WAVETECH

BEAT 100 Case Study:

Powered Wheelchairs & Scooters

A guide for

Mobility Providers

WAVETECH A/S
www.wavetech.de

“BEAT 100 can help mobility providers reduce costs while achieving higher user satisfaction levels.“

Introduction

The BEAT100 is a new product designed for use with powered mobility equipment such as wheelchairs and scooters. The BEAT100 provides several benefits for mobility providers looking to reduce program costs, simplify the ongoing maintenance of mobility equipment while maintaining higher levels of user satisfaction.

This case study aims to introduce the technology behind the BEAT 100 and to illustrate the cost savings possible when adopted by mobility service providers.

Yours sincerely,

Dag A. Valand CEO

WaveTech A/S

Advantages for Mobility Providers

Reducing operator costs, increasing user satisfaction

The BEAT100 from Wavetech helps reduce costs by increasing operational lifetime and reliability of lead-acid batteries commonly found in powered wheelchairs and scooters. In addition, continued use of the BEAT100 helps maintain battery capacity which translates directly into greater driving range - long after untreated batteries have been replaced.

The battery is one of the most important components in an electric wheelchair – it is also one of the major limiting factors in electric wheelchair performance. Using the BEAT100, lead-acid batteries can last up to 100% longer – essentially doubling their useful lifespan – saving money for wheelchair operators by reducing the number of battery replacement cycles. At the same time batteries used with BEAT100 are mechanically more robust as a result of the improved charging process.

Just as importantly, BEAT100 helps to retain maximum charging capacity throughout the lifetime of the battery ensuring users don't experience a drop off in performance or range throughout the extended lifetime.

Key Advantages (Operator):

- Lower costs associated with servicing and repair program
- Higher levels of customer satisfaction

Key Advantages (End user):

- Fewer service appointments required
- Greater driving range maintained for longer
- Lower cost of ownership for hire purchase schemes

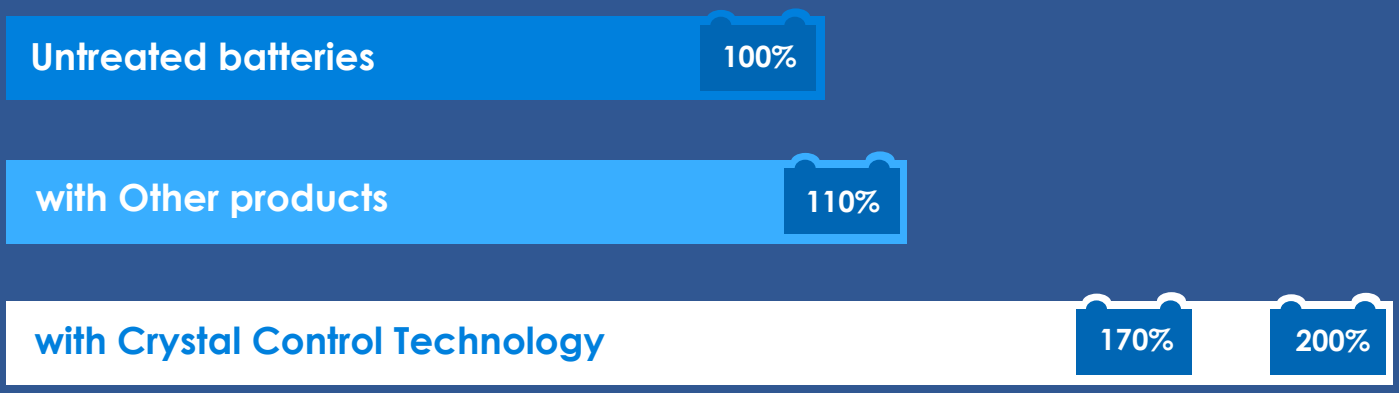
BEAT100 - Crystal Control Technology

Lead batteries store energy by means of a chemical reaction between lead, lead dioxide and sulphuric acid (liquid/gel). After a while in operation, lead sulphate crystals form on the electrodes, reducing the capacity and service life of the battery. Batteries treated with Crystal Control Technology (CCT) exhibit a significantly more homogeneous lead dioxide structure on the positive electrode. The advantages: the electrode works more efficiently, the charging time is reduced and both capacity and service life are considerably increased.

CCT supports the vital electrochemical process in a battery by electrodynamic means and through rapid changes in the electrical field strength, gives the ions more energy. CCT prevents the undesirable formation of lead sulphate crystals on the battery electrode and thus ensures a longer service life of the battery. CCT also supports the desirable, homogeneous formation of lead dioxide crystals on the positive electrode, thus obtaining more usable energy

Longer service life

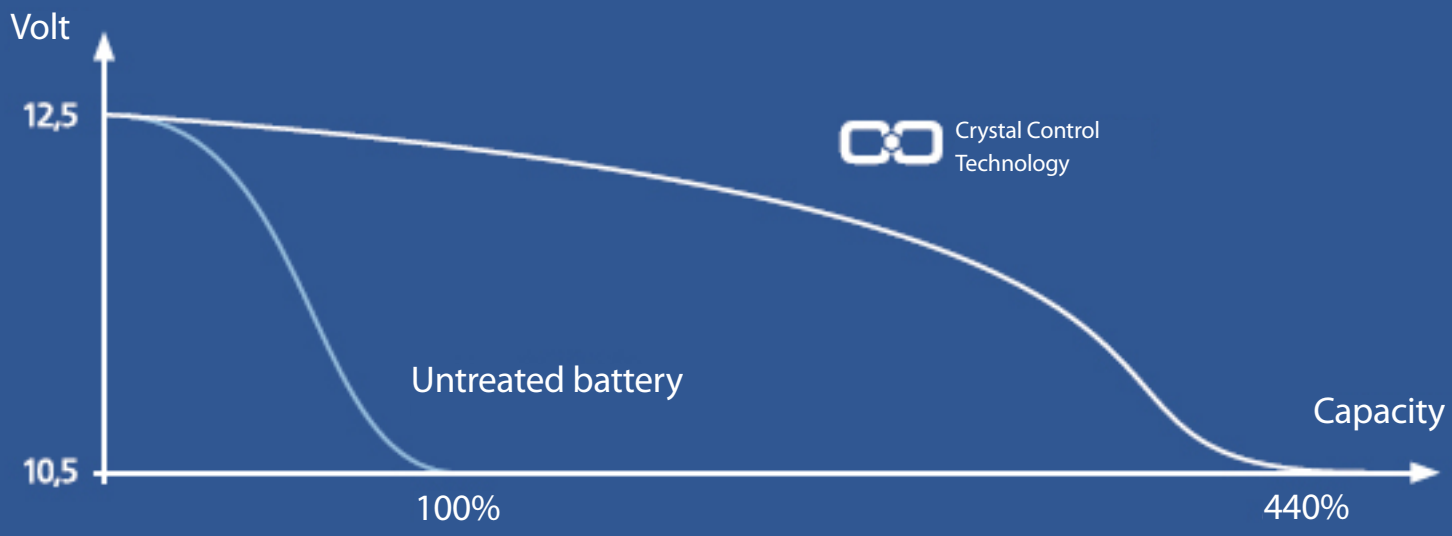
Batteries treated with crystal control technology have a longer service life (typically 70 - 100% longer) and therefore have to be replaced less frequently.



The service life in this example is judged to be ended when the capacity of the battery has fallen to 50%.

Increased capacity

Batteries treated with crystal control technology have a higher capacity retention after repeated charging cycles (up to 440%) and have to be charged less frequently.



The usable energy of batteries treated with crystal control technology is 340% higher than untreated batteries when the life-span has reached 50%.

Example Calculations:

The following scenarios provide examples of how the BEAT 100 from WaveTech can help reduce costs for medical suppliers/ service providers, health insurance funds and end-users. All calculations shown to illustrate the savings are examples of the German market and may vary. VAT not included.

Savings potential for medical suppliers/service provider on flat rates per case

Basis of calculation:

Lifespan of lead battery used in an electric wheelchair: ~ 2 years
Battery related expenses per year, batteries included: EUR 300.00 (EUR 600.00 for 2 years)

Expenses are made up of:

Price for one battery:	EUR 125.00
Service technican:	EUR 75.00
Service vehicle:	EUR 55.00
Substitute wheelchair:	EUR 25.00
Flat fee for small spare parts:	EUR 20.00

Purchase price BEAT 100/unit: EUR 130.00 (excl. VAT) / ca. price when using introductory offer 7 + 1 BEAT 100

Extension of lead battery lifespan (from - to)	70% - 100%	70% - 100%	70% - 100%
Running time of an electric wheelchair	4 years	5 years	10 years
	Flat rate per case	Flat rate per case	Flat rate per case
Investment for 1 electric wheelchair / 2x BEAT 100	EUR 260.00	EUR 260.00	EUR 260.00
Return of investment (from - to)	ca. 25 - 21 months	ca. 25 - 21 months	ca. 25 - 21 months
Savings per electric wheelchair (from - to)	EUR 494.12 - EUR 600.00	EUR 617.65 - EUR 750.00	EUR 1,235.30 - EUR 1,500.00

The annual savings are based on the calculations above:

Extension of lead battery lifespan (from - to)	70% - 100%
Savings per electric wheelchair per year	EUR 123.53 - EUR 150.00
Savings per 30 electric wheelchairs per year	EUR 3,705.90 - EUR 4,500.00
Savings per 240 electric wheelchairs per year	EUR 29,647.20 - EUR 36,000.00

Savings potential for health insurance funds, when service provisions are invoiced by medical suppliers / service provider

Basis of calculation:

Lifespan of lead battery used in an electric wheelchair: ~ 1.5 years
In this example the battery changing intervals are reduced considering the fact that the medical suppliers / service provider are interested in a higher turnover. This is promoted by invoicing every single service to the health insurance funds.

Battery related expenses per year, batteries included: EUR 400.00 (EUR 800.00 for 2 years)
(Based on information provided by medical suppliers / service provider and health insurance funds)

Purchase price BEAT 100/unit: EUR 130.00 (excl. VAT) / ca. price when using introductory offer 7 + 1 BEAT 100

Extension of lead battery lifespan (from - to) Running time of an electric wheelchair Investment for 1 electric wheelchair / 2x BEAT 100 Return of investment (from - to)	70% - 100% 4 years service life EUR 260.00 ca. 14 - 12 months	70% - 100% 5 years service life EUR 260.00 ca. 14 - 12 months	70% - 100% 10 years service life EUR 260.00 ca. 14 - 12 months
Savings per electric wheelchair (from - to)	EUR 902.56 - EUR 1,066.64	EUR 1,128.20 - EUR 1,333.30	EUR 2,256.40 - EUR 2,666.60

The annual savings are based on the calculations above:

Extension of lead battery lifespan (from - to)	70% - 100%
Savings per electric wheelchair per year	EUR 225.64 - EUR 266.66
Savings per 100 electric wheelchairs per year	EUR 22,564.00 - EUR 26,666.00
Savings per 500 electric wheelchairs per year	EUR 112,820.00 - EUR 133,330.00
Savings per 3,000 electric wheelchairs per year	EUR 676,920.00 - EUR 799,980.00

Savings potential for end users

Basis of calculation:

Lifespan of lead battery used in an electric wheelchair: ~ 2 years
Price of a lead-acid used in an electric wheelchair: EUR 252.10 (excl. VAT)
Price of a lead-acid used in an electric wheelchair: EUR 252.10 (incl. VAT @ 19% in Germany)
Recommended retail price BEAT100 per unit: EUR 197.48 (excl. VAT)
Recommended retail price BEAT100 per unit: EUR 235.00 (incl. VAT @ 19% in Germany)

Extension of lead battery lifespan (from - to) Running time of an electric wheelchair Investment for 2x BEAT 100 (excl. VAT) Investment for 2x BEAT 100 (incl. VAT @ 19% in Germany) Return of investment (from - to)	70% - 100% 5 years EUR 394.96 EUR 470.00 ca. 45 - 37 months	70% - 100% 10 years EUR 394.96 EUR 470.00 ca. 45 - 37 months
Savings per electric wheelchair (excl. VAT) **Savings per electric wheelchair (incl. VAT @ 19% in Germany)**	EUR 519.03 - EUR 630.25 EUR 617.65 - EUR 750.00	EUR 1,038.07 - EUR 1,260.50 EUR 1,235.30 - EUR 1,500.00

Note: The calculations shown to illustrate the savings are examples of the German market and may vary.

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