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# LiquidEnergy

## Norway and Sweden - biogas in Scandinavian countries study visits



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POLSKA  
PLATFORMA  
LNG i bioLNG

## – Norway, Trondheim

*“Advanced technology includes not only special cameras underneath all of the corners and radar, but also dedicated control system which takes care of everything, even when the subject will suddenly appear on the following line”*

says Erik Dyrkoren, CEO at Zeabuz.



## – Zeabuz

This is a spin-off from the progressive research center for autonomous marine operations and system, at the Norwegian University of Science and Technology. Apart from that, enabling waterborne mobility with autonomy and AI has been discussed. Zeabuz presented more information about the world's first fully autonomic ferry fitted with solar panel on the roof of the boat.

## – Sintef

It is a one of Europe's largest independent research organisations.

*“It is important to add that there is many possible ways of using fossil fuels, natural gas like LNG or LPG, biofuels including biogas or bio-methanol and hydrogen fuels in the future”*

says Scientist Torstein Aarseth Bo.

## – Biokraft Skogn

This is the world's largest production facility for liquid biogas fuel (LBG), which contributes to reducing emissions of greenhouse gases and contributes to green business development.

*“Gas liquefaction which involves cooling gas to a temperature below its boiling point so that it can be stored and transported in its liquid phase”*

says Terje Hyldmo, Manager, Commercial & Business Development Biokraft AS.



## – Sweden, Kalmar

75,000 tons of substrate contribute to the production of 25 GWh as vehicle gas. Biogas powers about 80 buses in Swedish town!

## More Biogas

This company was formed in February 2011 after several years of preparation. More Biogas has built a co-digestion plant which was completed in the winter of 2014. The plant produces ready compressed vehicle gas for local use. Raw materials are manure from the farmers' farms and food waste from households in the nearby municipalities. More Biogas also has its own gas station located right next to the plant.

*“We use CApure technology which produces a clean gas with a very high methane content, more than 99% and the so-called the methane release is very low, 0.1%. From here, the gas is led to compression and further out to the gas storage and locally located gas tank”*

says deputy director of More Biogaz.



## – Wärtasilä, Puregas, Kalmar

This is a small-scale LNG production project which upgrading head office is in Kalmar.

They focuses on producing more methane and upgrading it. According to liquifaction – really important is the quality of LNG and distribution change. If the quality is good, they can pressurize it to 20 bar, cool it, and deliver to storage tank: no boil of gas, no flash gases.

The next step is upgrading and polishing: puregas CA technology which integrate two stage solutions:

✓ **1st stage:** co2 bulk removal at atmospheric pressure;

✓ **2st stage:** co2 polishing at 20/60 barg pressure.

Study visits are an essential part of every project. During their duration, project partners and people involved in its creation, among others, have a chance to broaden their knowledge and exchange experiences. The study visits we have made to Norway and Sweden contributed not only to seeing the activities of entities close to the project in practice, but also to learn about solutions that could be implemented in the future.

