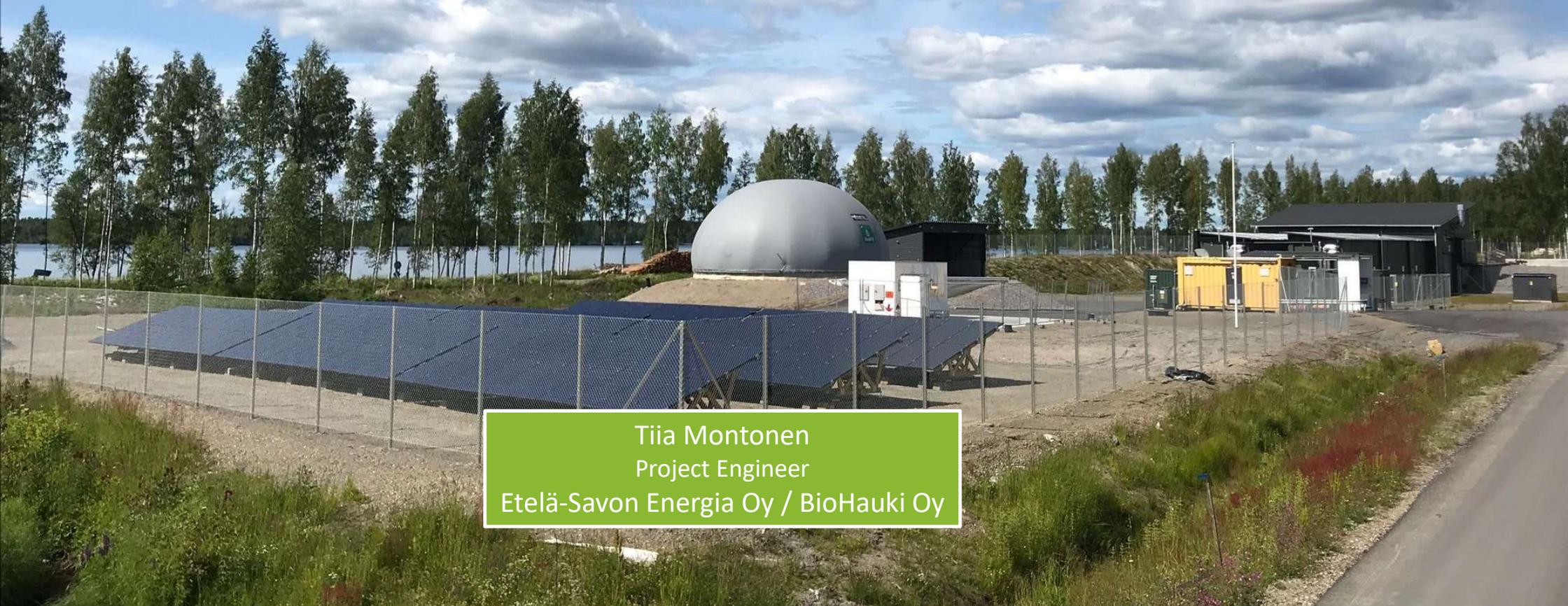


BioHauki Oy

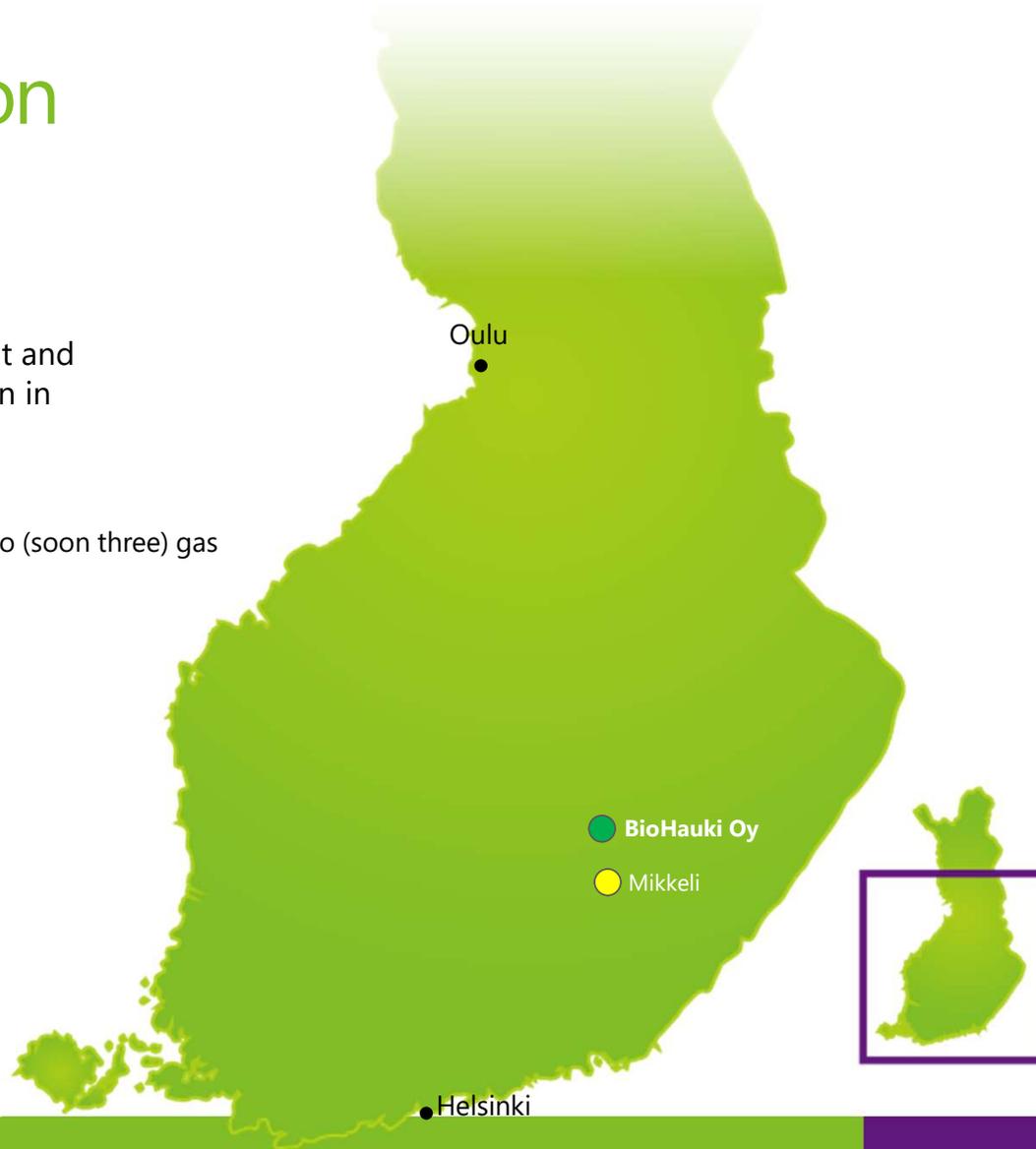
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Tiia Montonen
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Location

- BioHauki Oy biogas plant and biomethane filling station in Haukivuori
- Another biogas plant and two (soon three) gas filling stations in Mikkeli



About the company

- Founded in 2013
- Owned by Etelä-Savon Energia Oy (ESE) and 13 locals, mostly farmers from Haukivuori
- Idea came from the local farmers who saw the need for a biogas plant
- Construction works started in the autumn of 2016 and the commissioning was during the summer 2017
- Huge technical problems appeared during the commissioning and the original contractor went bankrupt in autumn 2018
- Most equipment renovated or replaced with new ones during 2019-2020 and new start-up 2020
- The main goal is to upgrade biogas to biomethane and sell to ESE (gas distributor) as vehicle fuel



Feedstock

- Feedstock is from the co-operative farms
- Feeds in process
 - Cow manure (dry and wet)
 - Chicken manure
 - Plant based biomass
- Max. 14 000 ton/year based on the environmental permit
- Max capacity atm 8000 ton/year with 2 reactors



The plant

- Two reactors
 - Mesophilic (35-43°C), on-going dry fermentation process
 - Dry matter content approx. 21-23 %
 - Retention time in the reactor approx. 30 days
- The methane (CH₄) content of the biogas produced ~55 %
 - To the boiler -> heat production OR
 - To the upgrading unit -> cleaning -> compress -> vehicle fuel
 - With the current feedstock biogas production potential approx. 310 000 m³ raw biogas /year
- Digestate residue separated into dry and wet fraction with screw press
 - back to the farms to be used as an organic fertilizer



Common worries and solutions

Odour emissions

- Treatment by ozonization

Urban run-offs and sewage water

- Closed process - > no waste
- Yards asphalted in the treatment areas of the feedstock and digestate

Noise

- Noisy appliances indoors or in containers

Air emissions

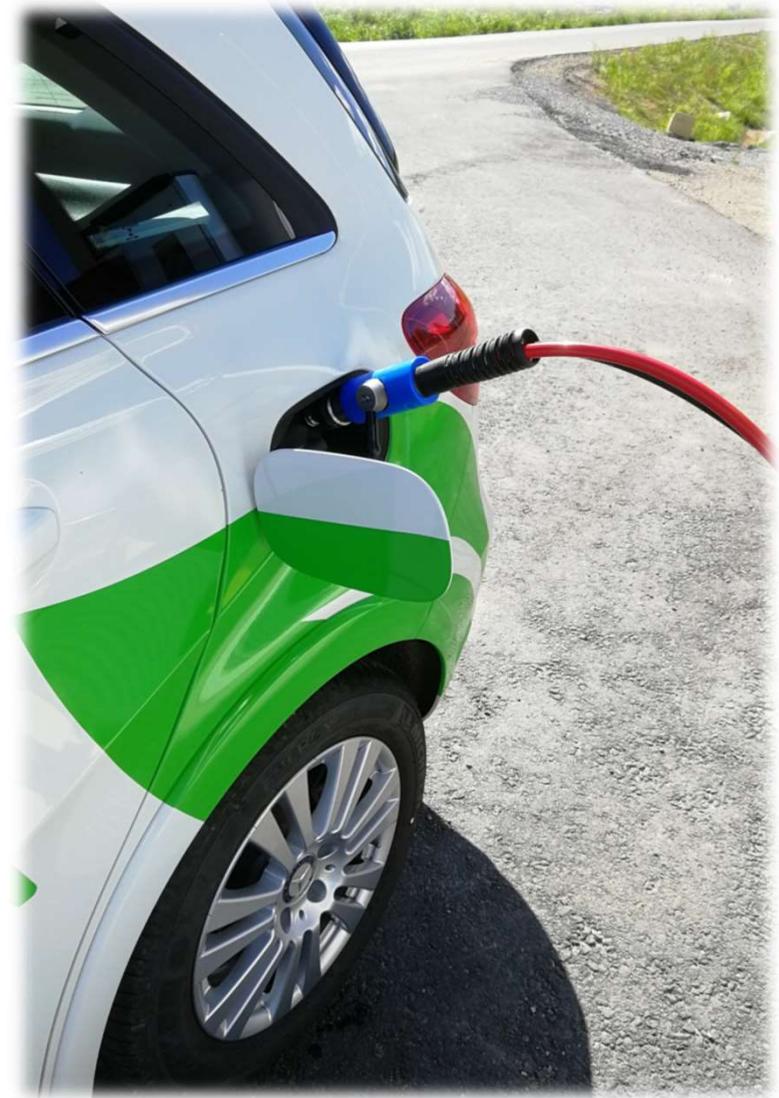
- Closed, gastight process
- Gas boiler as a safe system

Benefits 1/2: digestate as a fertilizer

- Digestate is better fertilizer than manure as such
 - The total ratio of the nutrients doesn't change but nitrogen becomes soluble
 - > ammonification, part of the feed's organic nitrogen becomes ammonium nitrogen
 - > transform mostly to nitrate in the ground
 - > easily utilized by the plants
- Digestate is separated to dry and wet fractions by screw press
 - Both still contain nitrogen and phosphorus but the nutrient ratio changes
- While using digestate as a fertilizer the use of chemical fertilizers can be reduced
- Digestate is almost odourless

Benefits 2/2

- Biogas plant reduces GHG emissions
 - The plant prevents methane emissions resulting from the decomposition of organic material
 - Biomethane replaces fossil fuels
 - > Carbon-neutral fuel
 - > No particulate emissions
- Nutrients recycled and energy recovered
 - > True circular economy!



Thank You for
Your interest!

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