

How Future Working Environments and Connected Buildings Can Aid Sustainability in the Workplace

Energy Expenditure – Innovations in sub-metering and scheduling can reduce expenditure on energy in 2009 by more than 30%

Innovations: Radio Mesh metering, web-based Workplace Footprint Tracker service, personal scheduling of heating/cooling using room booking system

A recent collaboration between [Building Sustainability Ltd](#), an Internet technology company, and Morgan Lovell, UK's leading office design, fit out, refurbishment and relocation specialist has resulted in some innovative approaches to sustainable design and operation of the workplace. This case-study sets out to highlight proven low cost adaptations to existing buildings which will produce major energy cost reductions and improve user comfort.

The vision for the work is explained by Morgan Lovell's Lara Conaway, "Sustainable office design can deliver higher performance in energy and other resource use, and higher productivity in human terms. People simply work, see and think better in offices that have more natural lighting, fresher and cleaner air, and where they have more control over their immediate lighting or temperature levels."

When considering current energy performance of buildings there are opportunities for major improvements. It is estimated that on average 30% of energy in an office building is wasted*. According to the Carbon Trust, a typical 10,000 M2 of office space, accommodating 1,000 people, will consume more than £160,000 of energy in a year. Therefore 30% wastage represents £48,000 of unnecessary annual expenditure.

Our collaboration set out to improve personal comfort and energy accountability for the users in the Morgan Lovell's Noel Street office in London. Building Sustainability Ltd has developed the [Workplace Footprint Tracker](#), a web-based energy display and management system to enable you to quickly get on top of office energy waste. The Workplace Footprint Tracker makes real-time energy consumption visible and it also integrates the room booking schedule with the building management system energy controls. This enables office workers to set temperature and lighting levels with the user interface shown in Figure 1.

Reductions in energy are be derived through improved decision making relating to usage of the workplace and energy resources.

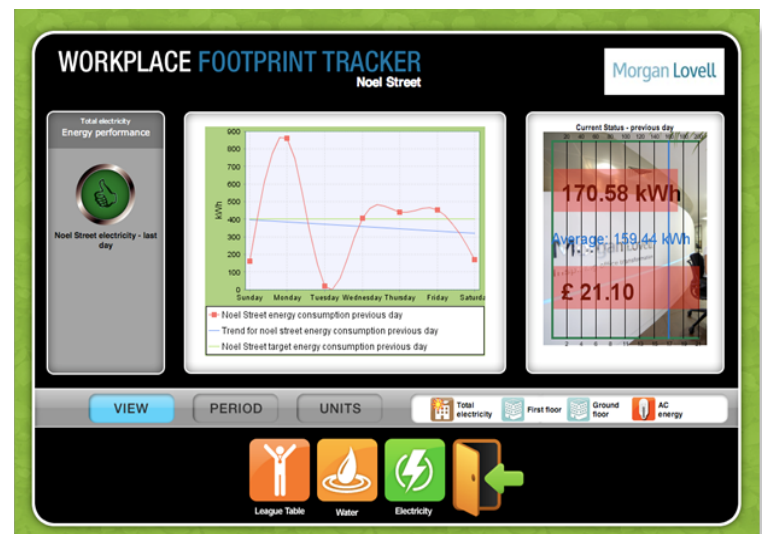


Figure 1 : Workplace Footprint Tracker - Total Energy Dashboard for Noel Street

The first step in any energy reduction program is to implement real-time access to energy consumption information. Building Sustainability installed the latest wireless radio meshed meters at Morgan Lovell (see figure 2) which provides a robust solution for communicating data back to the Footprint Tracker. These meters are also beneficial as they can be retrofitted at low cost compared with cabled meters.

Any savings identified will accrue an annual financial benefit. The answer is to install hourly sub metering on a number of the energy intensive assets and analyse in detail the consumption during a 24 hour period. It is important to focus on the amount of energy consumed during the night. It is possible to make changes without impacting the comfort of the workforce.

The Workplace Footprint Tracker does more than just track real-time consumption. Used together with PeopleCube's Resource Scheduler room and workstation booking system there is the opportunity for even more energy savings. By hibernating unused meeting rooms and therefore reducing heating/cooling and lighting use, there is potential to achieve a further 10% energy savings. Furthermore workstation energy can also be scheduled with bookings, saving typically £20-£40 per workstation per annum.

As a result of this collaboration, Morgan Lovell were able identify an immediate saving of 30% in their heating and cooling energy consumption. The real time data on energy consumption showed that overnight levels were higher than expected. Further investigation revealed that there was a fault with the heating and cooling timer. By rectifying this fault, Morgan Lovell was able to save £21 per day or the equivalent of around £5,000 per year. New initiatives are being introduced to enable further savings: 40% savings is their short term target.

End

Morgan Lovell

Located in London, Birmingham and the Thames Valley, Morgan Lovell is the UK's leading office interior design, fit out and refurbishment specialist. With its own teams of designers, surveyors and project managers, the company can design and deliver entire projects, with the benefit of just one point of contact. www.morganlovell.com

Building Sustainability Ltd

BSL designs and implements systems to track and control energy consumption and carbon emissions. It uses innovative smart metering solutions and dashboard visible presentations of energy data to influence occupant behaviour.

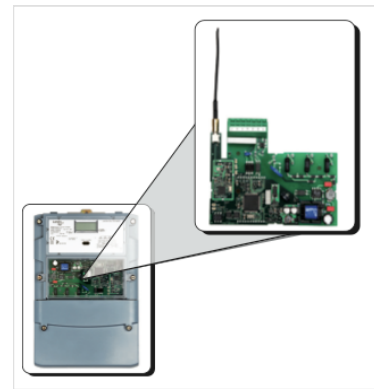


Figure 2 Radio Meshed Smart Meters by Aidon & TriTech

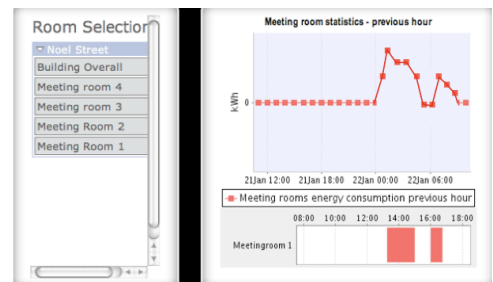


Figure 3 Energy Savings through Hibernation of Meeting Rooms