



Global market for industrial lead acid batteries—past, present and future

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Abstract

This paper will discuss the current status of the industrial market and its prospects for future growth on a global basis. The paper will outline the size of the industrial (non-automotive) battery marketplace in US dollars, and will analyze, in detail, both the stationary and the motive power markets. I will divide the markets into geographic regions, such as: North America, Europe, Asia, South America and the rest of the world. I will also analyze the key segments of each major market category such as forklift batteries in the motive power or traction markets and telecommunications and UPS batteries in the stationary markets. This presentation will outline the history of the markets over the past several years, the percentage growth of each market, as well as the trends over the next 3–5 years and in particular the driving forces behind these trends. I plan to do an in depth analysis of the telecommunications and UPS marketplace; past, present and future, and what needs to happen before we begin to see a recovery in these key markets. The information contained in this presentation will be arrived at/from the cooperation and research of the major battery manufacturers and key end users around the world.

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1. Introduction

It is a challenge to be asked to make a presentation on the worldwide “state of the business” for an industry that is in a major state of upheaval.

Up until 2000, this industry was enjoying record growth in most areas of the world, when the world economics began to slow and the telecommunications industry started into one of the deepest slumps any industry has ever experienced.

We will attempt to look into a crystal ball and forecast when the industry will turn around, forecasting the major market segmentations, geographic distributions and what is driving the markets today.

2. Sources of information

I should begin by listing the many manufacturers throughout the world who have contributed to this analysis by sharing production figures with us. By and large these manufacturers are members of associations such as Eurobat or BCI. In addition, we have been greatly aided by help from a number of industry figures throughout the world, some of

whom are directly associated with the battery industry and some who are not, and to those we would like to give our special thanks.

3. Overview

So now let us get into the heart of the matter. And when we look at the global market in the year 2002 and beyond, we can make the following comments.

1. Total market grew \$320 million in 2000; followed by a \$440 million decrease in 2001, due to the implosion of telecom and UPS.
2. After some additional \$170 million contraction in 2002, we should see recovery begin in 2003 on a global basis of about 3% for the whole market, ramping up to 4% in 2004 and back to a 5–6% growth from 2005 and beyond.
3. It will take until 2004 before we get the business back to the levels of 1999.
4. Motive power, which has not been hurt as much as stationary, will recover first on a global scale; growing at a 1–2% pace.
5. World currencies have been converted to US dollars.
6. The size of the market in 2002 should reach \$3.18 billion; down from \$3.79 billion in 2000.

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4. Industrial market segmentation

It is customary to divide the industrial battery market into two segments: stationary power and motive power. The stationary segment currently accounts for 59% of the total battery market, leaving 41% for motive power. But as mentioned above, the telecom implosion has forced the stationary sector to take a step backward. And so we believe that in 2004 the picture will look slightly different, with motive gaining a larger share of the total. A side-by-side comparison of 2000 versus 2004 reveals this view.

Looking at the split between stationary and motive along geographic lines, we see very different percentages in each region, often with one segment dominating the other, and only occasionally with some degree of parity.

5. Geographic distribution of market

When we turn to the geographic distribution of battery production, and when we further sub-divide stationary batteries into large and small sizes, it is not too surprising to see North America having the largest total of over 25 A h battery types. However, Europe is not far behind, although the split between stationary and motive batteries is somewhat different, with North America being more heavily weighted toward stationary batteries and Europe more heavily weighted toward motive power. Trailing behind is our next largest region, China, which specializes in under 25 A h, and the other regions we have chosen to break out for purposes of this presentation.

6. Regional growth rates

But this picture is not complete without a look at the individual growth rates of the respective regions. Here a slightly different picture emerges. North America, still a large market, has retracted due to telecom and motive power losses in 2001 and 2002. Emerging areas like China and India are making strong statements, even though their growth slowed in 2001. In terms of stationary battery growth, the leaders are India and China, running neck-and-neck in 6% annual growth, followed closely by South America. Europe is a distant 2%. Re-drawing our graph of total battery production to take these growth rates into effect, this is what the world will look like in the year 2004. Looking at absolute dollar growth in the 3-year period between 2002 and 2004, we obtain this comparative view. The big loser appears to be Japan, whose industrial base continues to move offshore to lower labor-cost areas, especially other parts of Asia. Europe, as already mentioned, sees its relative importance continue to decline.

While we see the continued dominance of North America, we also see Asia, when measured as a whole, clearly outdistancing Europe as a producer of stationary batteries.

Of course, this is already the case now, but by 2004 there is almost no competition. China and Taiwan alone, which were barely recognized as entities 10 years ago in the battery world, are now almost as large as Europe, and if one draws out the trend line using projected growth rates, these two countries will be significant players on the global market for years to come.

7. Motive power applications

Let us return now to the major market segment of motive power, which consists of three sub-segments.

1. Industrial truck batteries, which include forklifts, automatic guided vehicles, and airline ground equipment.
2. Railroad/locomotive batteries.
3. Mining vehicle batteries.

8. Motive power drivers

Of these, forklift trucks account for over 95% of the total segment, valued in 2001 at almost \$1.2 billion. The forklift market is driven by the automotive industry, which is by far the largest user of class 1 forklift trucks. So as the automotive industry goes, so goes the forklift market. In recent years, this has been a steady, if unspectacular market, with growth between 4 and 5% annually. The healthy economy in the USA, up until 2001, has yielded better results than the economies of Europe, and the motive power segment in other parts of the world, with the notable exception of Japan, is small by comparison.

9. Motive power battery trends

The trend seen over the past few years will change. We are forecasting annual growth at 1.5% through 2004, which will bring this segment to a total of \$1.203 billion.

10. Stationary power

Whereas the motive power segment is indelibly tied to the traditionally industrial part of the world's economies, the stationary power segment has hitched itself to an industry that can be described as "revolutionary" and in "turmoil". If the automotive industry rules motive power, then telecommunications rules stationary. A quick look at how telecommunications have come to dominate this market can be seen in this comparison.

The telecommunications market was in a boom period up until the year 2000, building out what seemed to be an insatiable appetite for network infrastructure. As these large telecoms kept spending billions of dollars on licenses and equipment, the financial communities started asking some

very basic questions about their business plans. Were they making any return on their investments? This forced a sharp halt to their build-out plans and resulted in a major fall off in battery purchases.

	Market segment		
	1999 (%)	2000 (%)	2001 (%)
Telecommunications	43	46	42
UPS	34	33	35
Miscellaneous stationary	3	4	5
Security	4	3	4
Control and switch gear	4	3	5
Emergency lighting	5	5	4
Electronics	4	4	3
Medical	3	2	2
Total	100	100	100

As you can see, telecommunications will control almost half of all stationary batteries at the end of this year. Several factors enter into play here: (1) the thirst for batteries as telecom giants compete to stay alive in a very tough world by building more and bigger parts of an infrastructure to carry their programs out to the market; (2) de-regulation in the US and certain parts of Europe as well as the growth of the wireless market; (3) the infrastructure build-out in Asia. Of course we could also talk about the reliability and value of these batteries as contributors to their growth, but in the end it was the voracious appetite of the telecom industry that is the largest single factor.

But it would be remiss to ignore the contribution of the UPS sector of the market. As long as companies such as APC, Lieberts, and MGE continue to supply major industries, reliable backup power for their computer networks in this market will remain strong. As a matter of fact, UPS is the third of the great trio of market drivers in the industrial battery world today, along with forklift trucks and telecommunications.

11. Stationary power batteries by size

A brief look at stationary power from the aspect of battery size is warranted. Although Europe and North America make slightly different definitions of the two major size categories (greater than and less than 24 A h in Europe, 25 A h in North America), the slight difference does not change the relative picture.

North America, Europe, and Japan dominate production in the larger sizes. These areas, plus India, Australia, the “rest of Asia”, and South America, have a greater portion of their sales in large-size batteries than in small size. Conversely, China and Taiwan are heavily invested in small-size batteries, most of which are exported to North America, Europe, and parts of the Pacific Rim.

The large-size batteries currently account for 60% of all stationary battery production. These large batteries are, of course, primarily used in telecommunications and demanding UPS applications. China and Taiwan, with their growth rates in the small-size batteries, will not markedly change this situation for some time.

12. Top three battery segments

Earlier we alluded to the largest three individual segments of the overall industrial battery market.

1. Industrial trucks (forklifts).
2. Telecommunications.
3. UPS.

The slide you see depicts the varying growth rates of these three segments. Industrial trucks are, and will remain, the largest single component of the market for a few years to come. Telecom batteries, which suffered severe losses in 2001 and 2002, will begin to grow again, although very slowly, in 2003 and should see solid growth of around 4% from that point. UPS batteries make up the last part of this trio. Here is how we see the shifts in these three key groups:

	Battery segment		
	1999 (%)	2002 (%)	CAGR (%)
Industrial truck	39	40	2.5
Telecommunications	26	35	NA ^a
UPS	21	25	6

^a Due to the telecom implosion of 2001 and 2002, CGR was not calculated.

13. Telecom trends

Lucent, Sprint, British Telecom, MCI/WorldCom, Deutsche Telekom—these and other names have been investing millions of dollars, euros, and pounds sterling in the build-out of a telecommunications infrastructure that was ringing the cash registers of battery companies throughout the world. That came to an abrupt halt in mid-2001, when investors and other financial institutions began to question the business plans of these carriers. Were they making a return on their investment? The simple answer to a very complex question was, no. They had not given their customers a valid reason why they should spend more on communication services that would make this infrastructure investment sensible. They had allowed themselves to get into a race with their competitors to see who could build-out their network first. In the end, what will be needed are practical, affordable services that consumers are willing to pay for. The technology in the wireless phones is finally catching up with the visions of the 3G marketplace. Once 3G begins to become widely used, revenue streams will pay

down some of the high debt loads of these carriers. They will then renew their appetite to build-out more infrastructure.

14. UPS trends

Concluding our summary of the top three battery segments, we have already seen that UPS battery sales will remain very solid at 6%. New UPS plants are going up all over the world, especially in Asia, and this of course bodes well for suppliers of batteries. The drivers here are the Internet and network servers, as well as the computer industry and its critical applications demanding complete reliability of data.

15. Summary

The worldwide industrial battery market has severely curtailed its growth over the past 2 years; namely, 2001 and 2002. Prior to that it enjoyed record growth in both motive and stationary. As I indicated earlier, the industrial market will contract again in 2002, but once we have purged ourselves of the spending binges of a few years ago, the basic industry drivers are sound and we should begin to grow again in 2003 and beyond. Unfortunately, it may take until 2004–2005 timeframe before we get back to the levels of business we enjoyed in 1999.