

## The need for lighting system verification measurement

Verification measurements are part of planning, implementation and evaluation process of streetlighting systems to ensure safe and sustainable environment.

### Why we need verification measurements

To succeed in implementing a new lighting system, there are a number of reasons for performing verification measurements of the system:

- To get an overview of the compliance of the installation, the energy consumption and the energy efficiency of the lighting control, and the condition of the luminaires.
- To guarantee road safety and a safe traffic environment.
- To get input data for prospective street lighting improvements, from a technical and economical point of view.

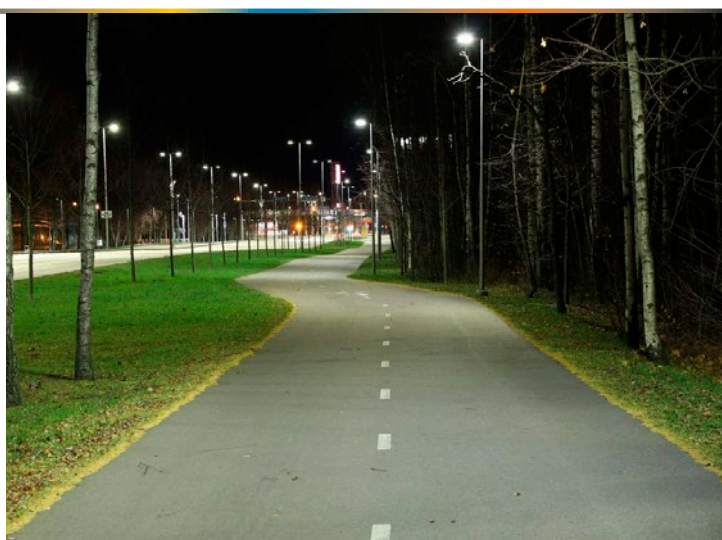


Photo: Toivo Vorjas

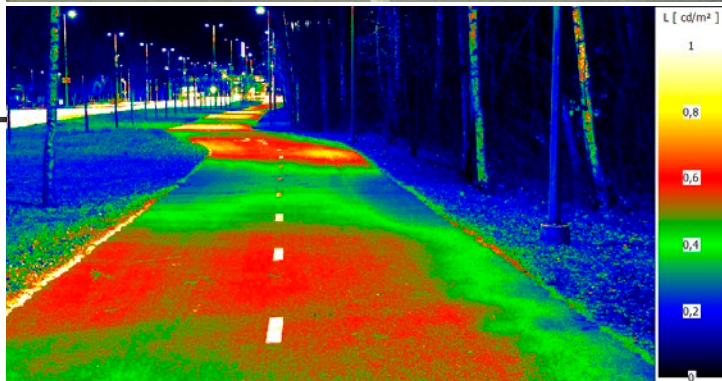


Photo: Toivo Vorjas

Verification measurement on pedestrian street in Tallinn, Estonia

### When to carry out control measurements

The measurements should be performed at several points during the decision and implementation process:

- Before a new lighting system design (in the case of an object to be renovated).
- After completion of new lighting system.
- Before warranty expiration of the outdoor lighting system.
- Regular evaluation of the lighting system.

Verification measurements are performed by a licensed energy service company or organization responsible for the project and may also be commissioned by a certified measurement laboratory.

See next page for more information ➤

### ○ The purpose of measurements after object completion

- Compliance with EN13201-4: 2015 and EN 12464-2: 2014.
- Assessing the expected energy savings.
- Checking compliance with warranty claims.
- Improving control system and maintenance practices.
- Road safety inspections.

### The purpose of measurements before warranty expiration

- Obtain a warranty evaluation.
- Check lighting installations for compliance with CEN/TR 13201-1; EN 13201 2-4.
- Assess changes in luminaire energy efficiency.
- Road safety inspections.

### ○ The most important measurable parameters

- Illuminance (luminosity) – to provide adequate lighting for light and pedestrian crossings.
- Luminance (brightness) – to provide proper roadway lighting and a safe traffic environment for vehicle drivers.
- Uniformity to ensure a safe traffic environment with good visibility and contrast detectability.
- Glare to minimise light pollution, less risk of glare and safety in illuminated environments.



Photo: Talve Vorjäs

### ○ Aims of measurements based on standard EN 13201-4:2015

#### Measurements at the final testing phase

Measurements carried out during the final testing/ commissioning phase of the road lighting installation, to verify the compliance with standard requirements and/or with design expectations. These results can be used for the road lighting installations formal approval.

#### Measurements during the road lighting lifetime

Measurements carried out at pre-determined intervals during the road lighting lifetime, to quantify the degradation of the lighting performance and to define the need for maintenance or to verify the compliance of the road lighting installation with the standard requirements or design expectations, generally based on maintained values.

#### Measurements for adaptive road lighting

Measurements carried out continuously or at pre-determined intervals to control the luminous flux of luminaires in adaptive road lighting, where the installations performance is kept at the given value within a given tolerance.

#### Measurements for investigation of discrepancies

Measurements carried out as and when required to investigate discrepancies between measures and design expectations or environment influence.