

Project no. 339-025

Energy savings by implementation of high quality LED illumination

Project manager: DTU Fononik – Carsten Dam-Hansen – Tel.: +45 4677 4513

For this project, LED light sources are being designed with a Ra index of 95-97 and low colour temperatures of 2200-2600 K for use in household cooker hoods and exhibition showcases at Rosenborg Castle, for instance. The good colour reproduction, long service life and minimum heat radiation of LED lighting makes it particularly suitable for these purposes.

Project status:

An innovative new LED-based lighting system has been developed and implemented in showcases at the Rosenborg Castle. This system fully meets Rosenborg's stringent aesthetic requirements for its lighting, with a light quality far superior to that of light bulbs. Implementation of this LED system has resulted in savings of more than 80 % of energy consumption. At the same time, the problem of heat in the showcases has been all but eliminated, and the much longer service life of the LED system has resulted in a significant reduction in maintenance work.

A corresponding LED system is being developed for cooker hood lighting, which as well as saving energy will improve the quality and distribution of light over the work surface beneath the cooker hood; at present, halogen bulbs provide powerful spotlighting of parts of the work surface. A new test set-up has been made for characterisation of cooker hood lighting which relates energy consumption to the light distribution over a work surface

Anticipated final project results:

The demonstration of the LED system in a showcase, with 80 % energy savings and elimination of the heat problem, is the final result in the showcase lighting subproject. Rosenborg is now applying for finance for the installation of the new LED system in all the showcases at the Castle, and work is in progress with I-NO and Lumodan in respect of commercialisation of the system.

For the cooker hood part of the project, a correspondingly developed LED system is anticipated which gives energy savings in excess of 50 % as well as enhanced light quality and distribution in a cooker hood where halogen spotlights are normally used.