

# Smedby, Municipality of Kalmar, Southeast Sweden, Street lighting project

## Project background and objectives

Smedby is a village in the municipality of Kalmar, about 10 km west of the main city of Kalmar. It has beautiful green surroundings and is characterised by agricultural and forested landscape.

Smedby contains townhouses, single-family houses and apartments. Many of the homes were built in the 1960s and the townhouses around 1980. Some of the roads in the area have a streetlight system that is not adapted to the local needs. It is generally oversized and creates unnecessary light pollution.

## Project description

In Kalmar, the service administration is responsible for the streets and parks and their related lighting. Together with the landscape architects, they decide how areas should be illuminated and design systems for refurbishment. It was decided to review the public lighting system in Smedby and replace the lamps. The objective was to convert the street lighting system to a modern, energy efficient installation that is well adapted to actual needs.

The work and lamps were sub-ordered from existing maintenance and supply contracts held by the municipality of Kalmar. The refurbishment was sub-ordered with guaranteed energy savings and the contractors were required to base their calculations on LCC. This is a new approach to lighting refurbishment for the municipality of Kalmar.



## Facts

- **Population:** 3,490 inhabitants
- **Type of streets:** residential streets
- **ESCO:** ALV-teknik and Rexel
- **Electricity cost savings:** 2,400 €/year
- **Maintenance cost savings:** 1,000 €/year
- **Reduction electricity consumption:** 21,600 kWh/year
- **CO<sub>2</sub> reduction:** 10 tons/year
- **Investment costs:** 18,300 €

## Further information:

Municipality of Kalmar  
S-391 26 Kalmar, Östra Sjögatan 18  
Telephone: +46-480-450 000  
E-mail: [kommun@kalmar.se](mailto:kommun@kalmar.se)

The Energy Agency for Southeast Sweden  
Telephone: +46-470-76 55 60  
E-mail: [info@energikontorsydost.se](mailto:info@energikontorsydost.se)

# Smedby, Municipality of Kalmar, Southeast Sweden, Street lighting project

Project data	Before renovation	After renovation
Total installed electric capacity	6.4 kW	1.3 kW
Total number of lamps	39	39
Number of lighting points (luminaires)	39	39
Main lamp type	HPS	LED
Annual electricity consumption	27,000 kWh	5,400 kWh
Annual electricity costs	3,000 Euro	600 Euro

## Results

The project has resulted in the installation of a modern energy efficient lighting system that answers the lighting needs in this section of the municipality. Energy savings reach 80 %. The contractors have guaranteed the energy savings. If they are not achieved, they are required to adjust or exchange the equipment. The project was implemented according to a new approach for sub-ordering streetlight renovation projects from an existing maintenance contract with the municipality. It has contributed to suppliers' and ESCOs' increased awareness that the consideration of Life Cycle Costs (LCC) is crucial for making good long term decisions. It has also helped them get familiar with the LCC tool as well as the calculation of guaranteed savings. This was the first EPC project for the ESCOs ALV-teknik and Rexel.

## Support by the facilitation service

The municipality of Kalmar is renovating its lighting system step by step. The facilitation service has supported the development of the new procurement approach and steering documents that will be used for future phases of refurbishment work. The facilitation service also helped the municipality in increasing its understanding of LCC and EPC tools, LED technology and defining criteria for energy efficiency procurement. As this was the ESCOs' first EPC project, additional support was required from the facilitation service in order to guide them through the process.

Photos: Håkan Olofsson, Kalmar Municipality



# Svensknabben, Municipality of Kalmar, Southeast Sweden, Street lighting project

## Project background and objectives

Kalmar, a modern middle-sized Swedish municipality with old historical roots, is working on a step by step modernisation of its lighting system. "Svensknabben", 3 km north of the city centre, is a century old cultural area with beautiful buildings from the early 1900s. It comprises a mix of residential and office buildings and a large horse-riding centre. Due to the use of outdated mercury lamps in this area, the municipality decided to refurbish the street lighting.



## Project description

The municipality uses an inventory system of the public lighting to identify areas in need of renovation. Life Cycle Cost Analysis (LCC) is employed to identify the areas with the highest energy savings potential. Areas with mercury lamps, such as Svensknabben, are prioritised for refurbishment work. Within the municipality, the Service Administration is responsible for the streets, parks and related lighting. The new lighting systems are designed together with the municipality's landscape architects.

Kalmar Energi holds a maintenance contract with the municipality, from which streetlight renovation projects can be sub-ordered. For this project, the refurbishment was sub-ordered with guaranteed energy savings and Kalmar Energi was required to base their calculations on LCC. This is a new approach to lighting refurbishment for the municipality of Kalmar.

Kalmar Energi, in cooperation with the landscape architects, selected a suitable luminaire for the project. Selection criteria included e.g. energy consumption, glare, and design.

## Facts

- **Population:** 64,000 inhabitants in the municipality and 48,000 inhabitants in the city centre
- **Type of object:** small residential streets and parking areas
- **ESCO:** Kalmar Energi
- **Electricity cost savings:** 970 €/year
- **Maintenance cost savings:** 500 €/year
- **Reduction electricity consumption:** 8,800 kWh/year
- **CO<sub>2</sub> reduction:** 4 tons/year
- **Investment costs:** 11,600 €

## Further information:

Municipality of Kalmar  
S-391 26 Kalmar, Östra Sjögatan 18  
Telephone: +46-480-450 000  
E-mail: [kommun@kalmar.se](mailto:kommun@kalmar.se)

The Energy Agency for Southeast Sweden  
Telephone: +46-470-76 55 60  
E-mail: [info@energikontorsydost.se](mailto:info@energikontorsydost.se)

# Svensknabben, Municipality of Kalmar, Southeast Sweden, Street lighting project

Project data	Before renovation	After renovation
Total installed electric capacity	2.4 kW	0.3 kW
Total number of lamps	20	19
Number of lighting points (luminaires)	20	19
Main lamp type	Hg	LED
Annual electricity consumption	10,000 kWh	1,200 kWh
Annual electricity costs	1,100 Euro	130 Euro

## Results

The project has resulted in a modern, energy efficient street lighting system, designed to meet the needs of the area. The mercury lamps were removed in order to comply with EU directives. The installation of LEDs has led to significant energy savings. In addition, the project is among the first projects in Kalmar to employ a new approach for contracting lighting refurbishment projects: LCC used to identify the areas with highest energy savings potentials and the project is sub-ordered from a supplier through their existing maintenance contract with the municipality. Energy savings are guaranteed and, if not achieved, the supplier (contractor) is required to adjust or exchange the equipment until the result is achieved.

## Support by the facilitation service

The facilitation service has contributed to increasing the knowledge of LCC and EPC within the municipality. Study trips, training events and meetings were held to explain these tools, inform about modern lighting technology and support in formulating demand criteria in a tendering process in order to achieve the best solution for each purpose. Key actors, such as technicians and landscape architects, were supported in developing the methodology for street lighting refurbishment that will be used from now on by the municipality.

Photos: Håkan Olofsson, Kalmar Municipality





# Valfisken, Municipality of Kalmar, Southeast Sweden, Street lighting project

## Project background and objectives

Kalmar is a modern middle-sized Swedish municipality with old historical roots, surrounded by water.

The municipality's overall public lighting system requires modernisation. Areas with mercury lamps are prioritised. One area that needed refurbishment in order to increase security for the citizens was "Valfisken", a neighbourhood situated just outside the city centre.

The area, characterised by large office buildings dating from the 1970s, is populated mostly during daytime. The roads are reserved for pedestrian and bicycle traffic.

## Project description

In Kalmar, the service administration is responsible for the streets and parks and their related lighting. Together with the landscape architects, they decide how areas should be illuminated and design systems for refurbishment.

Kalmar Energi is a procured maintenance contractor, from who the municipality can sub-order renovation of the lighting system. The project in Valfisken was triggered by the need to replace the mercury lamps as well as the willingness to increase the energy efficiency of the system and improve the illumination and safety in the area.

The project consists of replacing the lamps by LEDs. The municipality sub-ordered this refurbishment work from Kalmar Energi with guaranteed energy savings.



## Facts

- **Population:** 64,000 inhabitants in the municipality and 48,000 inhabitants in the city centre
- **Type of streets:** mostly pedestrian and cycling area
- **ESCO:** Kalmar Energi
- **Electricity cost savings:** 590 €/year
- **Maintenance cost savings:** 290 €/year
- **Reduction electricity consumption:** 5,450 kWh/year
- **CO<sub>2</sub> reduction:** 2.5 tons/year
- **Investment costs:** 8,200 €

## Further information:

Municipality of Kalmar  
S-391 26 Kalmar, Östra Sjöгатan 18  
Telephone: +46-480-450 000  
E-mail: [kommun@kalmar.se](mailto:kommun@kalmar.se)

The Energy Agency for Southeast Sweden  
Telephone: +46-470-76 55 60  
E-mail: [info@energikontorsydost.se](mailto:info@energikontorsydost.se)

# Valfisken, Municipality of Kalmar, Southeast Sweden, Street lighting project

Project data	Before renovation	After renovation
Total installed electric capacity	1.53 kW	0.23 kW
Total number of lamps	11	11
Number of lighting points (luminaires)	11	11
Main lamp type	Hg	LED
Annual electricity consumption	6,420 kWh	970 kWh
Annual electricity costs	700 Euro	110 Euro

## Results

Mercury lamps are being phased out according to EU Directive. Through this project, the mercury lamps have been replaced by a modern, energy efficient lighting system that is well adapted to the lighting needs of the area. The municipality of Kalmar employed a new approach for contracting lighting refurbishment projects. The calculations were based on LCC and energy savings are guaranteed by the contractor. If not achieved, the contractor is required to adjust or exchange the equipment. This project has contributed to informing local suppliers and ESCOs about such tools.

## Support by the facilitation service

Renovating public lighting is an ongoing project in the municipality. It is important that key actors such as technicians and landscape architects are aware of the possibilities offered by modern technologies so that favourable approaches are used from beginning of the projects. Through activities such as training events and site visits, the facilitation service has contributed to increasing actors' knowledge on technical aspects of modern lighting systems as well as their understanding of LCC and Energy Performance Contracting.



Photos: Håkan Olofsson, Kalmar Municipality



# Lindsdal, Municipality of Kalmar, Southeast Sweden, Street lighting project

## Project background and objectives

Lindsdal is a suburb in the municipality of Kalmar, located about 10 km north of the city of Kalmar. The area consists almost entirely of single-family homes. A large part of the suburb, with approx. 2,400 houses, was built in the 1970s.

In the last years, there has been extensive effort to initiate a process of development and modernisation of Lindsdal. The municipality has decided to use the procurement of a large streetlight renovation project in Lindsdal as a role model and a framework contract for all the streetlight refurbishments in the municipality of Kalmar.

## Project description

This small project serves as a pilot project for the large upcoming renovation of Lindsdal's public lighting system. The lighting in a test street was converted to LED technology. The renovation was implemented in 2016 by ALV-teknik and Rexel, who hold a maintenance contract with the municipality. For this project, the refurbishment was sub-ordered from the existing maintenance contract with guaranteed energy savings. In addition, the contractors were required to base their calculations on LCC. This is a new approach to lighting refurbishment for the municipality of Kalmar.

The objective was to test the procurement and implementation process to be used for the large EPC project that will follow. Dialogues with the citizen will be an important part of the large refurbishment project and citizen acceptance is crucial for the project's success.



## Facts

- **Population:** 6,500 inhabitants
- **Type of streets:** footpaths, cycleways and roads
- **ESCO:** ALV-teknik and Rexel
- **Electricity cost savings:** 240 €/year
- **Maintenance cost savings:** 290 €/year
- **Reduction electricity consumption:** 2,220 kWh/year
- **CO<sub>2</sub> reduction:** 1 ton/year
- **Investment costs:** 3,000 €

## Further information:

Municipality of Kalmar  
S-391 26 Kalmar, Östra Sjögatan 18  
Telephone: +46-480-450 000  
E-mail: [kommun@kalmar.se](mailto:kommun@kalmar.se)

The Energy Agency for Southeast Sweden  
Telephone: +46-470-76 55 60  
E-mail: [info@energikontorsydost.se](mailto:info@energikontorsydost.se)

# Lindsdal, Municipality of Kalmar, Southeast Sweden, Street lighting project

Project data	Before renovation	After renovation
Total installed electric capacity	0.66 kW	0.13 kW
Total number of lamps	11	11
Number of lighting points (luminaires)	11	11
Main lamp type	HPS	LED
Annual electricity consumption	2,770 kWh	550 kWh
Annual electricity costs	300 Euro	60 Euro

## Results

The pilot project permitted to test a system for developing and carrying out a qualitative dialogue with the citizens. This dialogue will be included in the extensive large-scale project and for the development of the framework contract that will result from it. The pilot project also offers an opportunity to familiarise with LED technology and see how it will work in this specific area. The municipality of Kalmar employed a new approach for contracting lighting refurbishment projects. The calculations were based on LCC and energy savings are guaranteed by the contractor. If not achieved, the contractor is required to adjust or exchange the equipment.

## Support by the facilitation service

The facilitation service had supported the municipality of Kalmar in increasing their understanding of EPC and in integrating energy efficiency criteria in their procurement process for street lighting refurbishment. The facilitation service will also continue to support the municipality in the process of citizen dialogue.



Photos: Håkan Olofsson, Kalmar Municipality

