

BAE *Nova trans*

Batteries as motive power



End2End

ENERGY FROM BATTERIES

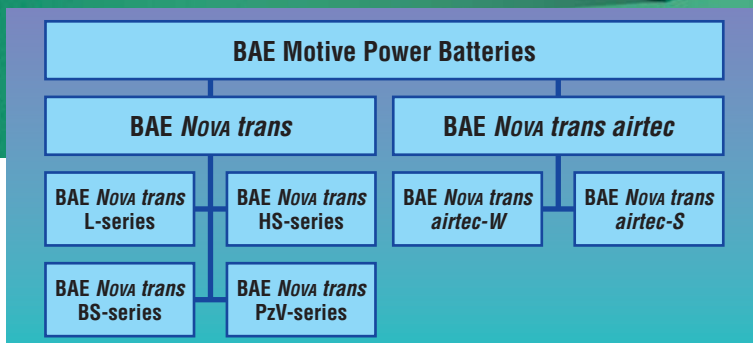


BAE motive power batteries – Individual solutions in series

The right battery for every application

High performance, reliability, low maintenance – these are the prime qualities of BAE batteries. Modular in design, they are more powerful than DIN standards require and can be used in numerous

applications. They are the batteries of choice for heavy duty and universal applications. And they are maintenance-free. We have the right battery for every electric vehicle.



Our programme at a glance:

BAE Nova trans The power horse

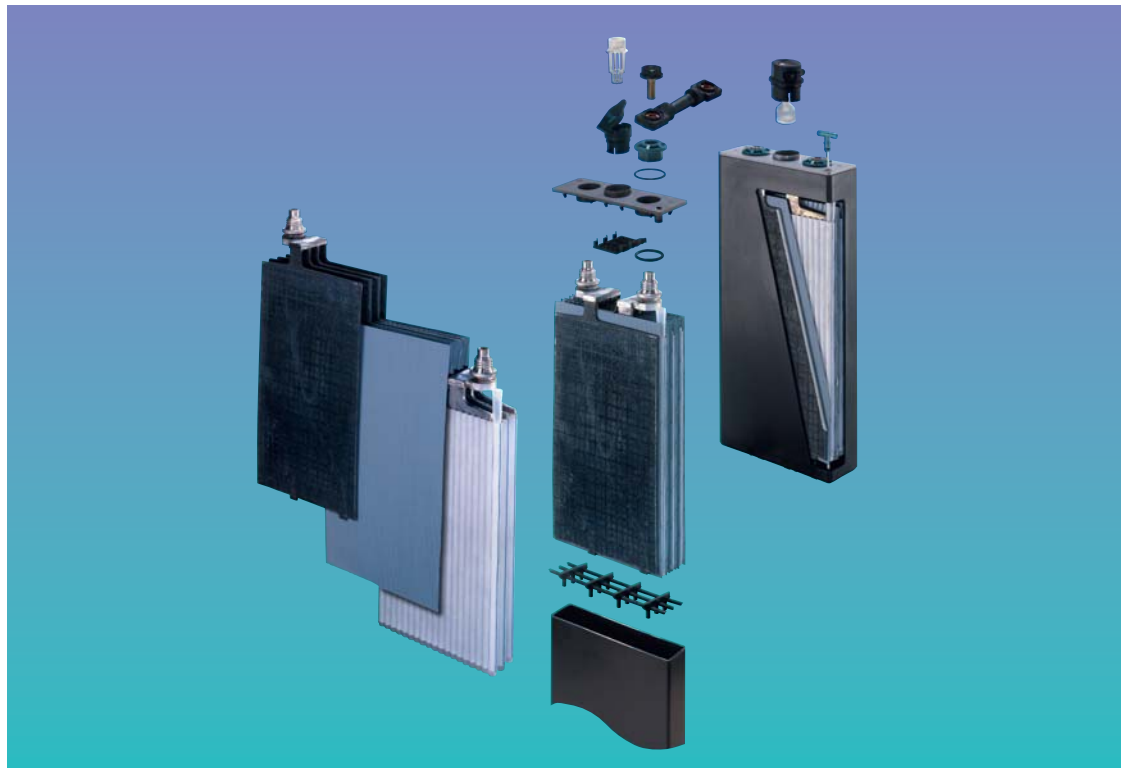
- **Nova trans L**
– Motive power batteries according to IEC 254-1 and 2.
- **Nova trans HS**
– High performance batteries with approx. 10 % more energy in the same cell dimensions as the L-series.
- **Nova trans BS**
High energy density and small external dimensions, designed for small electric vehicles.

- **Nova trans PzV**
Maintenance-free
– Unique GEL-technology:
no topping up and high cycle life.

BAE Nova trans airtec The air-lift battery – with acid circulation

- **Nova trans airtec-W**
– Lowest maintenance with longer topping-up intervals compared to standard versions.
- **Nova trans airtec-S**
– For heavy duty. One battery for two shifts due to interim charging. Ideal replacement battery for a 3-shift duty because of a short and efficient charging.
Both series are highly economic. Due to a charging factor of 1.05 they save 15 – 20 % of energy.

BAE *Nova trans* Battery technology



Quality throughout

The negative plates used in BAE batteries are equipped with highly durable long-life expander to cope with high cycle life. They are welded to the pole of the negative plate set, which in turn interlocks with the positive set which consists of tough tubular plates with corrosion resistant grids.

The cell jar is made of unbreakable and temperature-resistant polypropylene and is welded acid-tightly to the cell lid.

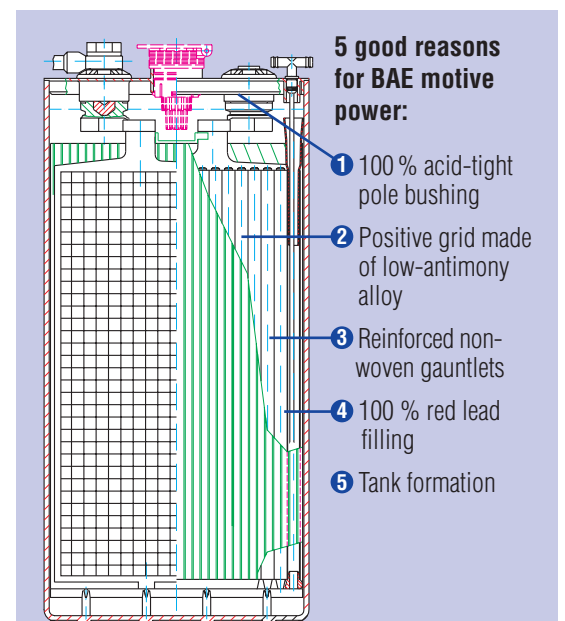
The pole, having a brass inlay, is screwed to the lid, with a special BAE pole nut, sealing with two O-rings.

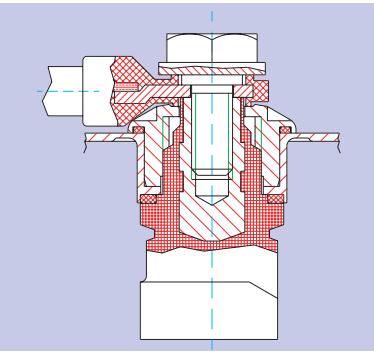
Topping up is carried out via a vent plug or an automatic refilling plug. *DUO* cells have an acid circulating device incorporated in the cell, driven by compressed air supply.

The cells can be connected with acid-resistant connectors to batteries of up to 24 V 360 Ah using stable, impact- and acid-resistant plastic trays or plastic-coated steel trays. For larger batteries the trays are made of plastic-coated steel. These are coated pore-free and are acid- and corrosion resistant.

Highest state-of-the-art technology

Five important design characteristics given below determine the high technology of BAE motive power batteries.





1 BAE pole bushing

The BAE pole bushing is a robust 100 % acid-tight whole of the pole and the lid, independent if a connector is screwed onto it or not. It is excluded that acid can destroy the pole or the connector.



2 Low antimony alloy for positive grids

The BAE low antimony alloy for positive grids is reducing the ageing effects of traction batteries. During corrosion of the positive grid the low antimony alloy releases less antimony into the electrolyte. The antimony will be deposited on the surface of the negative grid. There it reduces the final charging

The BAE pole has a machined lead shoulder below its thread. In this thread the BAE pole nut intervenes and presses the O-ring in axial direction between the lid and the lead shoulder of the pole. The pressing is limited by a stop on the pole. An additional O-ring within the pole nut stops any tracking current between the cell poles of a battery. A plastic-headed steel pole screw assures a safe contact between the connector and the pole. In the middle of the plastic head a lead protected contact point is provided for an easy measurement of the cell voltages.

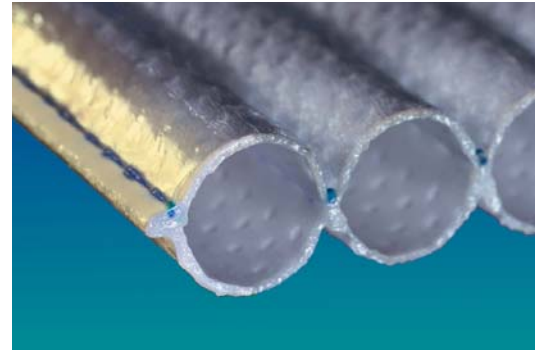
voltage, increases the hydrogen evolution and increases the temperature during charging. Less antimony in BAE batteries means:

- higher final charging voltage over life time
- lower hydrogen evolution, lower water loss
- lower temperatures at the end of charging

BAE alloys have besides the low antimony content additions of Sn, As and Cu to improve the casting of the grids, to reduce corrosion and to reduce the growth of the grid.

3 Gauntlet made of reinforced non-woven Polyester

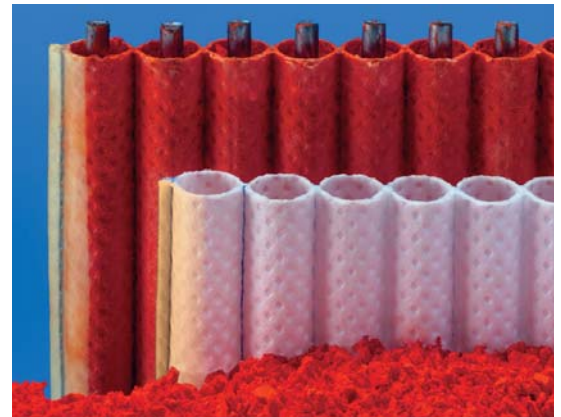
The purpose of the gauntlets is to keep the active material together and to avoid mass shedding. BAE best choice are the reinforced non-woven gauntlets. Its improved oxidation resistance and stability provides high cycle numbers. Their small pores of 30 μ diameter reduce the mass shedding



in comparison to woven gauntlets with pores of 90 μ. A special protection at the edges of the gauntlets guard against short circuits between the plates.

4 Dry filling with 100 % red lead

The particle structure of the active mass is important if uniform high capacity has to be achieved. During manufacture, the particle size distribution has to be precisely adjusted for this purpose. In order to restrict deposits to a minimum, the filling density must be kept within narrow tolerance limits. Dry filling with 100 % red lead



guarantees this much better than any other type of filling.

5 Tank formation

The quality of the positive and negative plates depends essentially on the acid density and temperature during the first formation charge. Ideal values, e.g. an acid density of 1.10 kg/l and a temperature of 40 °C, can be achieved in tank formation in contrast to cell formation and kept within strict tolerance levels.



BAE Acid circulation

Cost reduction every day

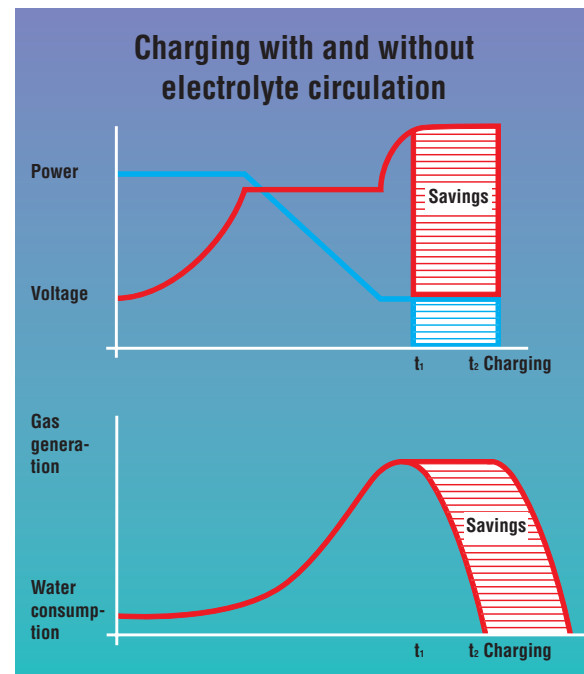
BAE *Nova trans airtec* – constantly in action

In contrast to conventional batteries where 17 % of the charging time is required for mixing the electrolyte in the cell, the BAE *Nova trans airtec* saves energy, charging time and water by injecting circulating air into each cell during the main charge. Battery heating is also reduced.

The advantages are:

- 20–30 % less charging time, without the need for higher electrical charge rating.
- Interim charging time substantially lower compared with conventional batteries.
- 15–20 % lower energy costs.
- 50–80 % less gas release and water consumption.
- Reduction of operating temperature by 5–10 K.

BAE *Nova trans airtec* and controlled charger from BAE: technology adapted for both heavy duty (*airtec-S*) and decentralised (*airtec-W*) operation. This type of adaptation is also possible even after years of operation. Pressure monitoring and patented leak monitoring facilities guarantee safe electrolyte circulation.



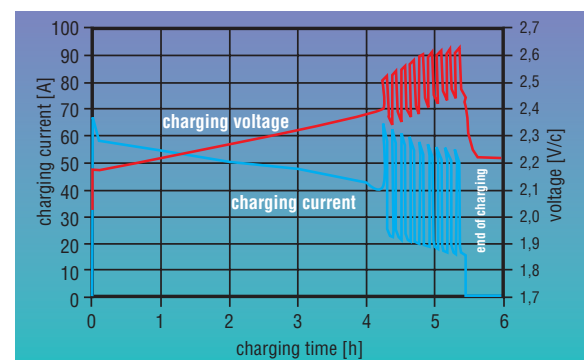
BAE *Nova trans PULS lift* – flexibility for all PzS batteries

The charging characteristic BAE *PULS lift* was developed by BAE together with a German charger manufacturer. The acid circulation is not made by injected air from a mechanical pump but by well defined current induced gas pulses during the final charging phase, having a charging factor of 1,07. Besides applications with many intermediate chargings the BAE *PULS lift* has the same advantages as the conventional acid circulation by using far less parts. No pump and no connection to the charger, no distribution hoses to each cell is required. It can

be used for all vented lead acid batteries. An equalisation charge during weekend is required.

The advantages:

- Applicable for all vented lead acid batteries
- No additional components
- Lower investment as for conventional acid circulation
- Lower maintenance as for conventional acid circulation
- Short charging times
- Lower temperature increase as with standard chargers



- Increased water filling intervals as with standard chargers
- Lower energy consumption as with standard chargers

Not just batteries ...



It is not surprising that BAE is the company of choice as initial equipper of several European fork-lift truck manufacturers.



Whether for fork-lift trucks, palleting trucks or automatic guided vehicles – BAE batteries prove themselves on a daily basis, even under the harshest conditions.



End2End



Our performance, continuing after the sale, is completed:

- Tested quality according to DIN EN ISO 9001:2000
- 24-hour service facility
- Guaranteed returnability and recyclability



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