

**An interview with Alexa Spence, Principle Investigator of [CTech](#) (Psychology), and Murray Goulden Research Fellow in Sociology.**

Motivating people to save energy in the home has long been an area of research focus, but understanding how to translate these behaviours to the workplace is more difficult to justify. Alexa and Murray tell us about their work with organisations around studying energy use in their premises, and developing novel ideas to effect behaviour change.

**Can you tell us a little about how the energy research in Horizon came to be and how it evolved?**

Much of the research into energy saving behaviours has been carried out in the home where there are easily quantified environmental and financial imperatives to motivate home owners to take an active interest. However in the workplace these imperatives are not clear - collective responsibility for usage, individuals not paying for the energy – and the question arises as to what would motivate staff to demonstrate energy saving behaviours when the immediate benefits may not be apparent to the individual.

With this in mind, the Horizon energy team - a multidisciplinary team incorporating researchers from Psychology, Sociology, and Computer Science, submitted a successful proposal to an [EPSRC call, Build TEDDI](#) (Transforming Energy Demand in Buildings through Digital Innovation). Collaborating with the [University of Southampton](#) (interface design) and the [Centre for Sustainable Energy](#) (CSE), a national charity focussed on supporting changes in energy behaviour), we were one of the first proposals that centred on workplaces rather than the home. As a result, we started the 5 year C-Tech (Creating the Energy for Change) project in September 2012.



### **What was the background to your work?**

We soon realised that, many attempts to engineer people out of energy management in the workplace had failed, and there was very little literature about research into people's behaviour in this setting - technical solutions, yes, but psychology and studies of user interaction with the interfaces, no.

The importance of incorporating staff in the process is shown by data from Innovate UK (from the non-domestic building performance projects they funded up to this point) suggesting that 65% of energy consumption can be controlled by occupants in a building, and that up to an incredible 50% of consumption occurs out of working hours. In addition, most building management systems are quickly and badly installed without buy-in and understanding of the clients. It is difficult to see how these technologies can be expected to play a part in energy-saving activities, and there-in lies the problem.

### **How did you find organisations who agreed to be study and deployment sites – was this hard?**

Very much so, as there is a team of stakeholders in most organisations, and each of them needs to be engaged and bought into the activities – from senior management, the Facility and Energy managers (who deal with energy management on a day to day basis, albeit from different perspectives), to of course the people that actually work in the buildings. The last group may be the most important, however mostly left out of the discussions, with the problem being isolated to a small part of the organisation.

After much hard work, we have been very successful in incorporating a number of test sites, including a mix of SMEs, corporates, councils and catapult centres.

### **What work did you carry out in these organisations?**

It's actually very difficult to carry out an evaluation under experimental conditions, controlling for all the variables (for example, outside weather). In an ideal world we would do a series of interventions over several years to achieve this, but this was not possible in the timescale.

So the project activities undertaken, in conjunction with the Centre for Sustainable Energy, have included accessing energy data for specific workplace buildings and analysing this data to identify patterns in usage and anomalies, where changes could be made. Further workshops, survey work and ethnography have provided insight into organisational energy policy, energy needs, and user perspectives and motivations for energy use and energy conservation.

### **What are the outputs and key learnings from the studies?**

We found the major challenge for organisations, especially now with the introduction of smart meters, is there is easy access to tons of data from overly clever systems, but with no resources to make use of it –as in the words of one of the Facilities Manager's we spoke to, it is like using a Ferrari to deliver the mail! In addition to the technology problem, there is the organisational problem of lack of communication and stakeholder buy-in.

We provided a specific report to each of the test sites. These highlighted the potential for major savings through a reduction in wasteful energy usage (such as water heating being on during the night); better use of the Building Management System through simplification of functionality and good training and maintenance; and institution of cooperative measures to reduce consumption.

In addition, we have produced various tools in the course of our research. One is a scale to assess motivations to save energy at work as there was nothing currently available. This tool, taking ideas from blood donation and other altruistic activities, has already been shared nationally with other Build TEDDI projects, and we hope will be published soon.

We wondered if competitive activities such as gaming may motivate people in the workplace, and so we developed and deployed IdleWars, a game that converts environmentally positive and negative behaviours into individual scores. It was shown to be effective in terms of generating discussion and behaviour change, and won the EnviroGame prize for best environmental game of the year in 2014.

The key project output we have developed is [e-Genie](#), an energy engagement tool that aims to engage staff in workplace energy consumption, and given them the means to act. This tool provides an energy consumption dashboard which provides data on workplace electricity use and heating. It also encourages people to take action, either collectively as workplace occupants with a discussion space, individually through a planning tool where staff can commit to an energy saving goal and are guided through a process of planning changes they could make, or collaboratively by reporting faults or communicating ideas to the Facilities Manager.

The current deployments of e-Genie will allow us to refine the tool through testing in real world conditions. In conjunction with CSE, we are currently developing a toolkit around e-Genie, incorporating the tool alongside supporting materials including advice and workshops plans for energy saving in the workplace which will be made available, open source, at the end of the project.

### **How have the results of your work been disseminated to different audiences?**

We have published in top ranked academic journals such as Nature Climate Change and Global Environmental Change. Our paper published in [Energy Policy](#) about the role of the facilities manager in organisational energy use won a prize from the British Sociological Association Climate Change group in 2015. We have also appeared in The New Yorker, [The New Scientist](#), [The Guardian](#), on the radio and Alexa recently gave a talk at the Carbon Journey event at Genting Arena in Birmingham to Birmingham city and Aston University students and a range of industry representatives.

Further industry engagement was also achieved when Murray also gave a keynote talk at a national conference for Facility Managers. Ben and Caroline also carried out a successful workshop with local industry representatives in Nottingham, exploring how people cooperate (or not) around energy issues in the workplace.

In terms of policy impact, we have a representative from BEIS (department of business, energy and industrial strategy) on the [CTech advisory panel](#) and regularly feed latest results in to third sector reports and policy thinktank discussions.

### **And the future?**

As Alexa's first very large research grant as Principle Investigator, this has been a really exciting journey, and it has allowed all the team members to develop their own research interests. They are now applying for funding to pursue these strands of research – Autonomous Internet of Things, smart grids and smart energy technology, energy poverty.



CTech findings will be presented along with the launch of our toolkit to engage office employees in energy conservation at the [TEDDINET-CTech Non-Domestic Energy Symposium](#) at the Digital Catapult in London, 2017.