both established manufacturing facilities there. Three other ventures also entered the business with manufacturing or assembly facilities, namely: Singa Lead Products Pty Ltd. (BESCO from Australia with some local dealers); Auto Batteries & Co. Pty Ltd. (manufacturing for Century); Far East Batteries.

By the mid-1970s, there were five small-scale plants operating in Singapore, including some assembly of hard-rubber batteries by the local battery dealers.

(iii) Removal of tariff protection: 1980s

In 1979/80, the Government was pursuing a more liberal economic policy and, one-by-one, the protection offered to the pioneer industries of the 1960s was being removed. In 1980, tariff protection on batteries and tyres was removed and the battery industry entered a period characterised by totally free competition. Very soon after tariff removal, three of the five manufacturers ceased manufacture, leaving Chloride and Yuasa as the two remaining indigenous manufacturers in Singapore. Imports from all over the world — but principally from the Far East — began to flood into the Singapore market. By the end of the 1970s and the beginning of the 1980s, the market was dominated by Toyotas and Datsuns. Indeed, about 80% of demand was now based on Japanese JIS sizes.

Vehicle market size and growth

Analysis of the vehicle statistics given in Table 1 shows that in the eight-year period to 1986 the total vehicle population was growing at an average annual rate of 6.5%. Explosive growth took place in the early 1980s when rates of 12% per annum were being achieved. However, since 1984, there has in fact been a slight negative growth with the total vehicle park stabilising at the 350 000 level. The vehicle population in Singapore has probably reached saturation point. Physically, Singapore is a small place — just 40 × 24 km in size. In the author's opinion, a growth rate in the vehicle park of only 1% per annum is to be expected.

Government policy has carefully controlled the vehicle population through some very innovative and unique schemes. For example, a system of permits is used to control entry into the Central Business District for private cars at peak hours. As a result, the severe traffic congestion witnessed in cities like Bangkok and Hong Kong has been avoided in Singapore.

For the future, a new Mass Rapid Transit system (MRT) is currently under construction and will be operative in 1988. Also, extensive improvements are being made to the road network which will be completed in 1988/9.

TABLE 1
Vehicle statistics (in thousands) for Singapore

Year	Cars	Buses	Goods vehicles	Total
1978	146.4	5.9	58.9	211.2
1980	164.5	6.2	70.8	241.5
1982	194.4	7.6	101.4	303.4
1984	232.3	8.7	114.2	355.2
1986	234.6	8.6	110.1	353.3
1987 (April)	234.1	8.6	108.9	351.6
Average annual growth rate between 1978 and 1986 (%)	6	5	8	6.5

(Source: Registry of Vehicles.)

Battery market size

Interpretation of the data given in Table 2 (taking into account that certain trucks and buses use two batteries per vehicle) yields an estimated replacement battery market for 1987 of 160 000 units.

TABLE 2

Key statistics in determining battery market in Singapore

Average battery life:	cars = 30 months buses = 24 months taxis = 18 months
Car population (1987)	235 000
Bus population (1987)	8 700
Goods vehicle population (1987)	109 000

There is no discernible seasonal pattern to sales in Singapore. The markets of North America and Europe exhibit an uneven sales pattern heavily weighted towards winter. This does not occur in Singapore where the temperature reaches at least 28 °C and is never below 22 °C every day of the year. Consequently, the monthly demand for batteries can be stated as roughly 13 500 units.

Battery designs from Singapore

As in other countries, the key factors affecting battery design for the Singapore market are: (i) climate; (ii) road conditions; (iii) vehicle type.

(i) *Climate.* As mentioned above, it is hot all the year round and the humidity is high. There is a monsoon period, or rainy season, in December through February or March. There is obviously no cold-cranking requirement. In six years of living in Singapore, the author can safely say that he never had to use a choke, and that his vehicle usually started first time. However, because of the continuous high temperatures, the under-bonnet temperatures can get very high. In consequence, low antimony or calcium alloy batteries, with a low gassing characteristic, are preferred. Maintenance-free batteries are not well accepted in Singapore. Because of high ambient temperatures, batteries can dry out and fail prematurely. The market demands a "maintainable" battery.

(ii) *Road conditions.* These are excellent in Singapore. Rough conditions are not experienced and therefore this is not a factor when determining the type of separator to use.

(iii) *Vehicle type.* About 80% of the car and goods vehicle population are the popular Japanese makes: Toyota, Datsun, Honda, etc. These models generally serve the mainstream market. The remaining 20% are taken by premium European models, mainly Mercedes, BMW and Volvo. The specification of vehicles, whether Japanese or European, is high. It is normal that cars will be fitted with a host of electrical accessories as standard — including

power windows, power antenna, and airconditioning. Therefore, the 'hotel load' is high and demands for reserve battery capacity are important design criteria. Taxis are normally Toyota Crowns or Nissan Laurels. They operate on a two, or even a three, shift basis, making even more onerous demands on the battery. An 18-month life is considered acceptable.

Battery market share

The Singapore market — being an open, free market — is extremely competitive and overbranded. A recent survey identified no less than 40 different brands of battery being offered by twenty-two different distributors or manufacturers! In such a situation, it is impossible to determine precise market shares. The author's market research suggests the breakdown shown in Table 3.

During the past twelve months, realignment of currencies has brought the Korean and Malaysian manufacturers strongly into the market, largely at the expense of the Japanese. There are some Indonesian batteries available also.

TABLE 3

Battery market share in Singapore

Brand	Share (%)
Chloride	15
Yuasa	15
Korean (mainly Aurora and Rocket)	30
Malaysia (mainly Yokohama, Leko, Century)	20
Japanese (mainly National FB, Hitachi)	10
Others (European)	10

TABLE 4

Cost of batteries in Singapore

Size	Singapore \$
N40	34
N50	38
NS60	42
N70Z	56
N100	69
N120	85

Battery market pricing

With the excessive competition referred to above, wholesale prices of batteries are generally low. Current typical prices (wholesale — to dealers) are given in Table 4. At these price levels, the gross margins earned by manufacturers or importers are very low. In addition, because of the intense competition, credit terms given to dealers are long. If payment is received within 90 days this can be considered good in the Singapore market. The norm is between 90 and 120 days.