

Stadtwerke Emden

„A continuous energy supply and climate control on a municipal level”



Stadtwerke Emden

The harbour town of Emden is situated on the North Sea in Germany and has 52.000 inhabitants.

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We are open-minded.

Emden

Oslo
Stockholm
Moscow
London
Paris
Berlin
Rome
Madrid



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Our town is geographically situated in the middle of Europe.

Emden



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To be more exact in the northwest of Germany.



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We are at home in "east frisia".



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Energy bundling – determining our future

Stadtwerke Emden GmbH (Ltd.) (SWE) The Emden municipal energy supply company is 100 % owned by the city of Emden. The city has 52.000 inhabitants.

Stadtwerke Emden GmbH is responsible for supplying the city

with

- electricity
- natural gas
- heating and
- water.

It is also responsible for municipal services such as

- the city airport
- public transport
- car parks and
- swimming pools.



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Stadtwerke Emden GmbH, on behalf of the City of Emden, developed an environmental energy concept in 1991 with 4 objectives:



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1. That the city electricity requirements should be met by renewable energy, for example **10 % from wind energy**.
2. Maximising energy efficiency, developing an energy saving program called **“The Emden Model”**.
3. The further **development of power and heat cogeneration to maximise efficiency**.
4. Taking part in a research **project regarding hydrogen extraction and utilization**.

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Realised achievements:

October 1993: 5 wind power stations, 2,5 mega watts
4.000 mega watt hours per year.

October 1994: 5 wind power stations, 2,5 mega watts
5.000 mega watt hours per year.

April 1996: 1 wind power station, 1,5 mega watts
2.800 mega watt hours per year.



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In total:

11 wind power stations, 6,5 mega watts, 11,800 mega watt hours per year - representing 6 % of the total demand.

Up until the year 2000 no financial help was given to utility companies by the state.

Stadtwerke Emden GmbH had an annual deficit of half a million € because of this.

The city of Emden agreed to bear these costs and accepted a reduction in their annual profit.



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Our wind farm.



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Renewable energy regulations have been in existence in Germany for utility companies since April 2000.

2004 / 2005: 3 installations, 18 mega watts 48.000 mega watt hours per year.

2009: 1 installation, 7,5 mega watts, 20.000 mega watt hours per year. The worlds biggest wind power installation was realised by Enercon. We repowered 3 old installations.

Overall situation in 2009: 12 installations, 29,5 mega watts, 75.200 mega watt hours per year. This represents 38 % of Stadtwerke Emden's total demand or expressed in another way 84 % of total private consumer demand. This has led to a CO₂ reduction of 45.000 to per year.

Our ultimate objective is: To be totally self sufficient with 100 % wind energy. This, of course, will lead to a reduction in CO₂ emissions – a much smaller carbon footprint.

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Energy efficiency: The Emden Model

There has been a subsidy of about 200.000 € annually, for the purchase of energy saving equipment or the financing of other energy saving programs for Emden's customers since 1992. For example special refrigerators, deep freezers, energy saving bulbs as well as energy saving consultancy for photovoltaik and thermal solar installations.

In total 1992 – 2009: about 3,6 million € subsidy and a CO₂ reduction about 10.000 to per year. As the owner the city of Emden supports these measures and freely goes without the normal annual profits.

The moral of the story is: “ You just have to really want it”



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Further realised achievements:

- a biomass power station, 20 mega watts (electric), 30 mega watts (thermal)
- 120 photovoltaik installations on Emden's roofs
- 500 solar thermal installations on Emden's roofs
- 2 solar thermal large installations for Emden's public swimming pools
- 3 natural gas installations (cogenerating heat and power stations)

In total about 75.000 CO₂ to saving per year.



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New planned projects:

- A biogas installation to produce 300 cubic meters of bio natural gas per hour.

Deep underground earth thermal installation in Emden:

- Energy process HDR (Hot dry rock)
- Drilling depth 2 x 4.700 meters
- Power – approximately (11 mega watts thermal / 1 mega watt electricity)
- Temperature more than 140 degrees centigrade

The VW automotive company in Emden are planning to build a “green” factory. This means that cars will be manufactured using renewable energy.



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Objectives / Opportunities:

- = 100 % Electricity from renewable energy
- = This is a quotation from the managing director of E.ON, Herr Bernotat: "By the end of the century we'll be approaching a situation of only having renewable energy." In Emden we will realise this milestone by 2030. We expect to have a 50 % energy saving efficiency by 2050.
- = Our activities and the subsidies will have a knock on effect of stimulating demand with economic savings for local industry.
- = All of this is economically sustainable in the long term.

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Thank you for your attention.

We all wish for a clean environment
also for generations to come.

We have our destiny in our hands.

