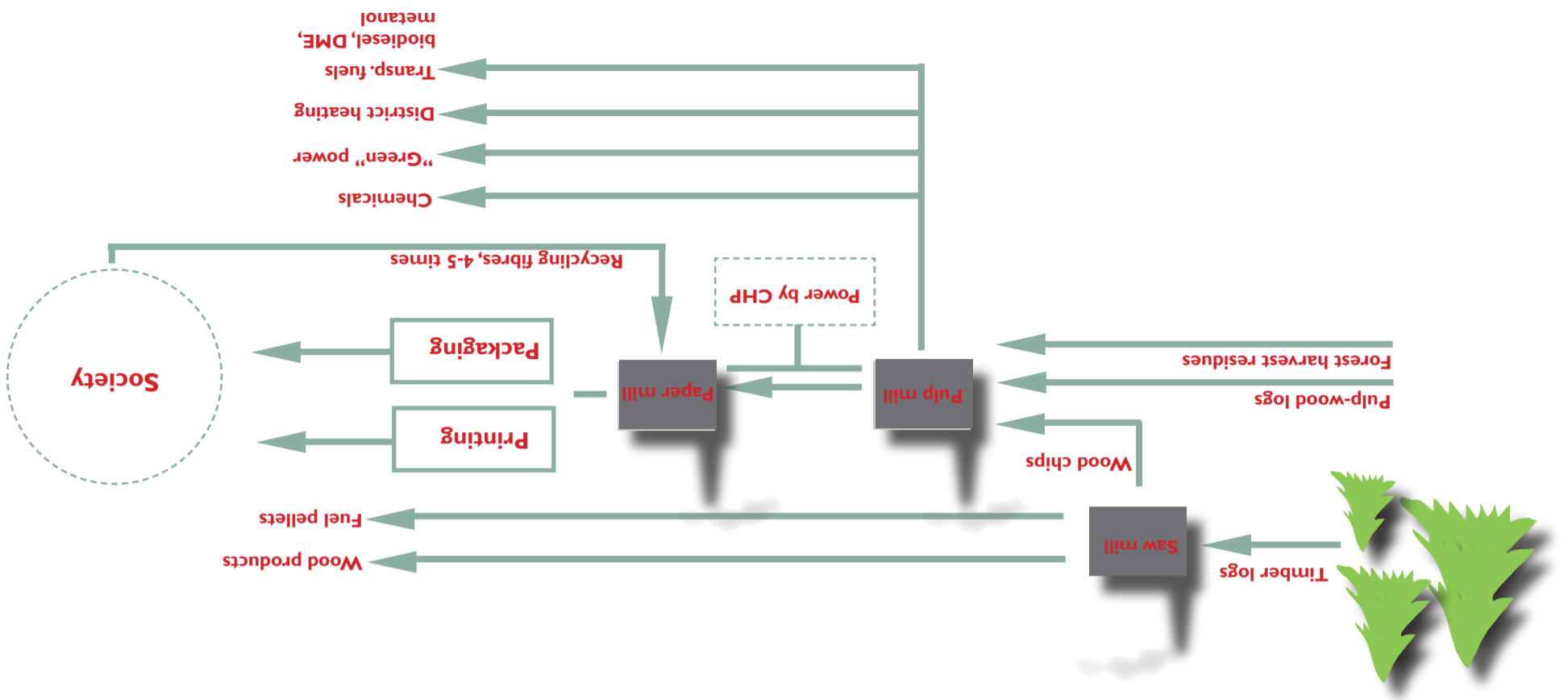


# Pulp mill biorefinery

Part of the "climate change" solution. A sustainable and the most efficient value added use of forest biomass.



## Members of Solander Science Park network



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renew  
 methanol  
 dme  
 biorefinery  
 biodiesel  
 gasification  
 biomass  
 pulp mill  
 energy  
 Solander  
 black liquor  
 Piteå

# Renewable energy actions in Piteå

## Solander Science Park



Solander Science Park (SSP) is the name of a pulp mill based biorefinery cluster in Piteå, Sweden. The vision of SSP is to create a world class center for research and business development around the kraft pulp mill based biorefinery. One step towards achieving this vision is to create a multi-year research program for developing new processes and improving existing processes, which will increase the number of products from kraft pulp mills with several new high value products, such as liquid fuels for transport

We work in close collaboration between industry, universities, research institutes and local and regional governments. National and international cooperations are also extremely important

In addition we have a number of on-going examples of successful applications.

Solander Science Park is intended for researchers, process engineers, vendors, investors and decision makers at all levels who are interested in the new concept of biorefinery and its potential for new products and profitable business opportunities.

Solander Science Park consists of three parts:

### Solander Research

- Black Liquor Gasification
- Hemi-cellulose extraction
- Tall oil refinery
- Lignin fuel for lime kiln

### Solander Business

- Start up of new business
- Business development
- Provide business premises
- Broadening of businesses

### Solander Symposium

- Dissemination of results
- Conferences/meetings
- Global research surveys
- Information and media

## New biomass boiler at Smurfit Kappa

The new biomass boiler is of the BFB (bubbling fluidised bed) type and it uses the most modern combustion technology. It has a patented design and has been developed for various fuels. To produce as much energy as possible the boiler was designed for 12 MPa which entails a new HP steam distribution central.

Metso Kvaerner's solution "Hydro Beam Floor" is used with water cooled elevated beams, increased surface for output and an outstanding degree of separation. For cleaning smoke a bag filter is used and the total number of bags is 1960 with a total filter area of 8624m<sup>2</sup>.

The advent of the biomass boiler means environmental improvements, the consumption of heavy oil is reduced markedly and the degree of self-sufficiency concerning electricity has increased from 35% to 50-52%.

Facts: Steam: 132MW -- 50kg/s -- 12,0MPa -- 520Celsius

Fuels: Bark, sawdust, bransches and tops, peat, internal rejects, biosludge, oil

## Tomorrows energy competence today



ETC is a research and development centre for renewable fuels with focus on combustion and gasification processes. In collaboration with private companies and public and academic institutions, we carry out research and development projects, design products, and analyse and solve problems associated with renewable energy sources.

ETC has a highly competent staff and advanced experimental and computational facilities. Partly owned by Piteå Municipality.



## Wind Power in Piteå

Northern Europe's largest wind-power park with 500 wind turbines is now being planned in Markbygden, together with the company Svevind AB and there are also plans on a large wind-power park with 130 wind turbines far out at sea, at Klockgrundet and Tärnas grund, together with the company WPD Scandinavia AB.

If both wind-power projects, Markbygden and Wind-power park Klocktärnan, become realities, it means in total roughly 600 wind-power turbines and investments at about 45 billion within a few years.

## Second generation biodiesel plant



SunPine AB is planning to setup a second generation biodiesel plant in the harbour area of Piteå. The production of up to 100 000 kbm biodiesel per year will be based on crude tall oil (a by product from pulp mills), acid vegetable oils and methanol.

Basic engineering, environmental permission and financing processes progresses as planned. The construction work is planned to start early 2008 and production in 2009.

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## Black liquor gasification



The pressurised CHEMREC black liquor gasification system is a new technology for energy and chemicals recovery in pulping processes with the aim of offering pulp mills significant cash flow additions through increased utilization of the energy content in its renewable feedstocks for production of green electricity, automotive fuels or hydrogen.

In addition the CHEMREC system offers the option of utilizing advanced new cooking processes resulting in increased pulp yield and giving a fundamentally different opportunity to manage the environmental impact of black liquor conversion.

The capital outlay for the system is larger than for the corresponding recovery boiler, but the extra investment is rapidly repaid through the increased cash flow generated.

## More information:

[www.etcpitea.se](http://www.etcpitea.se)

[www.smurfitkappa.se](http://www.smurfitkappa.se)

[www.energimyndigheten.se](http://www.energimyndigheten.se)

[www.umu.se](http://www.umu.se)

[www.ltu.se](http://www.ltu.se)

[www.slu.se](http://www.slu.se)

[www.nolia.se/solandersymposium](http://www.nolia.se/solandersymposium)

[www.sca.com](http://www.sca.com)

