### Renewable energy?



THE BIGGEST PROBLEM GLOBALLY:

NO STORAGE
(WIND, SOLAR, HYDRO)

methane, CH4





methane, CH4 can be produced using catalysts





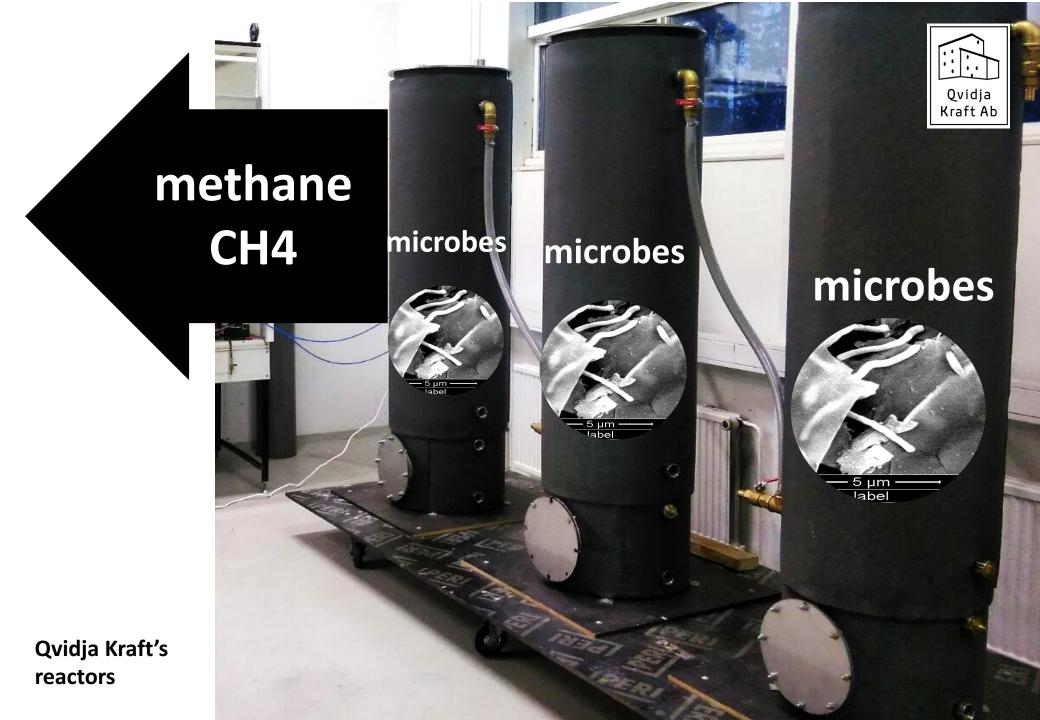
in a temperature of a couple of hundred C° without using living cells

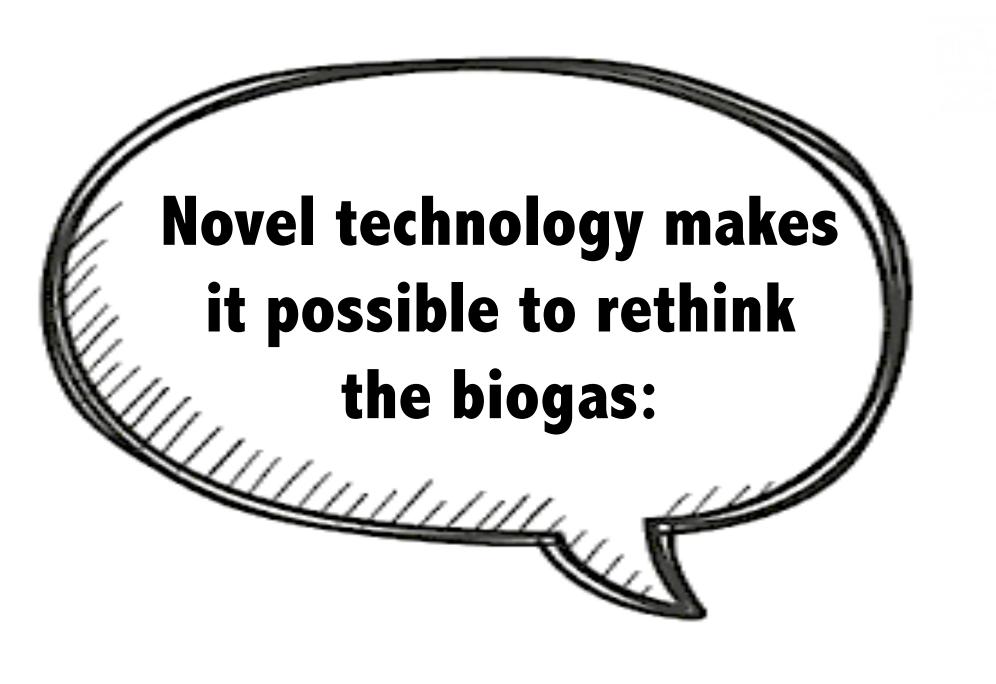
in a temperature of 50–60 C° using methane microbes

= THERMAL METHANATION, NOT WORKING DUE TO THE ENERGY BALANCE

#### **BIOMETHANATION**





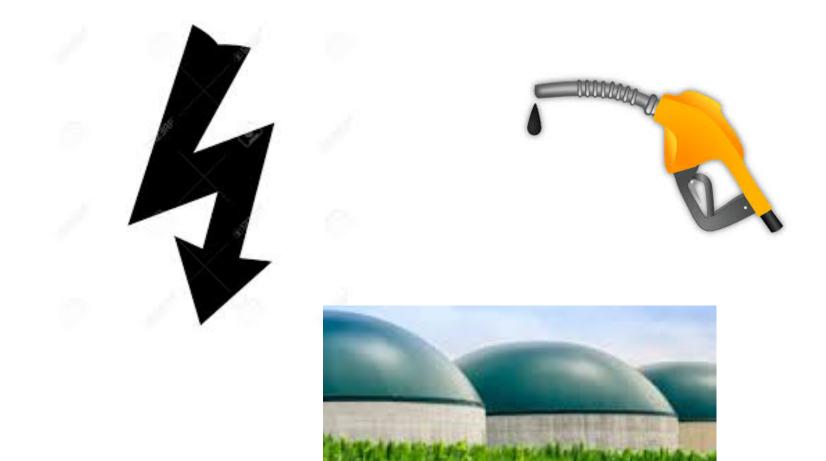


# Power to gas: storage is the key = biomethanation CO2 + 4H2 -> CH4 + 2H20



## After biomethanation whatever is needed



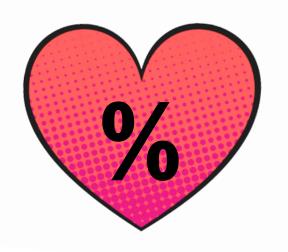


## Biomass: emphasis always on





# Carbon balance



efficiency