



BioGas2020^o


Fredrik Grund
– Innovatum –



Our target areas

Sustainable transport
Creative business
Sustainable energy
Sustainable production

Start and develop
Companies & networks



Focus on development



INNOVATUM

Start, develop and run
Projects & networks



Discover and explore
Interactive exhibits and school programs



Our industrial heritage
150 years of change

Driving forces to use Biogas

20 years ago

- Improve city environment by reduce particles and get cleaner air in the cities, which was a problem with the diesel buses

Biogas2020

- Environmental targets, I.e. EU and Paris goals.
- Business cases that shows the benefits to society and circular economy.
- Reuse of waste and manure to fuel
- Create Green fuel that do not compete with growth at agricultural land.

Purpose

- A number of activities with the purpose to increase investments and use of Biogas.
- Collaboration to develop new technology, new tools, methods, concepts and business cases
- Increase use of biogas mainly within transport sector.
- Organize a Scandinavian biogas platform that connects the local and regional biogas clusters together and create a collaboration around an overall Biogas vision, goals in Scandinavia and increase the political dialogue.

The Goals

Contribute to decrease environmental effect, greener economy and sustainable growth within Scandinavia.

To establish a Scandinavian biogas platform with members from the whole chain of actors within biogas from three countries to effect the development of biogas inside and outside of Scandinavia.

Prepare for massive investments in renewable energy equivalent to a value of SEK 1 billion, (100mil. Euro) that crates 1 000-1 500 new green jobs within a 10 years period

Partners in Biogas2020

- 12 University's, Institutes and Competence centres with research
- 14 public organisations
- 5 knowledge platforms
- 3 private companies



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PROJECT STRUCTURE

1. Project management	Innovatum
2. Communication	Innovatum
3. Collaboration platform	Innovatum
3.1.1 Network and political Collaboration	Västra Götalandsregionen
3.1.2 New Networks	Östfold Fylkeskommune
3.2 Business cases, benefit for society, circular e.	Agro Business Park
3.3 External monitoring	Kommunförbundet Skåne
3.4 Concept development	Fredrikssund Kommune
3.5 Process and technology support	Innovatum

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Activity 4.1: Marine and agrare substrates

- Survey of new agrare substrate
- More efficient use of existing agrare substrate
- Documentation of possibilities for use of marine substrate for biogas
- Documentation of increased take up of Nitrogen and fosfor from the ocean



Aktivitet 4.2: Collection of household waste

- Value chain analyse
- Survey of business cases
- Comming environmental policies
- Studies of methods to use households waste for biogas.



Activity 4.3: Biogas – the process

- Development of more efficient biogas processes
- Method of analyses for more efficient control
- Analyses of biogas production for different sizes of digester
- Test and pilot of high rate digester with manure from pig and cattle



Activity 4.4: Degistate

- Survey of existing research and knowledge
- Test and research of substrates regards to degistate
- Practical test of spreading of degistate
- Cultivation tests with documentation of growth



Activitey 4.5: Upgrading to biomethan

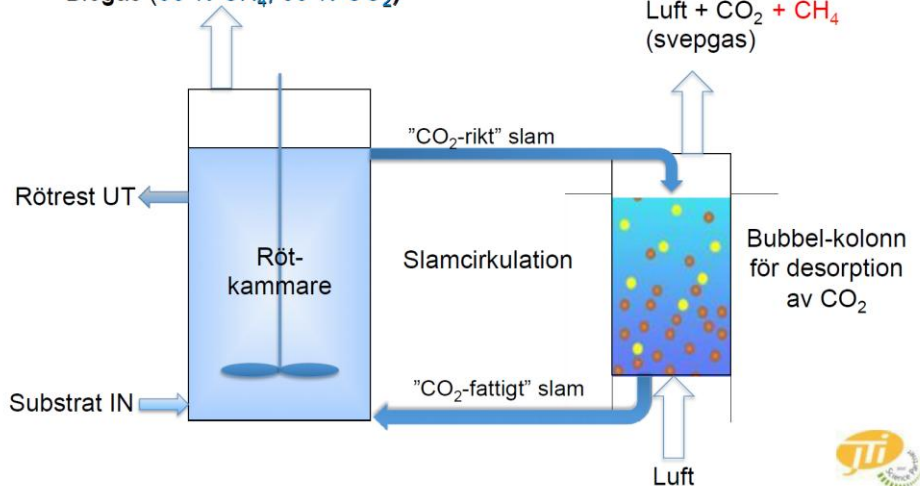
- Development of new methods for micro upgrading
- Demonstration and development of new business cases for micro upgrading

Processintern metananrikning

CO_2 har ca 40 ggr högre löslighet i vatten än CH_4 (35°C , 1 atm, pH 7,0)

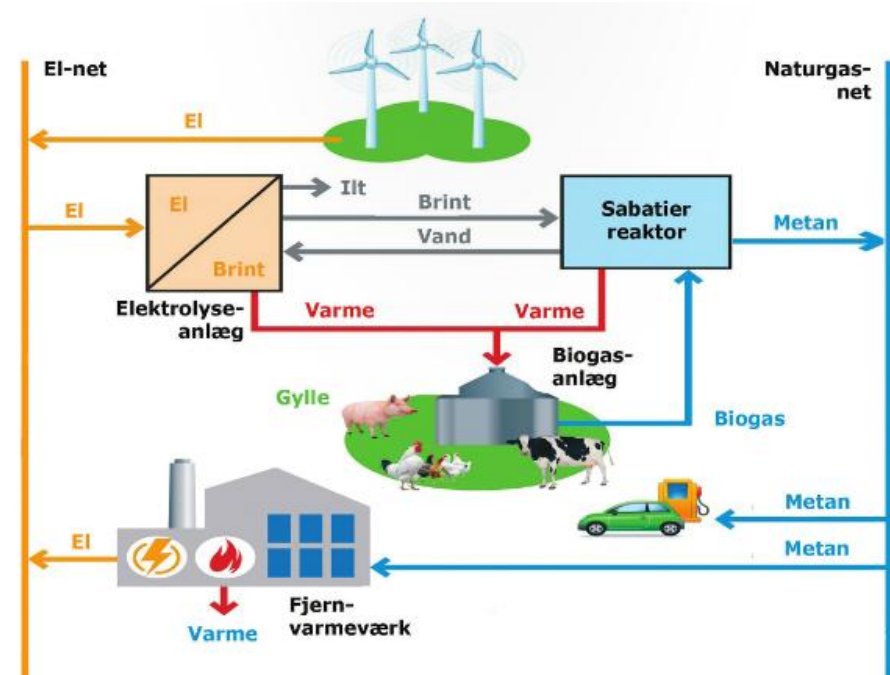
Biogas (96 % CH_4 , 3 % CO_2)

Luft + CO_2 + CH_4
(svepgas)



Activitey 4.5: Power to gas

- New technical solutions for production of methane from wind power and storage in fossil methane pipeline network
- Development of business cases



PROJECT STRUCTURE

<p>5. Infrastructure and Transport:</p> <ul style="list-style-type: none">5.1 National and international subsidy5.2 Need, TCO, and flow tool5.3 Political collaboration, Vehicles5.4 Online platform available vehicles, technologies, sales channels5.5 Best Practise Collection from different countries5.6 Preparation for test and demonstration activities5.7 Survey of available gas tank stations5.8 Development of business cases inkl roadshows.5.9 Potentials for CBG and LBG5.10 Survey of benefits for society with Biomethan5.11 Biomethan to maritime transports.	<p>NTU Michael Laugesen</p>

National and International subsidys

- Survey of different types of Subsidies and funding available for biogas
- Research of some of the EU-programs.
- Identification of relevant subedies and prioritation, possible for aplication in Denmark, Norway and Sweden



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Need- and flow analysis tool



Today status



Flow analysis



Recommendation

- Development of a combination tool for TCO (Total Cost of Ownership) calculator, emission calculator and flow analysis tool, integrated to the Biogas2020 homepage

Political agenda, -tools and -influence

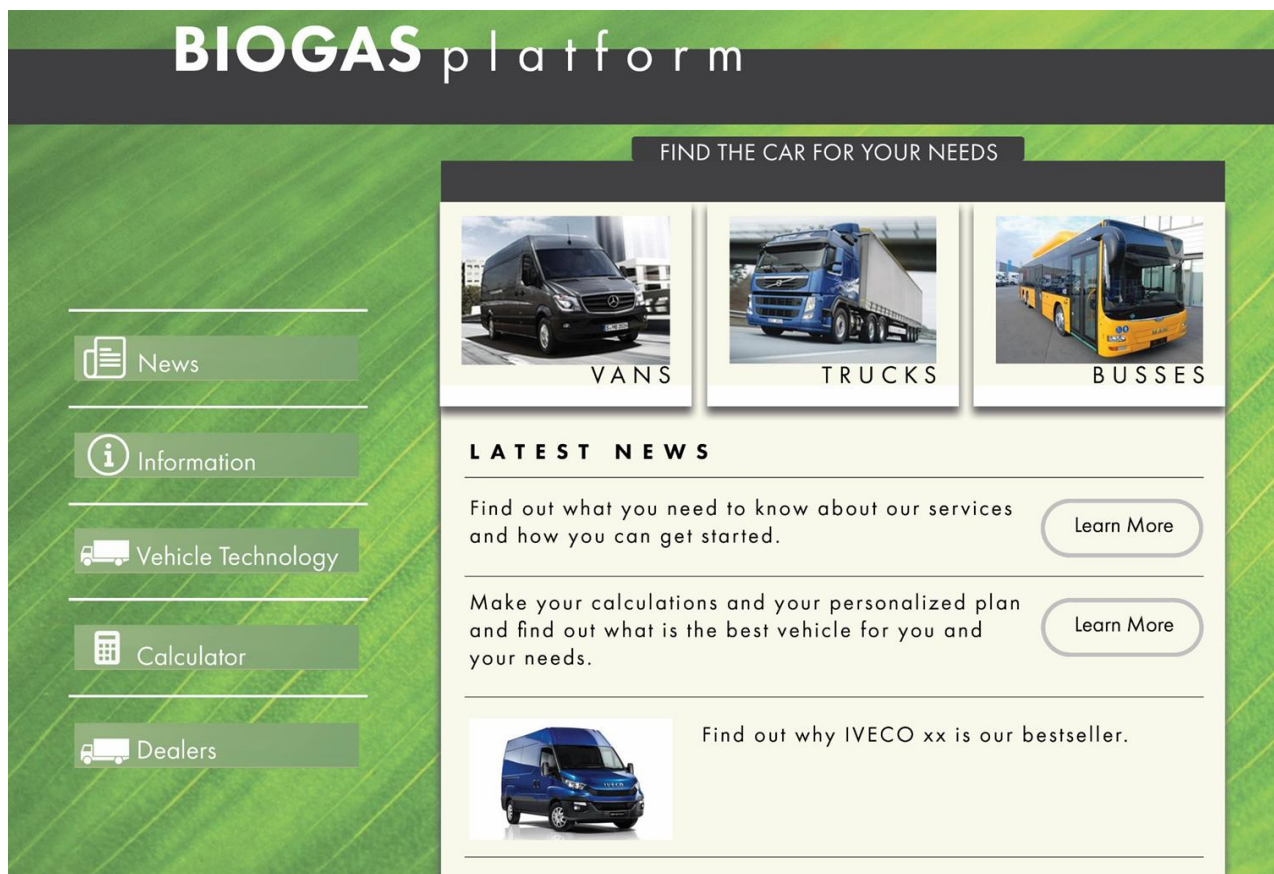
- Dialogue with authorities in Sweden, Denmark and Norway via Biogas2020 Advisory Board



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Online platform with neutral info regarding available vehicles, technologies and sales chanelns



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Best practice example collection for vehicles

- Collection of case studies for use of biogas driven vehicles.
- Collection of at least 10 cases from each of the countries Denmark, Norway, Sweden, Italy, Turkey, Germany



Preparation of test and demonstration activities

- Establishment of regional test and demonstration projects for use of biogas vehicles in practise.
- Preparation for establishment of Denmark's first B2B biogas tank station in Høje Taastrup Transportcenter (HTTC)



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Survey of available gas fuel stations



- Online information regarding available gas fuel stations DK/NO/SE

- Preliminary also an App.

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Roadshows for biogas in transport sector

- 5 roadshows regarding biogas for transport sector
- 1:st roadshow is 9. may 2016 in Herning Transport center (HI-Park)

Report:

- <https://inbiom.nemtilmeld.dk/19/>

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Projektbutikken
Workshop:
Kom og få sparring på dit projekt og hør om andre projekter i Region Midtjylland.
Logos: gas2move, AARHUS BSS, NTU

Tilskud...
Kom og få beregnet økonomien og hør om relevante støttemuligheder.
Logos: NTU, piggy bank icon

Gaslastbiler
Spark dæk på en gaslastbil og få en prøvetur, hvis du har kørekortet med...
Logo: IVECO, truck icon

Problem knuseren
Vi afdækker dine udfordringer og knuser problemer
Logo: AARHUS BSS, warning triangle icon

Gastankstationer og energiløsninger
nærenergi
Logo: gas pump icon

Gastankstationer til komprimeret gas
Bay Naturgas
Logo: bus icon

Potentials for CBG and LBG

- Identification of primary potentials for use of Compressed biomethane (CBG) and liquified Biomethan (LBG)

Biogas i naturgasnettet

Eksisterende og planlagte projekter

HJØRRING: 6 MIO. M³/ÅR (JAN. 2014)
NETTILSLUTNING: HMN NATURGAS I/S

HJØRRING: CA. 2,2 MIO. M³/ÅR (AUG. 2014)
NETTILSLUTNING: HMN NATURGAS I/S

BRØNDERSLEV: CA. 6 MIO. M³/ÅR (DEC. 2014)
NETTILSLUTNING: HMN NATURGAS I/S

AALBORG: CA. 9,3 MIO. M³/ÅR (MEDIO 2015)
NETTILSLUTNING: HMN NATURGAS I/S

SKIVE: CA. 4 MIO. M³/ÅR (NOV. 2015)
NETTILSLUTNING: HMN NATURGAS I/S

SKIVE: CA. 4 MIO. M³/ÅR (OKT. 2014)
NETTILSLUTNING: HMN NATURGAS I/S

HORSENS: CA. 7 MIO. M³/ÅR (JUL. 2014)
NETTILSLUTNING: DONG ENERGY

TÅRM: CA. 6,7 MIO. M³/ÅR (MEDIO 2015)
NETTILSLUTNING: HMN NATURGAS I/S

FREDERICIA: CA. 3 MIO. M³/ÅR (AUG. 2011)
NETTILSLUTNING: DONG ENERGY

HOLSTED: CA. 12 MIO. M³/ÅR (ULTIMO 2015)
NETTILSLUTNING: DONG ENERGY

VEJEN: CA. 6 MIO. M³/ÅR (ULTIMO 2015)
NETTILSLUTNING: DONG ENERGY

TØNDER: CA. 35 MIO. M³/ÅR (PRIMO 2016)
NETTILSLUTNING: DONG ENERGY

VOJENS: CA. 21 MIO. M³/ÅR (MEDIO 2016)
NETTILSLUTNING: ENERGINET.DK

AABENRAA: CA. 35 MIO. M³/ÅR (MEDIO 2016)
NETTILSLUTNING: DONG ENERGY

EKSISTERENDE
PROJEKT
PLANLAGT
PROJEKT

VRÅ: CA. 12 MIO. M³/ÅR (MEDIO 2016)
NETTILSLUTNING: HMN NATURGAS I/S

RØDKJÆRSBRO:
CA. 4 MIO. M³/ÅR (ULTIMO 2016)
NETTILSLUTNING: HMN NATURGAS I/S

FRISENBORG:
CA. 5 MIO. M³/ÅR (MEDIO 2016)
NETTILSLUTNING: HMN NATURGAS I/S

OPGRADERET BIOGAS I NATURGASNETTET
TIDSPUNKT ANSLÆT SAMLET MÆNGDE PER ÅR
ULTIMO 2015 CA. 76 MIO. KUBIKMETER
ULTIMO 2016 CA. 200 MIO. KUBIKMETER

OPGRADERINGSANLÆG
I FUNKTION
SPILDEVANDSTANK
HUSDYRGØDNING

AVEDØRE: CA. 2,5 MIO. M³/ÅR (MEDIO 2016)
NETTILSLUTNING: HMN NATURGAS I/S

BOGENSE: CA. 9 MIO. M³/ÅR (FORÅR 2016)
NETTILSLUTNING: NGF NATURE ENERGY

FAABORG: CA. 10 MIO. M³/ÅR (ULTIMO 2015)
NETTILSLUTNING: NGF NATURE ENERGY



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Survey of benefits for society with use of biomethan

- Analyse of social-economical effects when using biogas as fuel for heavy transports and public busses.

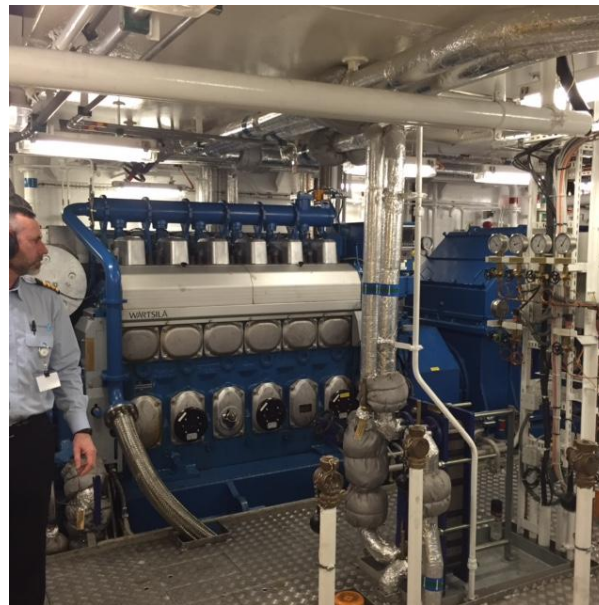


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Gas for Maritim Transport

- Survey of the Samsö ferry at Samsö (LNG) and possibilities to copy the business case and experiences to other ferries.



Welcome to talk to us regarding
collaboration!

www.biogas2020.se

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Challenges

- Biogas/Biomethan is a relatively new fuel, 15-20 years to compare with oil more than 100 years, why it is complex to start up in new areas, I.e which should come first; the infrastructure, the manufacturing or the vehicles. This makes it has to start up at the same time. In Biogas2020 we help to start up new clusters and networks to make it happen at the same time both the vehicles, the manufacturing of biogas and the infrastructure. Many communities have been a good help to start this up with municipal vehicles like busses and garbage trucks before other vehicles are in place.
- Biogas like many other biofuels have a hard time to compete with fossil fuels when prices are low at fossil fuels. Subsidy in different ways have been essential to start up new areas, specially those who are supporting communities and regions to invest. In biogas 2020 we are trying to do production more efficient, finding new substrates, increase the volumes with new users like heavy vehicles, we collaborate with knowledge and for research between countries. We are helping and share different business cases to get the gas affordable. When looking at benefits for society, the price per kWh is not always all.

Challenges

- Biogas in Scandinavia is a relatively new fuel and has been manufactured, distributed and used locally or within smaller regions the past 15 years. Now when growing larger i.e. through Biogas2020 when we connect those smaller clusters together to bigger networks and the market gets national and even international we can see that different subsidy systems in different countries can disbenefit a fair competition.

In Sweden we have tax exemption (CO₂ tax), when we buy the biogas fuel.

In other countries i.e. Denmark and Netherlands they have a subsidy when they manufacture the gas. If Danish Gas is sold in Sweden they can use tax exemption in Sweden and subsidies in Denmark. In Biogas2020 we have a dialogue with politicians to discuss this type of questions and we are building a Scandinavian biogas platform to collaborate and find common solutions.