

IWAMA 1st International Capacity Development Workshop

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Smart sludge management in Lahti region

Ari Savolainen, BEng, eMBA

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27.9.2016 Labio Oy • Ari Savolainen CEO

 **Interreg**
Baltic Sea Region 
EUROPEAN UNION
REGIONAL
DEVELOPMENT
FUND

IWAMA
Interactive Water Management

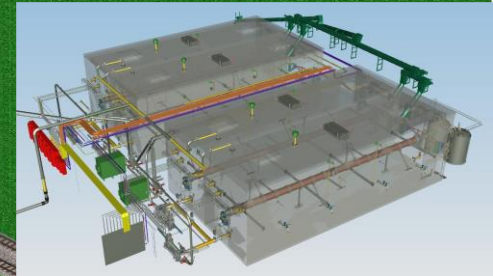

Labio

LABIO Ltd -facts

- Established 2003, at the beginning for owners waste treatment (Lahti Aqua Ltd 60%, PHJ Ltd 40%)
- Turn over 5,6 M€, (2015 forecast)
- Personnel 14
- Composting plant 2005, Biogas Plant 2014
- Biowaste treatment services, biogas and compost
- Over 10 years production and over 500.000 tons waste treatment without any breakdown

LABIO -Plants

LABIO (raw biogas production)



Gasum (biogas refinery)

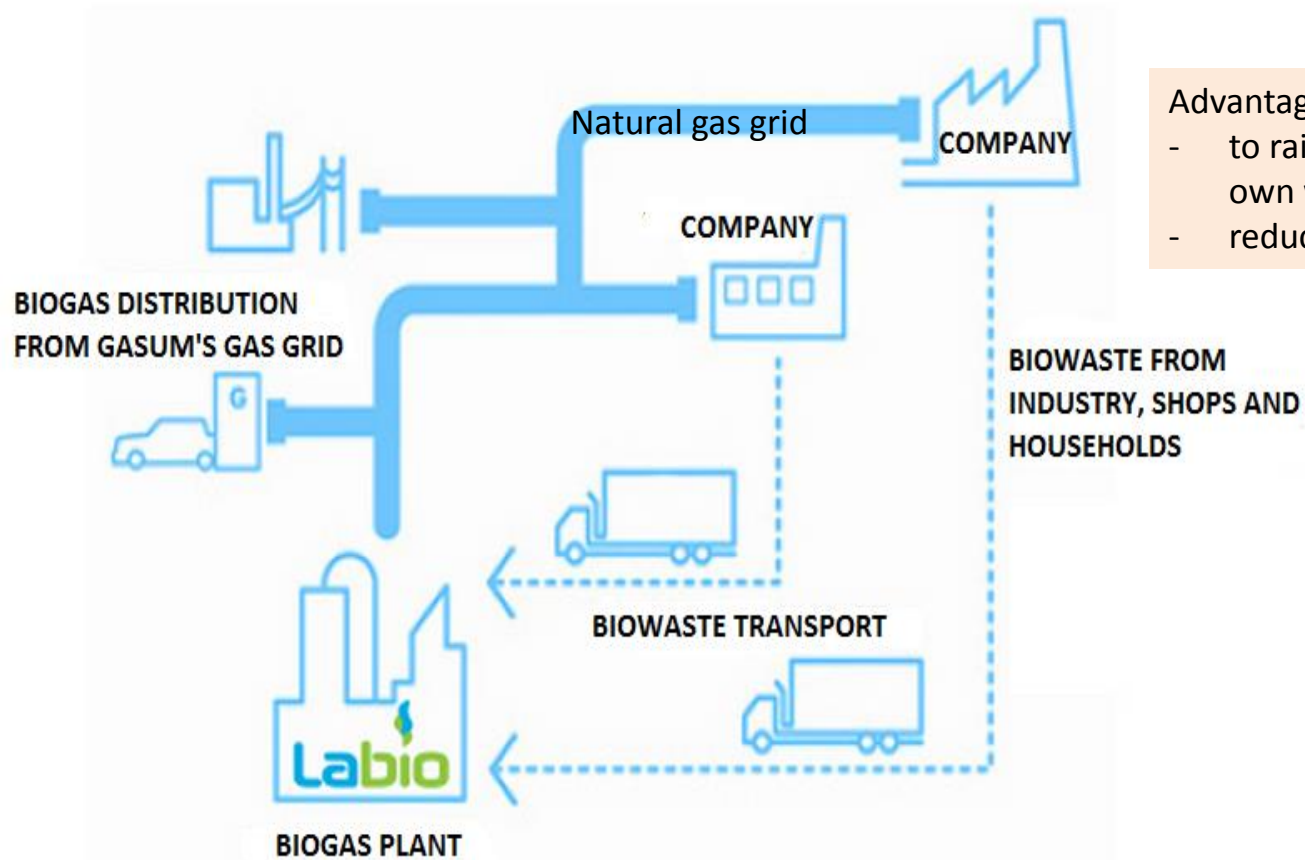


LABIO –business

- 70.000 tons/a treatment services
 - Municipalities and public companies
 - Waste water treatment plants (10 000 t/a + 12 000 t/a)
 - Waste market operators
- 50 GWh/a biogas production
 - Fuel for vehicles and industry via Gasums gas grid
- 20.000 t/a compost
 - for agriculture fertilizer (cornfield: barley, rye, wheat, oat)
 - Raw material for mold manufacturing

Business network

Recycled fuel biogas from your own waste material



Advantages for enterprises:

- to raise recoverability of own waste
- reduce carbon footprint

Compost products

Nutrients

	%TS	t/a
Nitrogen	3,10 %	443
Phospor	1,23 %	176
K	1,13 %	162
Ca	1,77 %	253
Mg	0,83 %	119
S	0,91 %	130

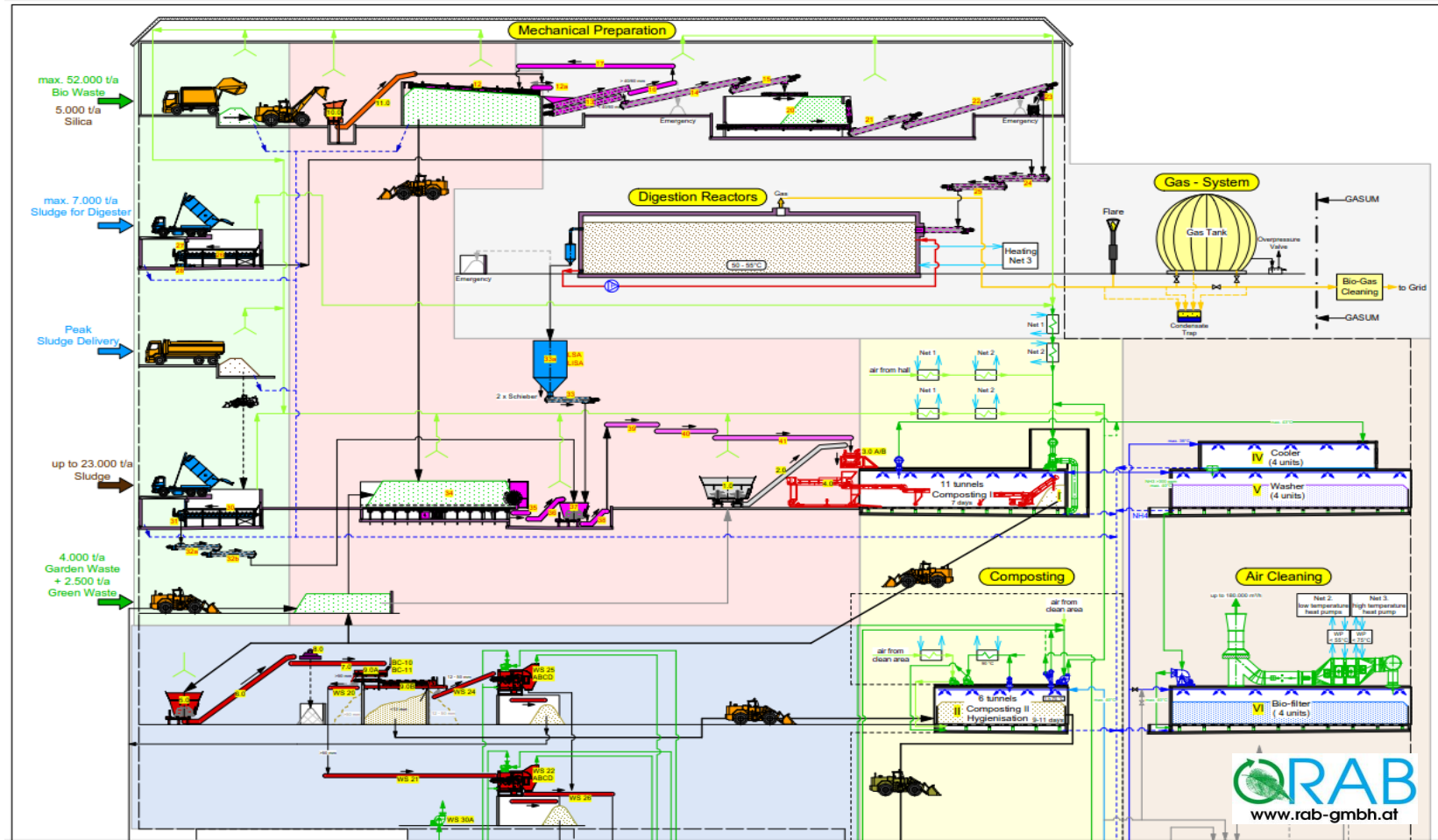
	kg/ha	ha
Nitrogen	120	3 694
Phospor	30	3 527



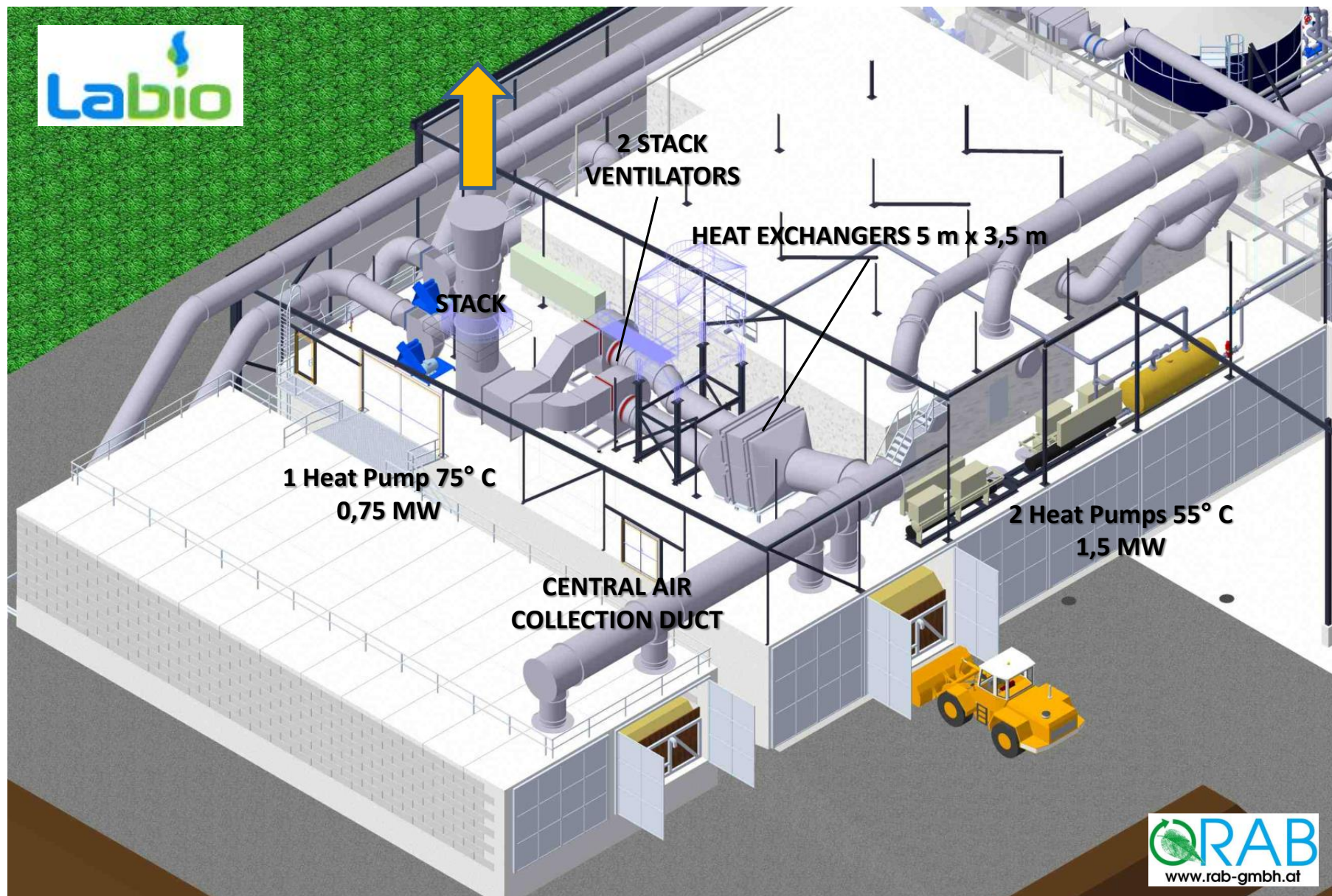
Lahti Digestion and Composting plant



THE PRINCIPLE PROCESS SCHEME



HEAT RECOVERY FROM PROCESS AIR – up to 2,25 MW

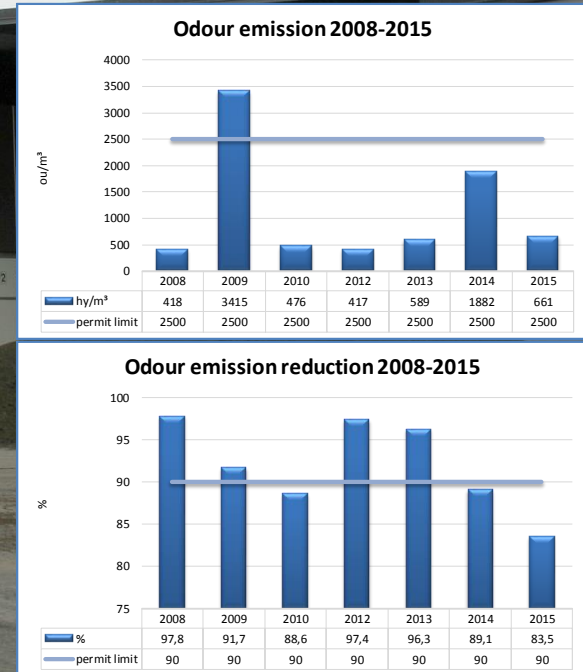


Labio Enviromental friendliness

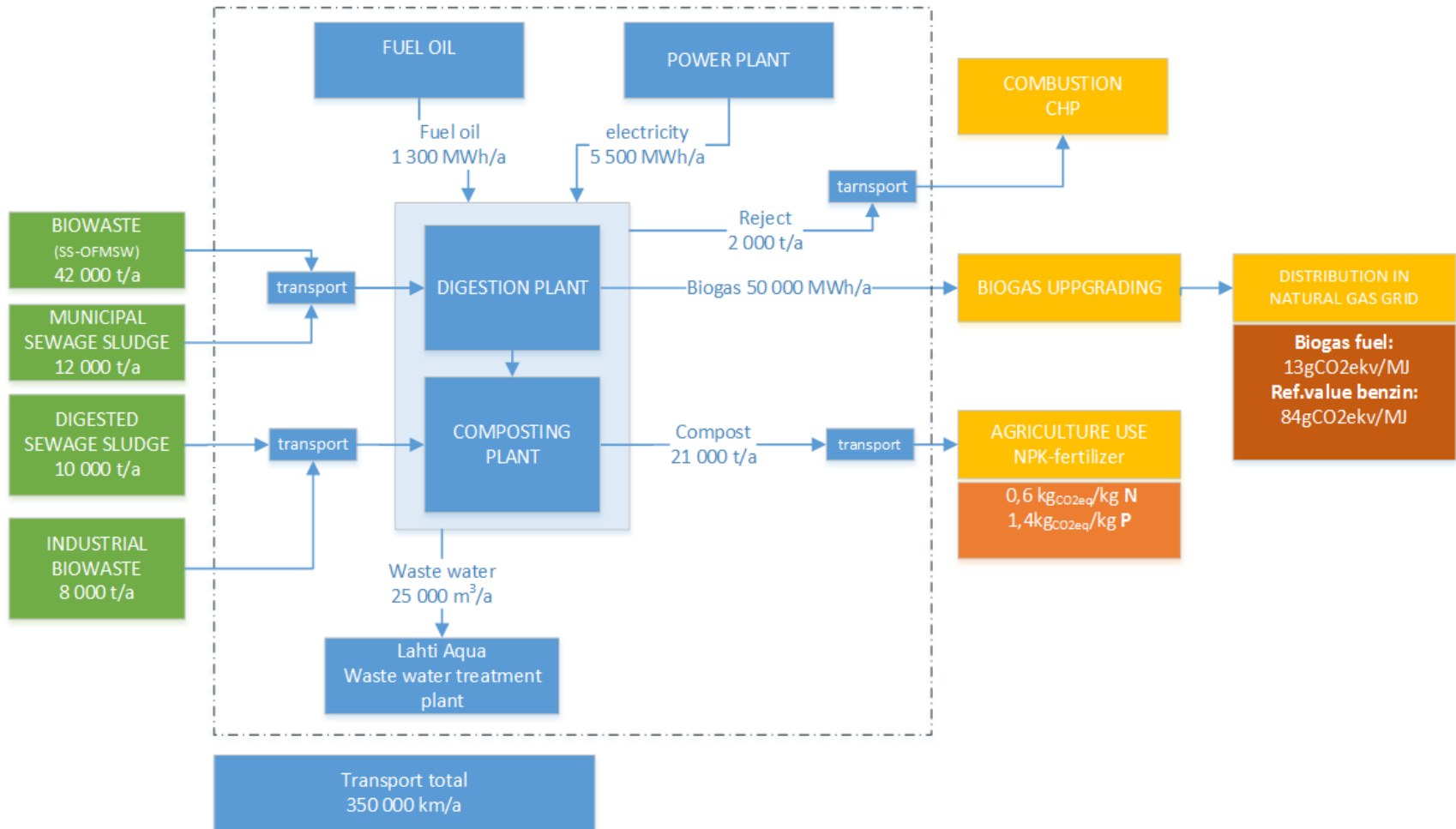
Biological odour emission processing system

Permit max. emission level 2500 ou/m³, reached level <500 ou/m³

Waste water is channelled to Lahti Aqua treatment plant



Massflow, energy balance and carbon footprint



N and P fertilizers carbon print

Nitrogen	kgCO _{2,eq.} / kg N	
Yara Glomfjord	3	Yara 2014
Yara Porsgrunn	2.8	Yara 2014
Yara Siilinjärvi	3.1	Yara 2014
Yara Uusikaupunki	3.3	Yara 2014
Yara Rostock	3.2	Yara 2014
Yara Sluiskil	2.5	Yara 2014
EU BAT	3.6	Yara 2014
EU keskiarvo NH ₃ tehtaat	7.8	Yara 2014
Ammonium nitraatti	3.5	Brentrup & Pallière 2014
N-fertilizer	5.9	BioGrace 2015
Ammoniakki	1.9	Wood & Cowie 2004
Nitrogen in compost (Labio)	0.6	
Phosfor	kgCO _{2,eq.} / kg P	
Fosfori	2.7	Winnipeg. 2012
Superfosfaatti TSP	5.5	BioGrace 2015
P ₂ O ₅	2.3	BioGrace 2015
TSP Eurooppa keskiarvo	2.5	Wood & Cowie 2004
Phosforin compost (Labio)	1.4	

- J. Havukainen; V. Uusitalo ; Lappeenranta University of Technology; 2016



Candle light from biogas plant start up

Thank you