

# Join us for a **Bioenergy Tour to Sweden**

**Swedish GDP increased while CO<sub>2</sub> emissions went down**

INDEX

Year

1990 1995 2000 2005 2010

240  
220  
200  
180  
170  
160  
150  
140  
130  
120  
110  
100  
90  
80

— Bioenergy  
— GDP  
— CO<sub>2</sub>

The main reasons for breaking connection with economic growth and higher emissions are our use of bioenergy.

+ 120 %  
+ 43 %  
- 16 %

Taking you from know-how to show-how



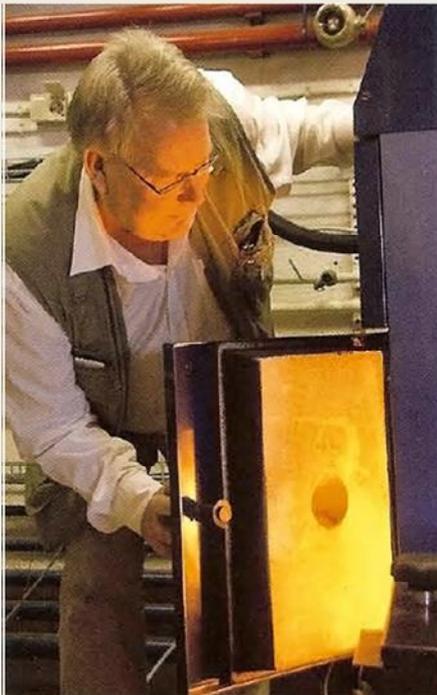
Sweden has become internationally at the forefront of sustainable, low impact living and as a country can show that it is possible to reduce greenhouse gas emissions whilst still increase GDP and societies' welfare. This study tour invitation allows you to meet companies and politicians who have made the difference in Sweden

# Tour of West Sweden - a region full of Good Examples

By integrating information with the visit of actual installations, we provide participants with a broad and general introduction to Swedish energy, based on different raw materials, supply chains and conversion processes, given Sweden a leading position in the transition to an energy supply based on renewable energy. **50% of all energy in Sweden currently comes from renewable energy sources.** This programme can be further adjusted to the needs of guests and caters to all who wish to know more about Swedish energy supply.

## IRETlse will be your host in Sweden

IRETI is owned by Chalmers Industrial Technology



**Bengt-Erik Löfgren** CEO for IRETlse and ÄFAB will be your personal guide. He has been involved in sustainable development and also with renewable energy for more than 30 years and he serves as a link between politicians, academia, professionals and business. He is one of the most experienced and most competent experts in small-scale bioenergy in the whole country.

To assist B-E Löfgren you will meet several people linked to both politics, companies and academia.

This study tour combines fundamental information with visits to various facilities. We believe everyone, as well as politicians and commercially active companies, will have a huge benefit from the visit. The event is specifically designed to provide a unifying view in an informal way that encourages questions and discussion.

The region of Western Sweden has a number of district heating plants, including Lidköping, one of the most modern waste to energy plants in the country. Household waste is here transformed to both heat and electricity for the city of Lidköping's heating demand. We have a number of medium-sized plants fired by wood chips and pellet, some are combined with solar energy. When it comes to energy efficiency, we can also show you "nearly zero energy buildings".

The surrounding area offers several plants producing biogas, as well as a great facility which upgrades waste from ethanol production to both CBG and LBG, and a number of smaller farm plants for electricity and heat production. Besides this we can show wood pellet production in large and small factories, drying facilities for cereals that use wood chips and pellets to produce hot air, etc..

*"Bengt-Erik is a true expert on all matters biomass. His depth of knowledge about pellets (wood or other materials) is second to none in Scandinavia and further afield. Working with him is a true education in every sense of the word"*  
**Paul Balmer - Kiwa GASTEC at CRE (UK)**

*"Bengt-Erik is THE guy for pellet boilers and stoves. He is perhaps the most knowledgeable and impassioned person I have worked within this sector. His knowledge and expertise and longevity in this business has rightly earned him the informal title of "the father of Swedish pellet technology". Indeed, his work has inspired many, not only in Sweden, but all over the world"*  
**William Strauss, FutureMetrics (USA)**

*"To me Bengt Erik is the most experienced expert for small scale biomass use for heating in Sweden. He has been dealing with wood burning devices for decades, knows the industry and has a wide network of international contacts. Bengt is really committed to his work and at the same time a most enjoyable person, hospitable, helpful and humorous"*  
**Christian Rakos, President European Pellet Council (A)**

# Taking you from know-how to Show-how

This programme is just an example with the city of Lidköping as a base. Lidköping is a small town with only 37,000 inhabitants, situated at the southern end of Lake Vänern about 130 km north of Gothenburg. Tell us what you want to see and we will, as organizers, do our best to fulfill your wishes.

The surrounding area has many good examples of most kinds of renewable energy and environmental technology. Proposals for visits and events can be modified or supplemented to the participants' wishes. Just let us know.

## AGENDA – Day 1

*Pick up at Landvetter Airport, Gothenburg*

*We meet up at the airport before midday for a transport to the city of Lidköping. On the road to Lidköping we will make visits at:*

- ~ **SP – Sveriges Tekniska Forskningsinstitut** – a leading international institute for research and innovation. We visit SP Energy Technology and the lab working on testing and certification of combustion technology for everything from boilers to large CHP regarding both fuel quality, combustion technology and emission reduction. ([www.sp.se](http://www.sp.se))
- ~ **Ulricehamns Pellet Factory**, owned by Lantmännen Agroenergi is a good example of cooperation between the local authority and the industry that has led to improved energy efficiency, reduced carbon emissions, while increasing the involved companies' competitiveness. ([www.agroenergi.se](http://www.agroenergi.se))

After accommodation at the hotel we will meet again at ÄFAB's permanent exhibition hall, where we are greeted by the mayor of Lidköping municipality and receive a short presentation about the municipality's environmental efforts. Later that evening, **Lidköping municipality wants to invite all of us for a dinner.**

## AGENDA - Day 2 (am) Track 'Public'

*Reassembly at ÄFAB's exhibition at 8:30am for a short review of the day's activities*

- ~ First stop and a closer look at a number of wind farms managed by **Ledsjö Vind AB**. Representatives of the company will present how they established itself as a strong regional player in renewable energy. ([www.ledsjovind.se](http://www.ledsjovind.se))
- ~ **Brunnsbo Farm** operates a biogas plant with electricity and heat production at farm level with substrate from pig production. Total number in the area are 35 biogas plants, with a total production in 2011 of 215 GWh. ([www.visitcleantechwest.se/plats/brunnsbo-gard-skara](http://www.visitcleantechwest.se/plats/brunnsbo-gard-skara))
- ~ On the road back we first make a brief stop at the biogas plant at **Gotene municipal wastewater treatment plants** which use sewage to produce biogas that generates electricity. Next, we visit the "**Villa Malmberg**" where the family Malmberg have lived in their passive house since 2008. The house has significantly lower energy consumption than a conventional building. (<http://www.tellus.tv/passivhus/>)

## AGENDA - Day 2 (am) Track 'Commercial'

*Reassembly at ÄFAB's exhibition at 8:30am for a short review of the day's activities*

- ~ First stop and a closer look at a number of wind farms managed by **Ledsjö Vind AB**. Representatives of the company will present how they established itself as a strong regional player in renewable energy. ([www.ledsjovind.se](http://www.ledsjovind.se))
- ~ **District heating in Gotene**, is a traditional wood chip-fired small district heating plant owned by Vattenfall. The heating plant is a 25 MW boiler fired with biomass for base load with additional two boilers of 16 MW for steam production.
- ~ In Hällekis village we visit the animal feed factory, owned by **Svenska Foder AB**. By installing **Opcon Powerbox ORC** - a new steam turbine solution - can the company use this to run the boiler uniformly and optimally. ([http://www.opcon.se/web/oes\\_en.aspx](http://www.opcon.se/web/oes_en.aspx))
- ~ Pellet fired boiler at **Vinninga School**. This container modular system from Janfire / Kvänum can be built for both hot water and steam in effects between 100 and 1800 kW. ([www.kvanumenergi.se/foretag-panncentraler](http://www.kvanumenergi.se/foretag-panncentraler))

## AGENDA - Day 2 (pm) - Both tracks together

*After lunch will representatives of the local authority present how they have worked to become one of the country's most noted environmental municipalities. We will meet politicians and officials who will tell all attendees on how to build a sustainable city*

- ~ **Waste to Energy** with a visit to **Lidköpings Värmeverk AB**, a local authority owned modern heating plant for waste combustion converting household waste into heat and electricity. Emissions of dioxins are very low, per cubic metre of fuel emissions is only 0.1 nanograms, or about 10 percent of the permitted limit. ([www.lidkoping.se](http://www.lidkoping.se))
- ~ Visits to **Lidköping Biogas** facility, the region's largest biogas plant. An anaerobic digestion plant where the gas is produced and then purified to vehicle gas (CBG). In the second part of the system processed gas to liquid gas (LBG). (<http://www.lidkopingbiogas.se>)

Day 2 ends with a **light buffet and mingling together with the exhibitors** in ÄFAB's exhibition. An evening opportunity to make many new contacts.



### AGENDA - Day 3 Track 'Public'

Reassembly at ÄFAB's exhibition at 8:30 am for a short review of the day's activities

- “ **Nossebro Energi AB**. A local authority owned energy company that have a variety of activities which all work in a way that contributes to a better environment. The company was awarded the 2007 Environmental Award of Nature Conservation. (<http://www.nossebroenergi.se/>)
- “ The next stop **Vattenfall in Trollhättan**. Sweden's first large hydroelectric plant and one of the oldest still in use. We also make a visit to the scenic beauty of the lock area around the Vattenfall's plant. ([www.vattenfall.se](http://www.vattenfall.se))
- “ **Innovatum AB** is a bridge between industry, research, education, individual innovators and the public. By offering good prospects for cooperation in development makes companies turn more quickly into profitable businesses. ([www.innovatum.se](http://www.innovatum.se))
- “ If time permits, we make a quick visit at **Örslösa School** where Kvänum Energi AB have built a wood pellet fired small district heating boiler.

### AGENDA - Day 3 Track 'Commercial'

Reassembly at ÄFAB's exhibition at 8:30 for a short review of the day's activities

- “ **Baxi AB in Falköping** delivers heating products - wood boilers, pellet boilers, stoves and solar heating. The product range includes everything from domestic boilers to complete heating plants up to 700 kW. ([www.baxi.se](http://www.baxi.se))
- “ **Hjo Värmeteknik AB** is a company who quotes boilers from 10kW-10MW. They have great experience of combining fuel of various kinds, such as pellets, wood chips, straw or grain following price and availability. ([www.hjovarmeteknik.se/?pg=78487162](http://www.hjovarmeteknik.se/?pg=78487162))
- “ **Sötåsen a "Living Lab"** and a technology centre for bioenergy with training in renewable energy. The school receives visits to their biogas plant and other bioenergy technologies facilities.
- “ Last visit at a farmer who has a **woodchip-fired air heater** from Vänertekno AB to replace traditional oil heating in drying grain. **Vänertekno AB** manufactures heaters for airborne heating of industrial halls, hangars, etc., in the power range of 25 - 400 kW. ([www.vanertekno.se](http://www.vanertekno.se))

### AGENDA - Ending session - Both tracks together

- “ Before we finish the study trip, we will get a comprehensive presentation on **carbon sequestration** by **David Andersson, CEO at Ecoera AB**. Ecoera is a leading player in efforts working with Biochar. With biochar we can put a reverse gear and take carbon dioxide from the atmosphere and bind it as stable soil carbon. ([www.ecoera.se](http://www.ecoera.se)).

The day - and the entire study tour will officially end with a **dinner at the Victoria Hall at Lacko Castle**. Located in the middle of Vänern's magnificent nature and culture and next to Lacko Castle now stands Victoria House Visitor Centre, which was a symbolic gift to HRH Crown Princess Victoria on her 30th birthday. It is a natural and beautiful venue where you also get to know more about the animals and plants and the geology and cultural history that shaped the area. (<http://naturum.lackoslott.se/>)

### AGENDA - Day 4 - Both tracks together

Pic up at your hotel at 07:30 for transport to Gothenburg or to the airport.

We will take you back to the airport, with estimated arrival 09:30 am. Then, the bus will continue to Gothenburg Centre. If you want, we can arrange additional programmes or field trips. Just tell us what you want. Find out more about the attractions and accommodation in Gothenburg at [www.visitsweden.com/sweden/Regions--Cities/Gothenburg/](http://www.visitsweden.com/sweden/Regions--Cities/Gothenburg/)

## Charges

Just tell us what you want to see and make a contact for a fixed price offer. We always try to get the price down through various grants and sponsors. These vary over time and from time to time. If you ask for "all inclusive" in Sweden we include all transports, meals and accommodation expenses.

Besides the study tours, we can also arrange training tailored to participants' needs and prior knowledge.

We can also make these trainings implemented in your business at home.



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