

Wind energy in Finland

Kotka Energy Ltd, Finland

Summary

The profitable analysis financed by European Commission provided basis on which Kotka Energy Ltd decided to build two wind power stations. Kotka Energy Ltd is 100 % owned by city of Kotka. The Finland's Ministry of Trade and Industry's support was 32 % of investment. The main investor was Kotka Energy Ltd. Bonus Energy A/S of Denmark was chosen as a supplier. The Kotka Mussalo wind farm comprises two 1 MW turbines, each with a 60 m tower and a rotor diameter of 54.2 m. Construction work on the site started in February 1999 and the turbines were erected at the end of August. They were connected to the grid within a week. Kotka Energy Ltd arranged a competition for children to name the wind mills. They got names "Ilona" and "Ilmari". Kotka Energy Ltd has establish a "Nature Ilona" -brand to sell the electricity produced by the wind mills. The Finnish Association for Nature has granted "Eco Energy" -label to "Nature-Ilona". The city of Kotka and Kotka Energy Ltd have paid attention to the landscaping of the Wind farm area. In the area there are several works of art designed by the students of the University of Industrial art. The nature trail has been built and the length is 1,5 kms. The Kotka city park department and South-East Finland's Environment Centre have built a series of nature trails and this is one of them. The nature trail got a name "Wind trail" because it leads to the wind park.

End-user area	Target Audience	Technical
<input type="checkbox"/> New buildings	<input type="checkbox"/> Citizens	<input type="checkbox"/> Energy efficiency
<input type="checkbox"/> Refurbishment of buildings	<input type="checkbox"/> Households	<input type="checkbox"/> Heating
<input type="checkbox"/> Transport and mobility	<input type="checkbox"/> Property owners	<input type="checkbox"/> Cooling
<input type="checkbox"/> Financial instruments	<input type="checkbox"/> Schools and universities	<input type="checkbox"/> Appliances
<input type="checkbox"/> Industry	<input type="checkbox"/> Decision makers	<input type="checkbox"/> Lighting
<input type="checkbox"/> Legal initiatives (municipal regulations, directives, etc)	<input checked="" type="checkbox"/> Local and regional authorities	<input type="checkbox"/> CHP
<input checked="" type="checkbox"/> Planning issues	<input type="checkbox"/> Transport companies	<input type="checkbox"/> District Heating
<input type="checkbox"/> Sustainable communities	<input type="checkbox"/> Utilities	<input type="checkbox"/> Solar energy
<input type="checkbox"/> User behaviour	<input checked="" type="checkbox"/> ESCOs	<input type="checkbox"/> Biomass
<input type="checkbox"/> Education	<input type="checkbox"/> Architects and engineers	<input checked="" type="checkbox"/> Wind
<input type="checkbox"/> Other	<input type="checkbox"/> Financial institutions	<input type="checkbox"/> Geothermal
	<input type="checkbox"/> Other	<input type="checkbox"/> Hydro power
		<input type="checkbox"/> Other

Context

Wind power will contribute to the programme for sustainable development followed by Kotka city. Moreover, wind power suits Kotka also because the city often likes to use the slogan "Wind in the Sails". To implement Kioto climate agreement in local level Kotka city has committed itself to Finland's communes climate agreement so that the aim is to decrease CO₂ - emissions by practical actions.

Objectives

The aims of the project are to realize concrete project for promoting sustainable development, to create good image for Kotka and to offer customers green electricity (Nature-Ilona).

Process

Kotka city is located in South-East Finland on the Gulf of Finland and the population is about 55 000. The wind power capacity in Finland has been situated in the coastal areas of Western Finland and on the fells in Lapland. The local energy company Kotka Energy Ltd's wind farm is first wind farm with commercial-sized wind turbines which has been constructed beside the Gulf of Finland. Kotka Energy Ltd is 100 % owned by the city of Kotka. As far as Kotka was concerned, the best places for wind mills were on the open sea and in the archipelago. The construction costs of wind mills built on the open sea are considerably higher than on the mainland, which is why the wind power analysis focused on the area adjacent to the industrial site situated close to the Mussalo Deep-Water Harbour. This area is highly interesting in terms of profitability because of its good location for construction and maintenance purposes. The average wind speed is 6,5 m/s.

The wind farm is situated close to Kotka city centre, enabling citizens to visit the site. The Mussalo area is also an environmentally sensible solution. The area already has houses and a harbour and adjacent to the area is the Mussalo Power Plant using coal and natural gas as fuel. For these reasons, the wind mills "soften" the image of the area in the eyes of a traveller and provide Kotka with an increasingly environmentally friendly appearance.

Construction work on the site started in February 1999 and the turbines were erected at the end of August. They were connected to the grid within a week. The technology used is conventional wind power generation. Supplier was elected by tendering process. Kotka Energy Ltd arranged a competition for children to name the wind mills. They got names "Ilona" and "Ilmari". Kotka Energy Ltd has established a "Nature Ilona" -brand to sell the electricity produced by the wind mills. The Finnish Association for Nature has granted "Eco Energy" -label to "Nature-Ilona". The city of Kotka and Kotka Energy Ltd have paid attention to the landscaping of the Wind farm area. In the area there are several works of art designed by the students of the University of Industrial art. The nature trail has been built and the length is 1,5 kms. The Kotka city park department and South-East Finland's Environment Centre have built a series of nature trails and this is one of them. The nature trail got a name "Wind trail" because it leads to the wind park.

Financial resources and partners

Total costs 2 000 K Euro, the Finland's Ministry of Trade and Industry's grant 640 K Euro. The partners were Kotka Energy Ltd, Kotka, Finland; Hamina Energy Ltd, Hamina, Finland

Results

Energy produced by renewables, 4000 MWh/a.

Lessons learned and repeatability

The positive aspect of project implementation was the excellent publicity value. The problem encountered was the lower demand for nature-electricity contracts than expected, which was overcome by marketing and price fixing.

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