CASE STUDY

UNIVERSITY OF BATH

BATH ZERO EMISSIONS MOTORCYCLES

POSITIVE PROBLEM SOLVING

WHEN THE BATH ZERO EMISSIONS MOTORCYCLES TEAM APPROACHED ETPS, THEY NEEDED A POWER SOLUTION TO HELP GET THEIR SEASON ON TRACK.

Many of the calendar's race circuits only have a single phase mains supply for battery chargers. However, commercially available sources with a single phase input are only usually available up to 3kW. This increases the time required to charge a battery pack. As a result, the number of times a team can test their bike before a race is reduced.

A special 5kW LAB-SMS with a single phase input was engineered by ETPS. The unit's 800Vdc nominal output meant that it could comfortably charge the bike's high voltage battery pack. To prevent transit damage between races, the DC Source was fitted into a flight case with shock and vibration mounts.

Louis Flanagan, manager of the team's inaugural season, added "ETPS provided us with the perfect solution. The power supply allowed us to maximise pre-race test time within track restrictions".

"Configuring an electric bike was a new experience for many of the team members. So it was ideal to have a reliable mobile charging solution while we were making last minute tweaks to optimise the bike's performance".

The team is made up of engineering students from the University of Bath. They design, build and race electric motorcycles in the Isle of Man TT Zero and Moto E series races.

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ELECTRONIC TEST & POWER SYSTEMS

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POWERING THE NEXT GENERATION

As part of the sponsorship, an engineer from ETPS provided onsite training for the team about the operating features of the unit. This ensured that the students had detailed product knowledge to hit the ground running.

Hannah Crewe, team manager, added "Having a sponsor like ETPS means that not only do we have access to specialist equipment, but we're also able to benefit from their in-house expertise".

"Many members of the team are from different degree pathways that don't involve electronics. To get an in-depth operational orientation meant that all of our key team members were trained to use the charger safely and effectively".

From the team's beginnings as a handful of students, they have greatly expanded their number of members. Due to their expansion, they will be looking to race two electric bikes at each event instead of one.

The team are looking to accomplish some ambitious goals in their upcoming race year. They want to achieve an average lap time of 100mph around the TT course, as well as building an electric bike which can reach a top speed of 150mph.

Engineering such a well tuned electrical machine is a key extra curricular activity for all those involved. It gives the students real world experience within their chosen career pathways, often expected by modern employers.

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ABOUT THE LAB-SMS

The LAB-SMS is a series of programmable DC sources. Each unit is incredibly compact, with 10kW of power provided from just 2U of rackmounting height. Models providing up to 1500V feature within the range, with high current versions also available.

A systems interface is provided as standard for master/slave operation. Setting values can be equally shared amongst up to 8 units in parallel. This allows up to 40kW of DC power to be achieved from a single phase input.

Besides operating as a battery charger, the power system also functions as a laboratory PSU. Each unit can be operated in constant voltage and current modes. Adjustable power limit and resistance modes are also provided.

Output values can be set via the front panel. Each unit has an RS-232 and isolated analogue interface for remote control. Additional interfaces are also available.

An optional SD card slot provides a convenient and low cost method of implementing complex DC waveforms. This is ideal for simulating cranking curve conditions, such as a cold vehicle start. The set up can be done via simple text script or graphically using freely available WAV software.

The memory card slot can also be used for data logging of actual output values. The sampling time is user adjustable from 1 second to 71 minutes.

During the off season, the 5kW power supply used by Bath is available for general rental. ETPS also keep many other DC power supplies within their rental stock. These cover applications from 12V up to 1500V.

If you'd like to discuss how the LAB-SMS could accelerate your testing, then please contact ETPS today.