

INFORSE-Europe Sustainable Energy Study Tours in Northern Germany

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INFORSE–Europe is an independent not-for-profit economic entity with 70 NGO member organisations from 33 countries. INFORSE-Europe has been developing study tours to inspire, train and inform participants and share information.

Experienced INFORSE-Europe representatives are available to accompany tour groups and provide technical translation. High quality study tours can be customised to meet the needs of clients from the public, business and NGO sectors including accommodation requirements from comfortable hotels to youth hostels or camping.



Photo: artefact Center

Northern Germany is a remarkable European region, which has achieved a substantial growth in renewable energy infrastructure over the last decade. Germany is now the world leader in renewable energy, and Northern Germany one of the most active parts of the country in this respect. This paper describes primarily the activities in the German counties (länder) Schleswig-Holstein and Hamburg.

The many sites available to visit range from brand new installations to some that have been operating for a number of years. Substantial experience has been gathered during operation. INFORSE-Europe Study Tours present a unique opportunity to learn first hand from this experience.

For all sites, it is important to arrange the visit in advance. The involved people cannot take care of visitors that just “show up”.

The following gives an overview of different potential sites, though the list is in no way exhaustive.

Wind Power

There are more than 1000 wind turbines in operation in the region, widely distributed though with the highest density in the Western part towards the North Sea. INFORSE –Europe can easily organise a visit to wind turbines with capacities from 600 kW to 1500 kW. Smaller turbines (5-25 kW) as well as larger turbines (up to 2 MW) are also found on land and can also be visited.

During a visit to a wind turbine it will be possible to speak with the operator and/or owners, listen to noise levels and see equipment inside the turbine. Larger turbines (above 500 kW) are usually equipped with ladders and platforms inside the tubular tower, and it is possible to climb to the nacelle this way to see generator, gear, main shaft etc. Usually it is necessary to refund one hour of wind production to be able climb the tower as the turbine must be stopped; e.g. 40€ for a 1 MW wind turbine

Most German wind turbines are owned by smaller private investors including farmers, but there are also other ways: A new municipal energy project with a wind park near Nieboell shows one of these other alternatives.

Wind power production facilities are also available in the region, including the Repower production and Vestas service facilities in Husum, and development of small wind turbines in the wind test

field at “Kaiser Wilhelm Koog ” north of Hamburg (pt. testing the 5 kW Aerosmart household turbine)

Solar PV

Next to wind power, the development of PV is the largest renewable energy success in Germany. There are a large number of installations in the region, from household installations to large roofs covered with PV panels. A few of the many sites are:

- Large solar PV roof and smaller installations at artefact centre in Gluecksburg, near Flensburg
- A number if installations in Hamburg including Wohnhof Braamwisch
- Sündreyer, PV installation that is tracking the sun for maximal energy output.

Solar Thermal

Germany is one of the leading countries in solar thermal. It is possible to visit smaller and larger installations from Flensburg to Hamburg, including large installations in Wohnhof Braamwisch, very efficient installations by Microsol in, Hamburg, and low-cost installations by Phoenix Solar.

Passive Solar Houses

Germany is leading in the development of passive solar houses with very low energy consumptions. There is a number of possible places to visit, including:

- „Sonnenpark Himmernmoos“ near Flensburg, with 6 passive houses.
- Braamwisch, Hamburg. Ecological houses for almost 100 families in a suburb of Hamburg
- ”Moresby house” at the Hamburg Solar exhibition 2005.

One of the companies in the region that construct passive houses are “Energie aus Wind und Sonne” a few km West of Flensburg, a company with 60 employees working on passive houses, solar, biomass, and windpower.



Picture: New passive house in Sonnenpark Himmernmoos”, built 2006

Biogas

Germany is the world leader in larger biogas plants, where the gas is used for combined production of heat and electricity. The German plants can be divided in::

- traditional wastewater and sewage sludge plants
- biogas plants on individual farms
- a few centralised biogas plants where several farmers deliver manure to one installation that typically heats a village.

There are more than 20 biogas plants in operation on single farms in the region, mainly on large farms, with digestion tanks in the range of 100 - 1000 m³. They use the manure from the farm as basic feedstock and increasing quantities of biomass esp. maize , sometimes also other approved organic waste. Usually they cover the heating demand of the farm and sell electricity from the CHP plants (gas engines) to the grid. Some of the biogas plants are self-built by the farmers, following special advices for how to build biogas plants; but the larger plants are built by specialised companies.



There is an increasing number of large centralised biogas plants in operation in the region. They receive cow and

pig manure and maize from a number of contract farms and after processing and recovery of biogas, return the digested fertiliser to the farms that deliver manure. There is a central biogas plant owned by the municipality and farmers in Viöl. It has an electrical capacity of 1250 kW and has been in operation since December 2004, see picture.

It is possible to visit many of the biogas plants.

Germany has a number of designer and manufacturers of biogas plants, and some of them are present in the region.

Liquid Biofuels

Germany is a world leader in biodiesel but also in direct use of vegetable oil in cars. Many farmers grow rape-seed and use it for transport, some of them with a small, simple press at the farm, but more with delivery of rape-seed to rape-seed mills. In the region is production of pure plant oil as well as biodiesel. The company “Marina” at the Kieler Channel that is selling pure plant oil as well as biodiesel has a new biodiesel production facility alongside oil press facilities.

Other sites and universities are involved in research projects on BTL (“Biomass to Liquid”).

Solid Biomass for Heating

Solid biogas for heating is increasingly popular in Germany, using wood pellets (small briquettes) wood chips and wood residues for heating and to a certain extent for cogeneration of heat and electricity.

Modern heating systems with solid biomass are found throughout the region. Main types are:

- Wood pellet boilers, to provide space heating and hot water for individual houses and small communities (1-100 families, 10 - 500 kW). These are increasingly popular, and the wood pellet biomass sector has a fast growth rate.
- Boilers for wood chips, sawdust etc., to provide space heating and hot water. Automatic systems for multifamily houses and institutions with installed capacities 100 - 2000 kW.

In addition to the users of biomass heating, it is possible to visit centres for sale of biomass stoves, where different products can be compared

Solid Biomass, Combined Heat and Electricity

In Germany there is a special feed-in tariff programme for biomass power that is higher than the feed-in tariff for wind power. There are a number of smaller plants in the region. Beside that the large CHP in the city of Flensburg is about to be extended to the combustion of several waste fractions.

Information Centres

Germany has a number of energy information and advice centres. In the region this includes:

-artefact demonstration and training centre in Gluecksburg near Flensburg. The centre has a “Power Park” introducing renewable energy and a number of renewable energy facilities (PV, solar heating, wind power, biomass), as well as innovative low-energy buildings together with exhibits of renewable energy installations from many parts of the world including. The Powerpark is open for individual visitors during the summer (April 1 –Oct.31). Groups can book guided tours, the guesthouse facilities for lodging and meals throughout the year.



-Energieagentur Schleswig Holstein, Kiel. As part of the public bank "Schleswig-Holstein Landesbank" this office is advising municipalities on biomass, solar, energy efficiency, energy renovation of buildings, energy management, local heating supply, local CHP – blockheizkraftwärme, and of course of funding. Only visitors with previous agreements.

-Verbraucherzentrale, Kiel. Consumer information office, including information on energy efficiency and renewable energy, funded by the federal German consumer ministry (Verbraucherministerium),. Only visitors with previous agreements.

Eco-developments

Germany has a number of development of low-energy housing, often combined with other environmental elements. Some of them are in the region.

An example of an eco-development is "ökologische siedlung wohnhof braamwisch" in a suburb of Hamburg. This development includes ten row houses (86 dwellings) built as low-energy houses with environmentally benign materials in 1999 and equipped with solar heating, local, plant-based wastewater treatment, and some of them with composting toilets. The houses are connected to a local district heating system with a large solar installation and 4500 m³ of long-term hot water storage. The solar installations provide 50% of the total heat demand of the houses.



Visiting Sustainable Energy Sites in Northern Germany

INFORSE-Europe can arrange visits to most of the sites mentioned above. Some of them charge a fee of (€50-€100) for a group guided tour.

It is possible to organise visits to many of the sites with public transport, but often easier with a hired bus or car. Alternatively, certain visits can be organised efficiently by bicycle, such as visits in the Flensburg area/artefact.

There are many accommodation opportunities in the region in youth hostels, hotels, bed&breakfast and camping during the summer. At the Artefact centre (see above) is a guest house that is offering bed&breakfast from 22€/night upwards per person.

Booking a Sustainable Energy Study Tour

INFORSE-Europe will organise sustainable energy study tours in Northern Germany on a day rate of 400€ +VAT for administration. A quotation can be provided on request which will vary depending on the complexity of the tour and level of administrative support required.

Once an itinerary is agreed, tour participants are usually responsible for directly booking suitable hotel accommodation, with advice from INFORSE-Europe staff if required.

The cost of an INFORSE-Europe guide to accompany a study tour is 450 € +VAT per day. Visits should be arranged at least one month before the proposed travel date.

For further information or a quotation please contact INFORSE- Europe, e mail ove@inforse.org, Web www.inforse.org