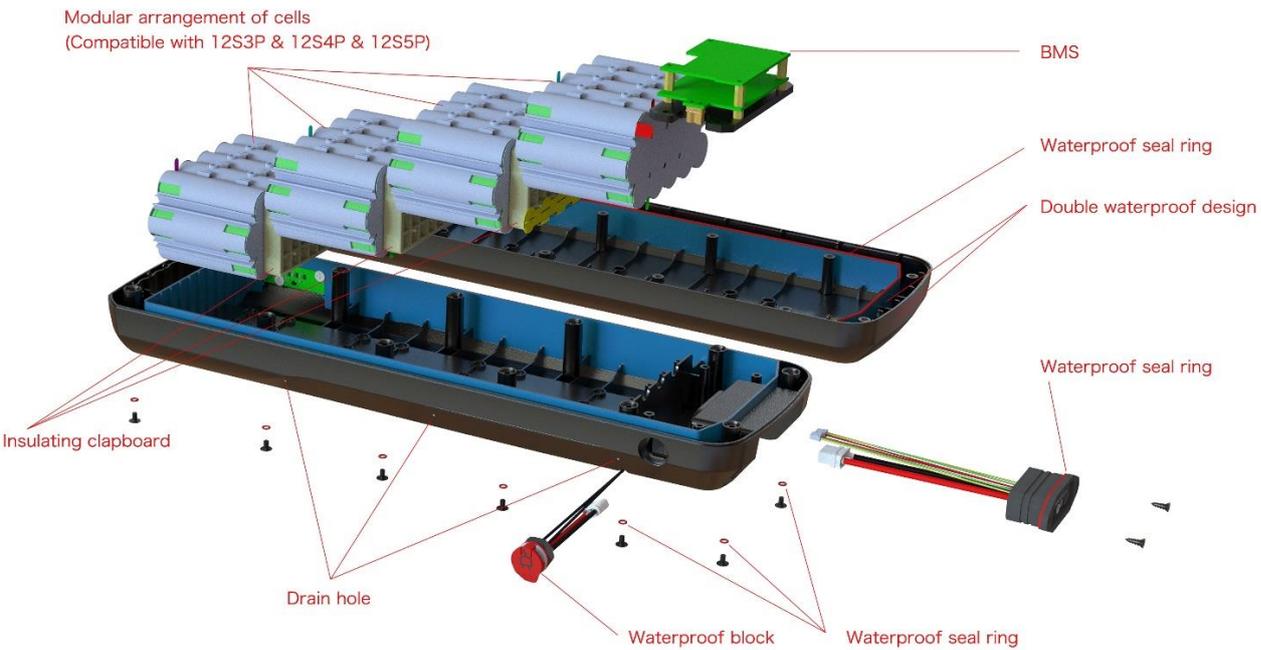


Press release
For immediate publication

Bafang 43V battery design – Advantages compared to 36V and 48V systems – New charger with easier handling

Bafang is best known for their high value e-bike motors which shine on the trails or on the road with their powerful torque output. But the company’s battery portfolio, ranging from rack-mounted to semi-integrated to fully-integrated InTube options, also comes with technical advantages, exemplified in the 43 volt design.

Suzhou (PRC), August 27th 2019 – Bafang, one of the leading manufacturers of e-mobility components and complete drive systems, not only offers a full variety of drive systems – front, mid and rear motors – but also a complete range of batteries. Distinguishing these from the competition is the voltage: instead of opting for the standard 36 or 48V formats, Bafang’s engineers have decided to use a 43V battery design, for some very good reasons.



Waterproof battery design, using a double shell construction

Advantage 1: Heat Efficiency

For batteries of the same capacity, the higher the voltage, the higher the working efficiency and the longer the range. When providing the same output power, the higher voltage leads to a lower working current, thus the battery and other components of the system produce less heat – and the efficiency will be improved accordingly.

When compared to the most commonly used 36V format, a 43V battery experiences just 69% of a 36V system’s heat loss. In terms of efficiency, a 48V battery is even better, at 59%, but has a disadvantage when it comes to space utilization.

Advantage 2: Compact Module Arrangement



43V – 12S5P cell layout

36V – 10S5P cell layout

48V – 13S5P cell layout

Depending on the capacity required, a 43V battery uses a 12S3P, 12S4P or 12S5P cell arrangement, resulting in a space utility of 75% for the complete package. Both



competing formats are considerably less space-efficient. A 36V battery’s 10S4P or 10S5P arrangement only manages 63% space utility, a 48V battery’s layout (13S3P, 13S4P or 13S5P) reaches no more than 65% – plus, that “high-end” 48V battery leads to a very wide package which conflicts in particular with the requirements of state-of-the-art downtube integrated batteries.

A space efficient battery can ensure a more compact downtube design

“When you take both of these efficiency parameters into account, there’s a clear overall advantage to the 43V battery design”, said Sunny He, Bafang’s director and deputy general manager. “And our latest battery options also have many additional advantages.”

Advantage 3: Safety

Users of Bafang's new battery packs benefit from improved resistance against bad weather and high thermal stress – because the batteries are designed in accordance with the IPX6 standard, and their smart thermal management restricts any possible temperature rise to 20 degrees. But there are also many even more sophisticated features and technologies implemented:

- Higher safety protection design: Bafang's charging circuit is equipped with independent temperature control. All important functions are identified before charging. The charging circuit has been designed with 6 circuits for safety protection.
- Low voltage design: All batteries rely on the safer 4.1V full voltage level (instead of the standard 4.2V)
- Multi-stage failure safety protection: Bafang's BMS (Battery Management System) uses 2 circuits to protect the chip against overcharge failure of the circuit and another 2 circuits to independently double-check for temperature protection failure. A real-time calibration system checks for discharge overcurrent.
- Independent 3-section fuses provide enhanced secure diagnosis of real-time MOSFET status, ensuring reliable on and off of the entire battery
- Two-level safety mechanism protective design: After unlocking by key, there's two-stage hook protection. A spring plate mechanism also facilitates attachment.

Advantage 4: Efficient Manufacturing

To achieve its mission to deliver ever higher product value at lower manufacturing cost, Bafang has incorporated a flexible design, well suited for automatic production processes. The batteries' standard core packs are assembled without any cables. Reliability is ensured, and plastic parts can be made smaller, by taking full advantage of vibration welding and multiple insert-molding processes.

Advantage 5: Easy Handling & Service

For the end consumer, the launch of a new charger line-up is good news. Both the CHG C01.3A and CHG C01.2A (with 3 and 2 amps charging current respectively) will fit all future Bafang batteries. And their 360-degree charging interface means "you can plug in even with your eyes closed."





For product managers and dealers' workshops, the following features are even more important:

- Free choice between CAN and UART communication protocols
- Software parameters can be updated with BESST (Bafang's current service tool) – and in the future through cloud-based systems
- A resume recording function helps in cases of warranty issues, long term capacity monitoring and / or malfunction

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Bafang, one of the leading manufacturers of e-mobility components and complete e-drive systems, has been developing components and complete systems for electric vehicles since 2003. Bafang currently has an annual manufacturing capacity of up to one million motors and systems for e-bikes and electric scooters.

The company focuses on all global e-mobility trends of the future: be it as an individual e-bike, e-scooter or for public bike sharing schemes. Bafang employs more than 450 staff worldwide in four locations. The head office, development and manufacturing center is based in Suzhou, near Shanghai.

Bafang has Sales and Service Centers in the Netherlands, in the USA and in Germany.

This release is issued by Bafang Electric (Suzhou) Co., Ltd. which retains the ultimate responsibility for the content.