

## **WORLD STARTER AND INDUSTRIAL BATTERY MARKET UPDATE: AN INSIDER VIEW**

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### **Introduction**

Like many other major industries, including electronics and automobile manufacturing, the starter and industrial battery industries are becoming global in nature. An increasing number of domestic battery companies have bought into foreign companies, formed joint-business ventures, or entered technology agreements with foreign partners. The reasons for the globalization of our industry are:

- to service automobile manufacturing transplants
- to minimize the effect of currency-rate fluctuations
- to establish new technology and low-cost manufacturing processes to new markets
- to take advantage of low labor rate pools
- to circumvent political pressures such as protectionism.

The result of the starter and industrial battery industry becoming global will be the consolidation and streamlining of domestic or regional manufacturing facilities, the push for increased manufacturing automation, and the drive to incorporate up-to-date technologies into battery designs.

The result of the above strategies will be that a global producer would produce technically superior products at the lowest cost. Besides having superior technology and low-cost manufacturing, a global producer must also be a global marketer. It must understand its regional marketplace and develop a world-class management team that recognizes and takes advantage of the company's position in the worldwide industry.

This paper discusses the world starter and traction battery markets with respect to their size and growth rate. Regional economic data are presented as background to each markets' forecast through 1993.

### **World starter battery market update**

The world battery markets showed mixed results in 1988 despite a generally healthy world economy and record motor vehicle sales and production. The strong world economy in 1988 was the result of stable currency

valuations, expectations of low inflation and relatively predictable political policies.

Table 1 shows the strength and forecast of the world economy by regions. It can be seen that 1988 world GNP growth exceeded the 1985 - 1988 average, but a downturn is imminent. Rapidly expanding economies continue to be the Pacific Rim regions of Southeast Asia, including Japan, Korea, Asia and the Pacific. Developing regions, including Central and South America, and Africa and the Middle East, have been struggling with internal balance of payment problems and runaway inflation. These problems are hampering their ability to expand above the world GNP growth rate.

TABLE 1

Real GNP annual growth (%): 1980 constant US\$<sup>a</sup>

	1985 - 1988	1988	Forecast	
			1989	1990
North America	3.6	4.0	3.0	2.2
Europe	2.5	2.7	2.7	2.7
Japan	3.9	5.0	4.0	3.0
Korea	15.9	12.0	8.5	6.5
Asia and Pacific	5.5	5.0	4.5	4.5
Central and South America	2.1	1.5	2.1	2.5
Africa and Middle East	2.0	3.0	3.0	2.0
World	4.0	4.2	3.3	3.0

<sup>a</sup>Source: Wharton Econometrics OECD, IMF, and BBH Co.

The North American region showed surprising growth in GNP during 1988 while Western European countries experienced a moderate 2.7% growth rate. Fears of inflation causing a general rise in interest rates across the globe will slow economies during 1989 and 1990. GNP is forecast to slow to an overall 3.3% and 3.0% in 1989 and 1990, respectively, compared with the 4.2% rate of expansion in 1988. The slowdowns are expected in North America, Japan, Korea and the Asia and Pacific regions. Level growth is expected in Europe and the Africa and Middle East regions, while growth is anticipated in Central and South America.

World motor vehicle sales were strong which generated record production of automobiles and trucks. Eighteen of the 21 countries regularly surveyed by Ward's automotive publications posted in 1988 sales increases over 1987. The only countries exhibiting a decline were Argentina, West Germany and Denmark. Table 2 shows the summary of motor vehicle sales/registrations by regions.

As forecasted last year, and shown in Table 2, the strongest percentage growth in motor vehicle sales was in the developing regions of the world: Korea, Asia and the Pacific, and Central and South America, growing 24.5, 15.7 and 23.8%, respectively. Japan topped the list in unit growth, however,

TABLE 2

World motor vehicle sales/registrations: car, truck, bus ('000 units)<sup>a</sup>

	1988	1987	Increase/(decrease) units	Increase/(decrease) units (%)
North America	17351	16714	637	3.8
Europe	12513	11996	517	4.3
Japan	6721	6018	703	11.7
Korea	523	420	103	24.5
Asia and Pacific	523	452	71	15.7
Central and South America	1240	1002	238	23.8
Total (21 countries)	38871	36602	2269	6.2

<sup>a</sup>Source: Ward's Automotive Reports.

showing an increase of 703 000 (11.7%) from 1987 to 1988. This increase in wealth within the populations of Japan and the developing regions is generating demand for private transportation methods, such as automobile and light duty trucks. In total, world motor vehicle sales grew by over 2.2 million units (or 6.2%) between 1987 and 1988.

Strong motor vehicle sales fueled record worldwide vehicle production. Table 3 presents motor vehicle production for the major regions of the world. The data show that the largest unit increases in vehicle production were in Europe, North America and Japan, being 734 000, 634 000 and 451 000 units, respectively. Together, these three regions made up 87% of the almost 2.1 million units (4.5%) increase from 1987 to 1988. The largest percentage increases were in Korea and Central and South America, growing 10.6% and 15.2%, respectively.

The strong worldwide economy, resulting in heavy motor vehicle sales and record production, contributed to the overall growth in the worldwide

TABLE 3

World motor vehicle production: car, truck, bus ('000 units)<sup>a</sup>

	1988	1987	Increase/(decrease) units	Increase/(decrease) units (%)
North America	13194	12560	634	5.0
Europe	15554	14820	734	5.0
Japan	12700	12249	451	3.7
Korea	1084	980	104	10.6
Asia and Pacific <sup>b</sup>	4359	4432	(73)	(1.6)
Central and South America	1746	1516	230	15.2
Total (14 countries)	48637	46557	2080	4.5

<sup>a</sup>Source: Ward's Automotive Reports.<sup>b</sup>Includes other regions of the world.

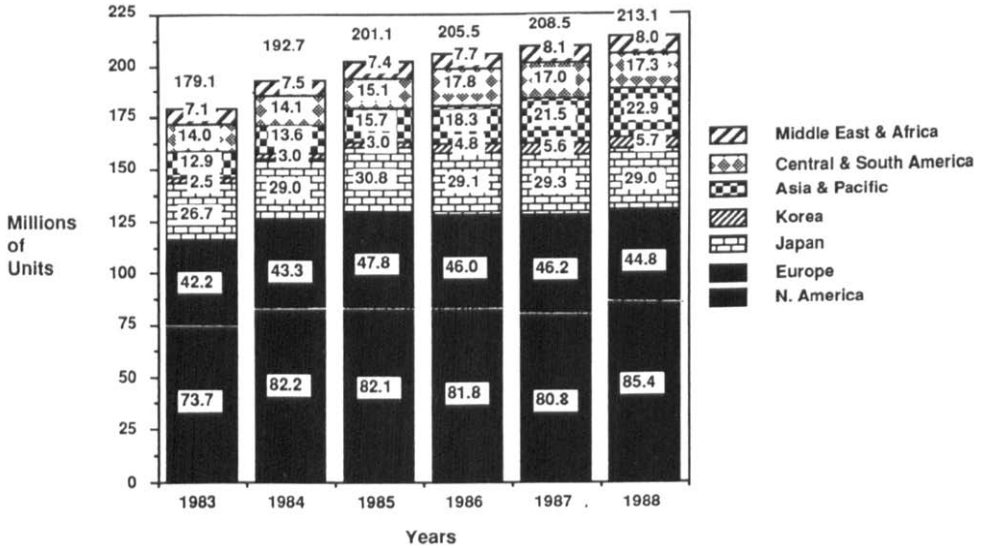


Fig. 1. World starter battery industry: 1983 - 1988.

starter battery industry in 1988. Figure 1 shows the historical trend of the market. It can be seen that the market grew by 4.6 million units (2.2%) from 1987 to 1988. This entire growth can be attributed to the increase in the North America region, which grew by 4.6 million units (5.7%) from 1987 to 1988. The growth region of Asia and the Pacific of 1.4 million units (6.5%) was offset by the declining market of Europe, *viz.*, 1.4 million units (3.0%). In general, all regions of the world showed strong original equipment and weak replacement demand with the exception of North America, Japan, and Asia and the Pacific. These regions experienced strong demand in both segments, original equipment and replacement. Japan's overall decline, however, was the result of a sharp decline in exports of starter batteries. In total, the world starter battery market grew by 34.0 million units (3.5% annually) from 1983 - 1988. The reasons for this growth have been a favorable and expanding worldwide economy and a moderate increase in world vehicle stock.

Figure 2 shows the growth in vehicle stock from 1980 through 1986. The stock grew by 88.6 million units (3.3% annually) during this period. In addition, world vehicle production rose rapidly after a downward trend between 1980 and 1982 (Fig. 3). Overall, the production increased by 7.2 million units (2.5% annually) between 1980 and 1987.

Figure 4 shows world vehicle production as a percentage of total vehicle population and of the total world starter battery market from 1982 to 1986. It can be seen that new vehicle production as a percentage of the total starter battery market is holding steady at 21 - 22%. However, an upward trend in vehicle production as a percentage of world vehicle population has occurred — from 8.2% in 1982 to 9.0% in 1986. Indications are that as the world

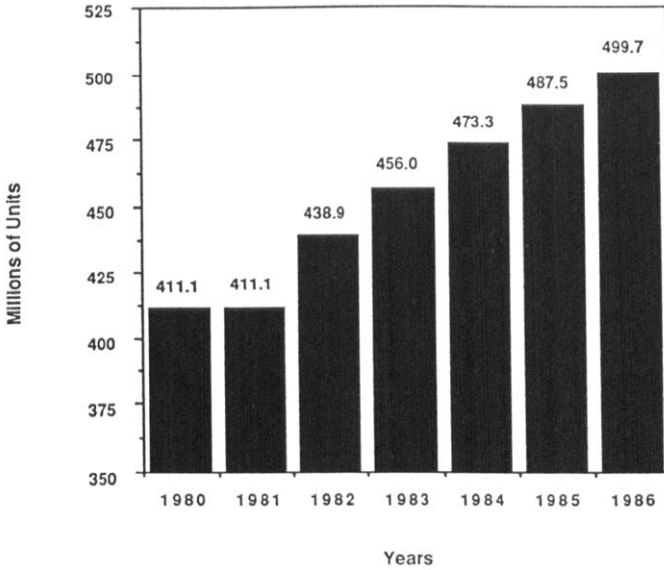


Fig. 2. World motor vehicle stock: 1980 - 1986.

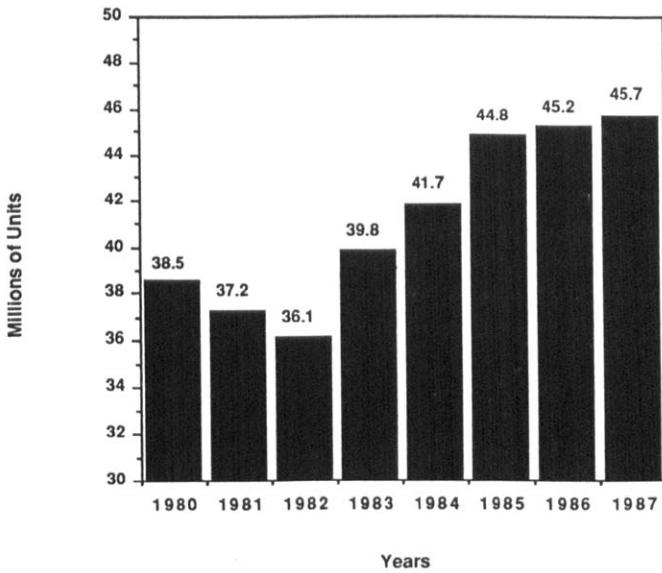
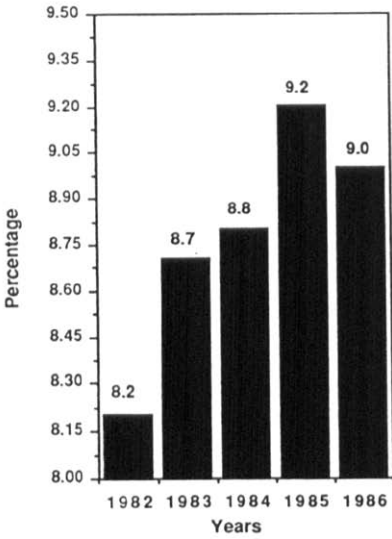


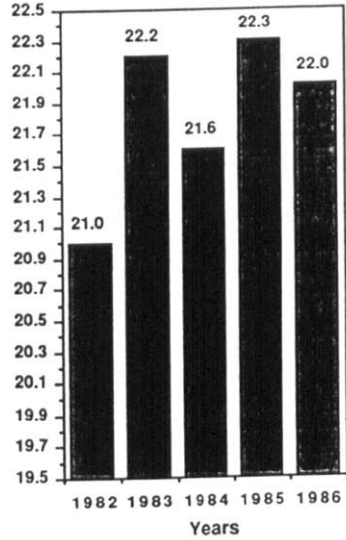
Fig. 3. World motor vehicle production: 1980 - 1987.

economy grows, wealth in the population increases and the ability to purchase vehicles increases. This trend is also shown in the number of people per car and per total vehicle (car, truck, and bus), as presented in Fig. 5. The latter demonstrates that during 1960 - 1986 the number of people per car has decreased from 29 to 12, and number of people per total vehicle has



% of World Motor Vehicle Production

(a)



% of World Starter Battery Shipments

(b)

Fig. 4. 1982 - 1986 world vehicle production as a percentage of: (a) world vehicle population; (b) starter battery shipments.

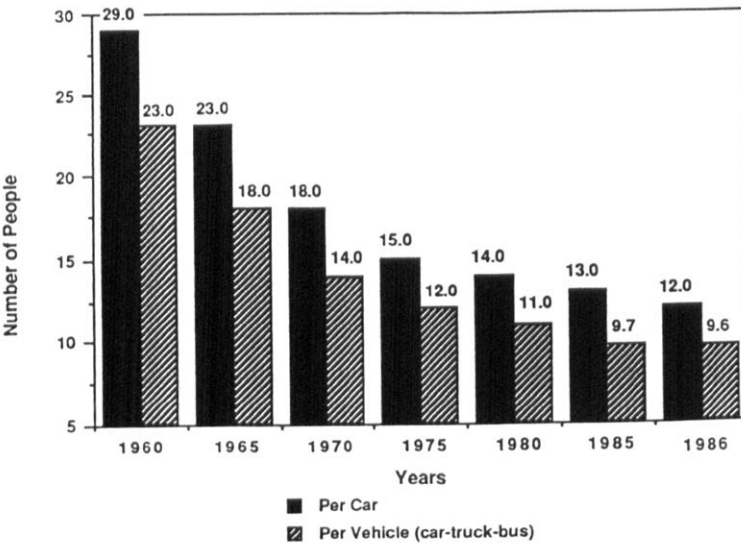


Fig. 5. Number of people per car and per total vehicle: 1960 - 1986.

declined from 23 to 9.6. These trends show that the increase in vehicle stock is rising faster than the growth in world population which further indicates that more people are choosing private transportation methods for travel.

Therefore, the world battery markets are healthy and will continue to grow. As the world economy continues to expand, vehicle sales and production will increase and the number of people per car and vehicle will continue to decrease.

The world starter battery market is expected to grow by 29 million units between 1988 and 1993, *i.e.*, by 2.6% annually (Fig. 6). This compares with 34.0 million units (3.5% annually) for the period 1983 - 1988. The decrease in growth rate is the result of a cooling off of GNP growth and the cyclical nature of original equipment demand, particularly in the 1989 - 1990 period. Average annual growth in 1990 - 1993 is forecast to be 3.1%, an increase over the 1989 - 1990 period and close to the five-year historical rate of 3.5%.

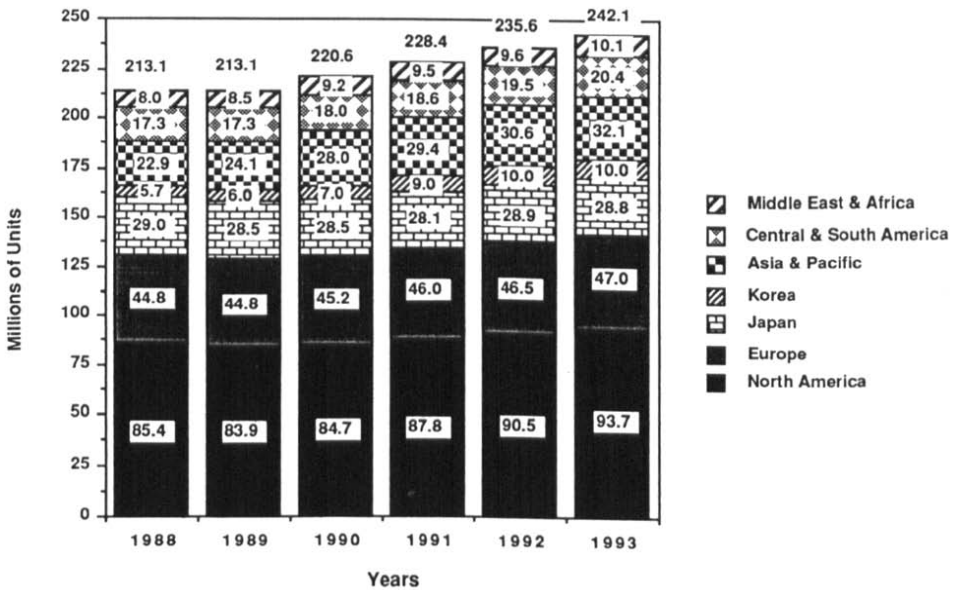


Fig. 6. Forecast for world starter battery industry: 1988 - 1993.

The unit and percentage growths of the world starter battery market by region from 1988 to 1993 are given in Table 4. It can be seen that North America and the Asia and Pacific regions will contribute 17.5 million units (or 60.3%) of the 29 million unit increase forecast in world battery growth. The regions of greatest percentage growth, however, will be the developing regions of Korea, Asia and the Pacific, Central and South America, and the Middle East and Africa. Japan's decrease will be the result of lower original equipment demand due to a decline in automobile exports and a decrease in battery exports.

TABLE 4

World starter battery market: unit and average growths by region for period 1988 - 1993

Region	Unit growth (millions)	Average annual increase/(decrease) (%)
North America	8.3	1.9
Europe	2.2	1.0
Japan	(0.2)	(0.1)
Korea	4.3	12.0
Asia and Pacific	9.2	7.0
Central and South America	3.1	3.4
Africa and Middle East	2.1	4.8
Total	29.0	2.9

### World traction battery market update

Unlike the world starter battery market, the world traction battery industry is more conservative in strategy, less state-of-the-art in technology and manufacturing techniques, and not as global in nature. There are indications, however, that these differences are changing. Most consolidation in the traction battery market has been secondary and the result of consolidation of starter battery companies. In the U.S.A., Exide merged with General Battery. Both companies had automotive and industrial divisions that were simultaneously merged. The same situation has occurred between Tudor Spain and Chloride France, as well as between Tudor Spain and Hagen Germany. There has only been one primary merger in the Traction Battery industry — CEAC France has merged with the Motive Power Division of Chloride U.K. The result of this merger has been to form a company that will produce over 30% of all traction units in the European market.

New technologies and improved manufacturing techniques are also beginning to develop within this industry. Advanced tubular designs and recombinant technology are being developed and used. Automation of manufacturing processes is also being developed and utilized for efficiency of production. The traction battery industry is beginning to move in its globalization strategy.

Growth rate is another factor that differs between the two battery markets. The 1983 - 1988 world growth for traction battery production was 9.8% per year, compared to the starter battery industry's rate of 3.5% during the same period. The industrial economies of the developed regions of the world are just as hungry as the developing nations for electrical-powered industrial vehicles.

The size and growth of the world traction battery industry between 1983 and 1988 is outlined in Fig. 7. The market increased by almost 3.2



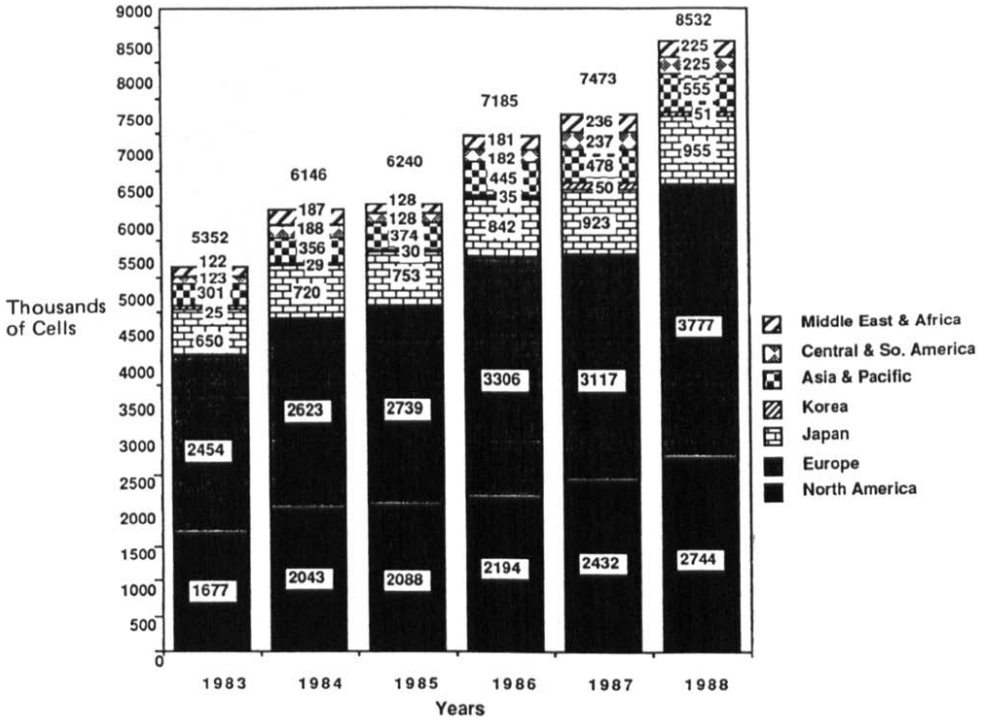


Fig. 7. World traction battery industry: 1983 - 1988.

million cells (9.8%) during this period. The highest percentage growth rates occurred in the developing regions of the world including Asia and the Pacific, Central and South America, and the Middle East and Africa. Of the 3.2 million cell growth, however, 1.3 million occurred in Europe and 1.1 million in North America, the largest industrial regions of the world. There was relatively little change in production and distribution between the regions of the world over the same period (Fig. 8). Between 1988 and 1993, however, there is expected to be a shift in production between Europe, which will drop from 44% of total to 40% of total, to the Asia and Pacific region. The latter is forecast to increase its world production share from 7% in 1988 to over 10% by 1993. This increase is due to lower labor costs and technology shifts as a result of joint ventures.

The same macro-economic factors drive traction battery demand as starter battery demand. Therefore, real GNP annual growth forecasts were one factor used to forecast future growth rates of the world traction battery market. The forecast through to 1993 is given in Fig. 9. A slowdown in growth rate to 4.7% per year is expected, compared with the historical 9.8%. This slowdown is due to the decline in economic growth rates forecast for the developed regions of the world during the 1989 and 1990 period.

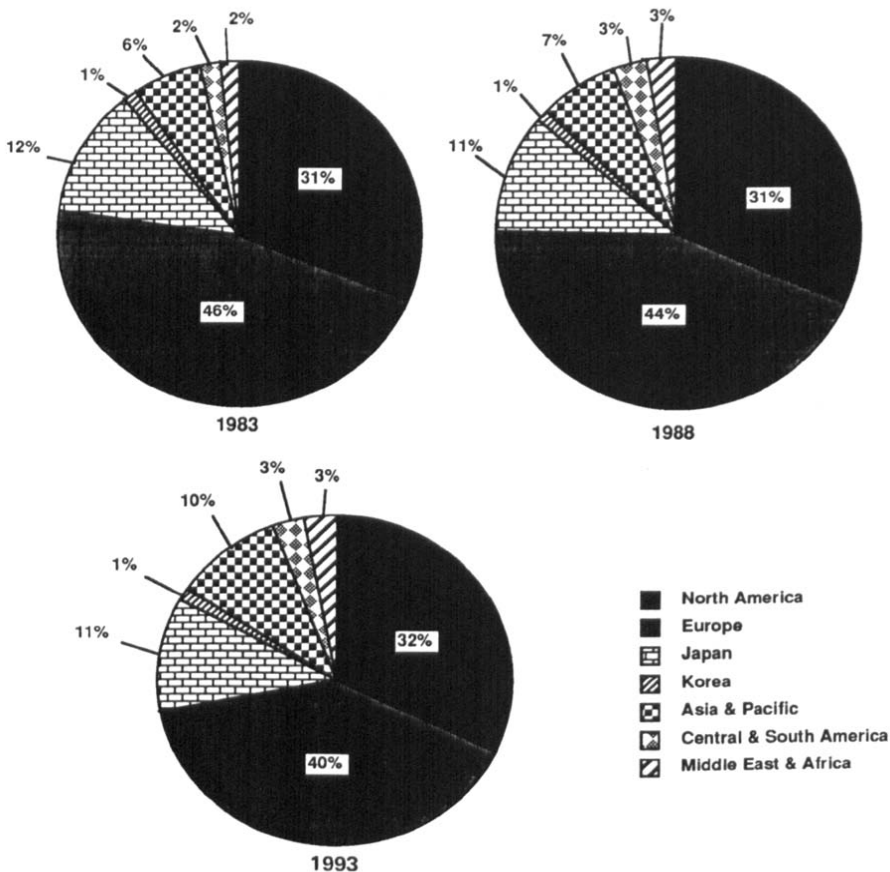


Fig. 8. World traction battery production as a percentage by region.

Growth from 1991 through the forecast period is expected to accelerate to approximately 5.3%, still below the historical trend.

**Summary**

The world starter and traction battery markets are dynamic and healthy. There will continue to be globalization of both industries due to the constant drive to use the most up-to-date technologies and cost-efficient manufacturing techniques. Also, management will continue to develop regional and local marketing techniques to be successful in their overall strategic deployment. It will be management's job to develop a world-class management team that recognizes and takes advantage of the company's position in the shrinking worldwide marketplace.

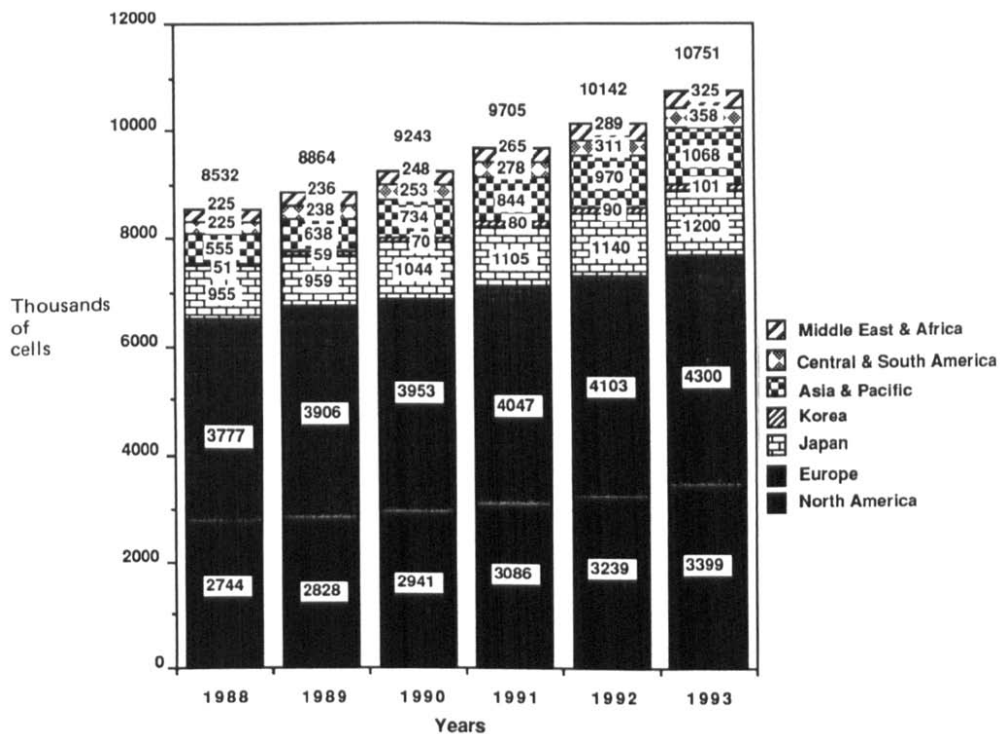


Fig. 9. World traction battery industry forecast: 1988 - 1993.