



The Editor takes a trip to the Maltese headquarters of Abertax – a company that ‘surfaced’ for the battery world at last year’s ELBC and has plenty of new offerings for the industry.

Malta is what Wikipedia calls a European ‘microstate,’ a group of islands in the Mediterranean just 60 miles off the coast of Sicily and 200 miles north of Libya.

It is steeped in history, conquered by the Romans, the Turks, and the British, of course. But assume that this is hardly the sort of place you’d expect to find a small high tech company doing “interesting things” in the battery field, and you’d be wrong. Werner Schmidt, the founder of Batterie Fullungs Systems, fell in love with the island twenty years ago and decided to set up a manufacturing plant for some of his company’s products there. BFS is one of the most

successful companies in the world, as far as battery watering systems are concerned; and to put it simply, Schmidt believes he does not need any further wealth.

Further, he is something of a philanthropist. He has established Abertax as a trust and draws nothing from it. Now the cynic would have taken a view that perhaps Malta is a good place to establish a business because it is quite beautiful, it is part of the European Union (so there must be grants-a-plenty to be had), and labour costs are probably low. On the other hand, it might be hard to attract a skilled team, especially at the top. But again, you’d be wrong.

Look at its head of R&D, Dr. Joseph Cilia. Cilia studied electrical engineering at the University of Malta

and worked at the island’s oil-fired power station for three years before going to the UK to do a PhD at the University of Nottingham. His core interest was motor control and thus it follows that he would have an interest in electric vehicles. And is there anywhere better to employ electric vehicles than on an island? And on a small island of course, you can have a lot of influence. Government, for example. As well as holding the head of R&D position, he is deputy chairman of the Maltese government’s resources authority, and he is steering a plan to ensure that 10% of Malta’s electrical power will come from photovoltaic sources by 2015.

He’s got the ear of the country’s prime minister on sustainable development for the



« island and holds a senior lecturer's position at the local university. He's got a roof terrace bristling with working PV units delivering terabytes of data and many kilowatts of grid deliverable electricity. Others talk but this firm is actually doing. One wonders how he manages to work on projects as complicated as Abertax's intelligent lead acid battery system and a lot more besides.

Look at its general manager George Schembri, a graduate in mechanical engineering.

George and I spent a pleasant evening kicking over the traces of our lost youth, where it seems we were both messing about with government surplus radio equipment. It led him to the German International broadcaster Deutsche Welle, and the author to BBC World Service. But Schembri has mastered many more skills, including injection moulding and general manufacturing.

Add to the management team Klaus Dieter Merz, a man with nearly 30 years of experience in electrical motive power, right back to the days when Sonnenschein was an independent battery maker. Is there anyone better to can tell you what customers in motive power want?

Finally, head the team up with Johannes Schneider, master marketer with Daramic until six years ago, when the German state imposed retirement. It was Schneider's re-emergence at ELBC last year that inspired BEST to take a look at the company, and Schneider's major role in promoting the business.

The company has spent a small fortune on new workshops and laboratories; it now makes its own tooling and test instrumentation. It runs a fleet of Reva electric cars, and a series of solar installations to evaluate its battery management systems – but what does it actually make?



Abertax has more than 20 injection moulding machines for component manufacture.

It turns out there is a small stack of products that battery makers and battery systems suppliers will find useful in building much more effective energy storage systems for themselves.

Soon to be available is the Abertax capacitive battery electrolyte sensor, which as its name suggests, relies on faradaic principles to detect electrolyte levels within a flooded battery. The technology eliminates

For VRLA batteries, the company offers the GRS valve, a patented design which, while releasing excess pressure from systems, shuts just as fast to prevent air entering the battery, which could ruin it plates. The valve features a special labyrinth design that creates a turbulent gas flow and prevents the transportation of solids to the valve. This prevents fouling and guarantees return of liquid to the cell, thus preventing dry out and water loss.

Abertax's R&D efforts in solar technology may help Malta to achieve a goal of 10% of electrical power coming from renewable sources by 2015.

electrolytic corrosion between the probe and cell plates. It is easily installed and can be placed in any of the six cells supplying the sensor

Protected against over current in all the three possible paths, the sensor cannot be damaged by wrong polarity connection and it is not subject to electro-magnetic interference. The beauty of the product is its simplicity: a green light shows electrolyte levels are OK, while a red light shows levels are low.

The intelligent battery is a novel concept design that enables battery packs to be put together with a number of voltage options and capacities. The main feature is physical proportionality – a length width ratio of 2:1 that allows any direction of assembly. The product is aimed at the electric wheelchair and cleaning machine; the battery lid is adapted to add the Abertax battery management system within it. This system will link »

to computers via Bluetooth, and that's just part of a family of battery management products that the company offer.

The Abertax BMU is designed to work with motive power batteries. Not only does it measure current in and out of each cell but it also is set up to acquire data from the company's tailor-made electrolyte level and thermal sensors. The device can communicate to other devices via USB, RS232 and Bluetooth. There is also a sensor to determine if electrolyte has leaked or spilled into the battery tray. And, of course, the company has developed battery management software to monitor and control cells, which it has used in its fleet of Reva cars and its solar units

"There's new thinking in the way industrial EV users want to buy their



Abertax operates a series of solar panels from its office to help evaluate its battery management technology.

batteries," Merz said. "They're fed up with fighting manufacturers about battery warranties... they frequently don't come close to stated cycles. Buyers can now pay for the energy they use and our tools. Our sensors and our software, when used with any battery system, can make this

happen."

In this island environment, Abertax has been able to put its battery innovations to the test, and has found them to work for the benefit of the environment – one of Werner Schmidt's original dreams for business. It can only get better. +

A lead-acid haven in the sun?

Malta is one of the ideal places in the world for a totally electric vehicle fleet, a study carried out by Abertax's Joseh Cilia has shown. Most daiy car journeys are less than 30km – well with the range of pure electric vehicle and most cars clock up as little as 7,500km annually.

Buses too clock up journeys of no more than 80 km.

Cilia has calculated that a 75 km range and an annual mileage of 12,000km would equate to some 160 charges per annum, well within a three year life of a low cost lead-acid system.

Vehicle speeds 60-70 km per hour are easily achievable and the maximum gradient on the island (1 in 10) means and EV with an all up weight of 1000kg could achieve 40km/h and would need a minimum



peak power of 12 kW.

Running costs are minimal. Cilia estimated that at 2007 prices a small

EV might cost as little as €1.68 a week to run, a fifth of the cost of running an ICE powered vehicle. +