

## ***Lighting Controls - The Way Forward?***

The correct control of lighting is an important element in the energy efficiency of a building. However, a lighting control system adds complexity and this means that there is an increased possibility of things going wrong.

There are three main problems that come with a complex control system. The first issue is that the system may not be correctly commissioned and thus waste energy or not deliver the correct amount of light. The next problem is that the users of the building may not understand how to interact with the control system, at best this may mean that they are unable to use all of the features of the system at worst it may mean they have to find ways of subverting system, for example jamming paper clips into switches, so that they can get the lighting that they need. Finally maintenance of the system can be problematic. In many cases a lighting system may have a design life in excess of 20 years, however, as controls and the companies that make them are changing rapidly many key components of the control system become unavailable after a few years, thus making the installation unsupported in the event of a component failure.

The current state of affairs is that we have a industry standard system, DALI, and whilst with care it can work well we still have a number of problems as outlined above. However, at present the industry seems to be pushing to add further complexity to lighting controls with a number of manufactures introducing products based on the Internet of Things (IoT). The IoT is a great way for devices to communicate and under normal circumstances a message sent from one device will reliably get to the device it was meant for. However, there are no rules for what commands can be sent and way devices respond to any given command. IoT lighting controls are therefore almost always proprietary to a given manufacturer and as devices may be exposed to the internet to the internet they are vulnerable to hacking and denial of service attacks.

One major advantage of many new control systems is that they provide a use event log and so by data mining it is possible to discover exactly how people use the lighting in a given building and by coupling this knowledge with occupancy evaluation surveys it is possible to know how happy they are with the system. The results of such analyses may provide the basis of the next generation of lighting control systems, which will have the functions the users want, they will be interoperable, and they will have the ability to self configure. Moreover, the lighting control will be able to integrate with other building services to reduce needless device replication.

The analysis of the buildings with complex control systems is starting, but the bigger question is will the lighting industry want to use the results to make better controls?