Setting new standards

Bender continuously adapts its electrical safety technology to meet new standards, market demands and customer expectations

Bender is an expert in electrical safety solutions. For more than nine decades the company has developed pioneering technologies, which monitor and detect electrical failure, help prevent downtime and ensure electrical safety in critical infrastructure applications world-wide.

Bender continuously adapts its technology to meet new standards, market demands and customer expectations. Bender pioneered the development of electric vehicle insulation monitoring over 10 years ago. Today Bender's capability includes electric and hybrid vehicle monitoring to charging stations and control technology. The high specification monitoring technology is proven in use in a range of demanding applications such as; Formula 1 and Formula E, electric and hybrid vehicles, buses and fleet.

From on-board components to charging equipment, Bender has a total capability in EV solutions:

CC612

Chargespot Berlin

The Chargespot Berlin is Mode-3 EV charging station (for public and commercial applications). This safe and fast charging solution is designed to mount on streetlight columns, street furniture and walls. It meets all regulatory standards and requirements including ISO 15118, for a wide range of electric vehicles. It is totally flexible in terms of where it can be sited, how the operator collects payment and it has a power rating up to 22kW, although other options are available. The Chargespot Berlin is universally applicable and easily configured to any backend management system - making it a versatile charging solution, which is free to use with any software infrastructure. Where installation is concerned multiple charge stations can form a grid to distribute available energy in a customised and highly dynamic configuration.

Modular Kit

The Chargespot Berlin is also available as a Modular Kit without the housing. This allows customers to acquire all the components required for a charge station which is built into their own charging station with Bender technology inside. Reducing cost and development time, the Modular Kit offers a fast route to market in the field of electric vehicle charging.

CC612

The CC612 Charge Controller is the main component of any electric vehicle charge station, including the Bender Chargespot Berlin. For electric vehicles, the charge controller controls the charging outlet socket. It allows a setup that is in accordance with all relevant standards, (IEC 62196, IEC 61851-1, IEC61851-22 and ISO 15118). The controller can authorise the user, communicate with the vehicle, connect to the charge station and read the meter.

The CC612 has an efficient structure and size (114.5mm x 22.5mm x 99mm) and therefore allows for compact, intelligent, and cost-effective charge stations. For communication with the charge controller, a backend system and reliable communication protocol are required.

Most manufacturers of the backend device use the OCPP protocol, as a result the CC612 is compatible with OCPP 1.5 and 1.6 as well as all electric vehicles currently on the market. The controller can be operated in an 'Always-on system', as there is permanent connection to a mobile network allowing enhanced surveillance. The device supports 2.5G Edge and 3G/4G UMTS mobile networks, with a sim card being required for connection to online operation. User interaction is enabled using an optional RFID module, consisting of an RFID card reader and LEDs.

The CC612 is sold separately to charge station manufacturers. It incorporates a power supply, contactor, charging socket, IEC 61851 Mode-3 commercial charge controller and remote access for software updates and monitoring.

RCMB121

The Bender 6mA DC sensor RCMB121 is designed to detect a DC earth fault, which is more cost-effective than using a Type B RCD. This sensor activates automatic

IR155

shut-down through an external disconnection device in the event of hazardous electrical faults occurring.

The RCMB121 works in conjunction with a Type A RCD to provide a significantly cheaper alternative to type B RCD for AC charge stations. It enables compliance with the BS7671:2018, providing maximum safety at a considerably lower cost than using a Type B residual current circuit breaker.

IR155

This vehicle insulation monitor enables continuous measurement of the insulation resistance on the AC and DC electrical drive system. Existing insulations faults are signalised reliably even under high system interferences which can be caused by motor control processes, accelerating, energy recovering etc. This technology is proven in use with Formula 1, E, Boris Buses, and utility vehicles.

Bender also support over 170 Formula Student teams with our IR155 IMD (insulation monitoring device). The EV race category specification states a Bender IMD is necessary to monitor the drive system for electrical safety purposes. Formula Student teams are not only judged on speed and finish position, they are assessed in a number of categories including: engineering design, cost, technical aspects, business presentation and marketing.

As well as supporting Formula Student, another team Bender support is Bath Zero. The team competed in the Isle of Man TT Zero race in June 2019. The bike was fitted with an IR155 IMD for monitoring of the battery and electrical system. Rider Mathew Rees secured fourth place for the team, finishing behind professional outfits Mugen and Team Mirai who secured the top three places – making Bath Zero the highest placed university team.

Bender UK is at the forefront in the development of new and innovative electrical safety solutions.

www.bender-uk.com

RCMB121