

Intelligent street lights adapt to conditions in Finland

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VTT Technical Research Centre of Finland has developed a dimmable LED street light that consumes significantly less energy than current lighting systems, while improving the lighting characteristics. The street lights were tested in Helsinki with user experiences collected.

Traditional street lights work on full power when turned on, and the amount of light is not usually adjusted. The new LED street lights developed by VTT adapt to the [ambient conditions](#) with the help of sensors and wireless control, allowing them to be dimmed on the basis of natural light, environmental conditions (for example light reflected from snow) and the number of pedestrians. In order to maintain comfort, several characteristics important to [road users](#), such as the amount and colour of light and the shape of the [light beam](#), are considered in the luminaire design. Particular attention was paid to glare control, light distribution and sufficient lighting of road shoulders.

The intelligent [street lighting](#) system stores information on [energy consumption](#), temperature, lighting level, and number of pedestrians, among others. According to laboratory measurements, the new LED street light is 50 per cent more energy-efficient than traditional lights on the market - without the intelligence factored in. With lighting levels adjusted according to the number of users or to natural lighting conditions, an additional energy saving potential of 40 per cent with added intelligence has been observed. The developed lighting method is based on available components (for example, LEDs and sensors).

The street lights were tested along a pedestrian road in Helsinki, where initially a total of 20 reference street lights were installed. These represented five different luminaires on the market, three of which were LED luminaires and two others a traditional high pressure sodium and a metal halide lamp luminaire. Aalto University carried out

a user survey in the pilot installation area, based on which VTT designed the new LED street light. Demo lights were installed at the end of 2012 as an extension of the first test installation, after which Aalto University carried out another survey on the experiences of the people using the road. The demo street light received the best feedback in the survey.

Provided by VTT Technical Research Centre of Finland

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