Research theme	Sustainable energy technology
Research title	Design of a sustainable public lighting system for use in the Netherlands
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Research period	From March 2011 to Februari 2012
Company	**'**Tiparo' and 'LED factory'
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Background

The Frisian companies Tiparo and Led factory wants to introduce sustainable public lighting systems in the Netherlands. These systems are in Asia already more common in the form of a hybrid streetlight: a LED streetlight combined with solar panels and a mini wind turbine. These systems operate often stand-alone by using batteries.

Assignment

The main aim of the thesis was designing a hybrid streetlight for use in the Netherlands, with a focus on residential and urban areas. To do this the requirements for public lighting and the use of wind and solar energy in the Netherlands is investigated. Furthermore, the monitoring data of a pilot hybrid streetlight that is located in Leeuwarden is analyzed to gain insight about the energetic performance. Lastly, the design process is also analyzed in order to structure the design process of a hybrid streetlight in the future and to make such a design process easier.

Results

The research showed that the use of mini wind turbines for hybrid streetlights in the Netherlands is not suitable at the moment. The application of solar panels on lighting columns is a good option for the Netherlands. The results of these sub researches are combined and led to a production ready design of a grid-connected solar powered streetlight.

Personal experience

The thesis was a challenging assignment because it combines different design aspects and multiple technologies, which are besides all rapidly growing in terms of innovation. The assignment made it possible to provide a significant contribution to the development and application of hybrid streetlights in the Netherlands and it would be great if the designed hybrid streetlight will be actually used in the near future.