

A Demonstration Unit for Temporary Installation of Human Centric Lighting

Human Centric Lighting is the term used when lighting is adapted to human beings and their needs. One aspect of this is dynamic light, where the light emitted changes over the course of the day to match our circadian rhythm, improving alertness. This project looked into a possible temporary solution for those wanting to try this lighting concept over a brief time period.

The idea that human beings are affected by the light they are exposed to is uncontested, and although the light bulb has been practically available since the late 19th century, it is only recently that developments have been made with our well-being in mind. A favourable light environment brings many benefits that, when it comes to life cycle assessment, often play a larger part than focus on energy consumption.

Good lighting can be achieved in more ways than one, the main focus of this thesis being on dynamic lighting. Dynamic lighting changes its colour temperature and intensity during the day, usually mimicking the cycle of sunlight. Light from the sun tends to be of a “colder” and bluer colour in the morning and changes to warmer hues of orange and red towards the evening. High intensity blue light helps concentration and inhibits production of melatonin, sleep hormones, improving alertness. Warmer, dimmer light helps us wind down, allowing melatonin to be produced again and increasing the chances of a good night’s sleep. Too much blue light in the evening, for example from a screen, can cause disturbances in the sleep pattern while warm reddish light in the morning might create difficulties waking up properly.

This project was done with Future by Lund, an organisation located at Ideon innovation in Lund. In collaboration with other organisations, it has been involved with installations of dynamic lighting in several buildings such as schools, offices, care homes and healthcare establishments. One problem they’ve run into is the scepticism towards a concept that is only recently starting to attract attention and is still relatively unexplored market-wise. Why invest in an installation where you don’t know what the Return on Investment is going to be, a concept that doesn’t offer a clear holistic view of costs versus savings and revenue? Moreover, an installation was often thought to be a rather extensive and complicated one.

In this degree project I developed a solution with the aim to speak to potential clients who might be interested in testing dynamic lighting but not entirely convinced in a long-term investment. A temporary, even portable, concept that allows for a trial period of six months or so. Two designs were developed, one wall fixture and one 60 by 60 cm ceiling fixture for standard drop ceilings. Each design was given two means of power input, giving clients the option to choose; the ceiling fixture, one completely wireless battery run variety and one PoE (Power over Ethernet) input. The wall fixture, one standard wall plug and one battery run version. PoE combines network and power connections in one cable and, more importantly, does not require a qualified electrician to fit them.

These fixtures are intended to be easy to install and, because of the different options presented, applicable to any room or hall without major costly/extensive alterations or a need to rewire. Hopefully, facilitating circumstances for potential clients would make more people willing to try the concept of Human Centric Lighting.

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