Bill Gysin is chairman of **Elcomponent Ltd**

The complexities of higher education

Universities have high expectations when it comes to meter reading systems and there are complex drivers influencing energy consumption, explains *Bill Gysin*

Managing energy in a university environment is not an easy task. In fact it is a major challenge.

Having worked closely with dozens of universities and colleges of all shapes and sizes over the last twenty years designing, installing and supporting automatic meter reading systems, submetering systems and associated software, we know that the challenges start with design and installation. While some universities comprise a single modern (or even brand new) campus, most do not, and many incorporate listed buildings and sensitive areas that require a flexible and sympathetic approach to hardware retrofit. For similar reasons, access to data networking options is often severely limited. Building occupancy tends to be continuous as summer schools and a myriad of additional symposia and special projects fill the between-term gaps that would ordinarily provide a generous window for installation work and supply shutdowns.

Many of those difficulties can be avoided or minimised by lowering the system specification, but the sector's expectations are high, so this is a poor solution on all levels. Increasingly, the requirements include real-time or near-time data with ever-shorter read intervals to be available across a multitude of platforms to an ever-growing and more demanding set of users. That means that the old standby of a GPRS connected day-plus-one half hour meter or data logger just won't do, even if they do significantly simplify the installation process.

Universities tend to be ahead of the curve in terms of the demands made on their EM systems

Which brings us to the performance of the package once it has been successfully installed, tested, and commissioned. As front end software for meter-based systems has developed, universities have been at the vanguard in the drive towards a wider-reaching user-interface to include a less expert but nevertheless motivated and attentive audience across all levels of the enterprise. Dashboards that could be readily configured to show energy and carbon performance at different points within the organisation became essential, as did the ability to showcase league tables and inter-departmental 'competitions' for energy efficiency.

This was more of a challenge than it first appears because HE establishments are not factories functioning on the relatively simple basis of energy and raw materials in, widgets out. Neither are they 'standard' commercial buildings where degree days and to a much lesser degree occupancy take the place of widgets as the primary drivers for the normalisation of consumption data. The drivers influencing consumption can be complex, often requiring multiple regression and CUSUM calculations to be made, but such complexity must be managed if the credibility of initiatives such as energy league tables between buildings is to be maintained.

Dashboards can be configured to show energy and carbon performance across the university

Of course, even if universities tend to be ahead of the curve in terms of the demands made on their EM systems and software, they are far from unique. Turnkey system providers such as Elcomponent who supply and install everything from the meters and data loggers through the networking hardware and web-interfacing to the software itself, have seen their customers demanding and expecting more bang for their energy management buck.

It's not all about new techniques and features though. It's still an incontrovertible fact that there is a lot of highly effective energy management that can be done with a half-hour bar chart and a mk1 eyeball, and it would be a serious mistake to lose sight of that foundation fact. However, foundations are but a part of any edifice and features such as unlimited user logins, multiple access levels, complex normalisation, automated report creation, and distribution and configurable dashboards have become the more visible elements of the construction. At present, the output data (charts, reports, alarms etc) are primarily based on measured data as they have to be if the aforementioned accuracy and therefore credibility is to be achieved. However, the development of AI techniques to allow the modelling of consumption and behaviour based on the analysis of sector metadata rather than individual meter readings and other measurements is being much discussed and researched. ■