

# AVANGARDCO

**Ellmann Engineering (EE) GmbH**  
**Process solutions for poultry manure**





**AVANGARDCO** is one of Europe's largest Egg Producer

- 11.2 million laying Hens
- 3.5 billion eggs per year
- Largest hatchery in Europe
- Operational experience with a biogas 6 MW plant in the Kherson region (destroyed as result of the Russian war of aggression).

**EE** International awarded Technology. Over 20 years of experience in the design and construction of numerous biogas plants worldwide in the range of 45 kW to 12.0 MW. We are specialists in processing poultry manure and other high ammonium substrates.

- Planning and detail design of customized processes
- Monitoring of the construction
- Aftersales Service

**We are planning to build a biogas plant with  
AVANGARDCO company.**

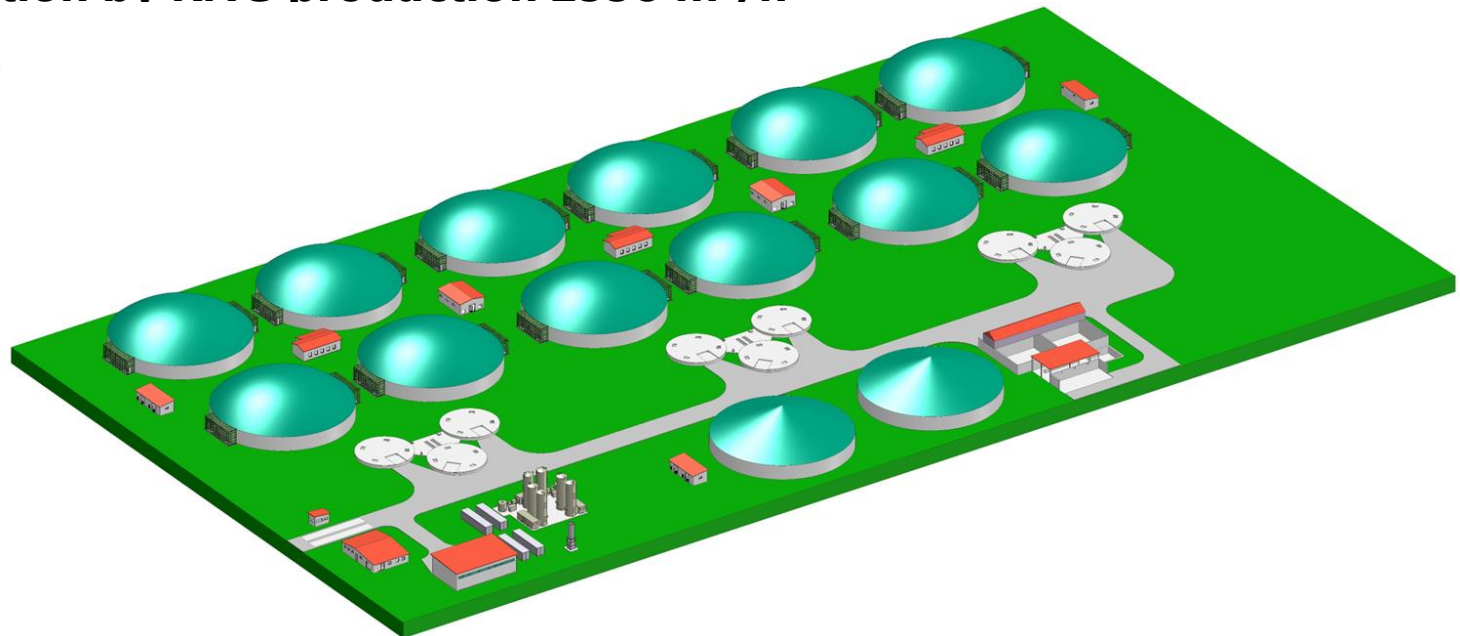
Brief Discription of the venture:

- **Input**

- 750 t/d Layer Manure
- 60 t/d Straw

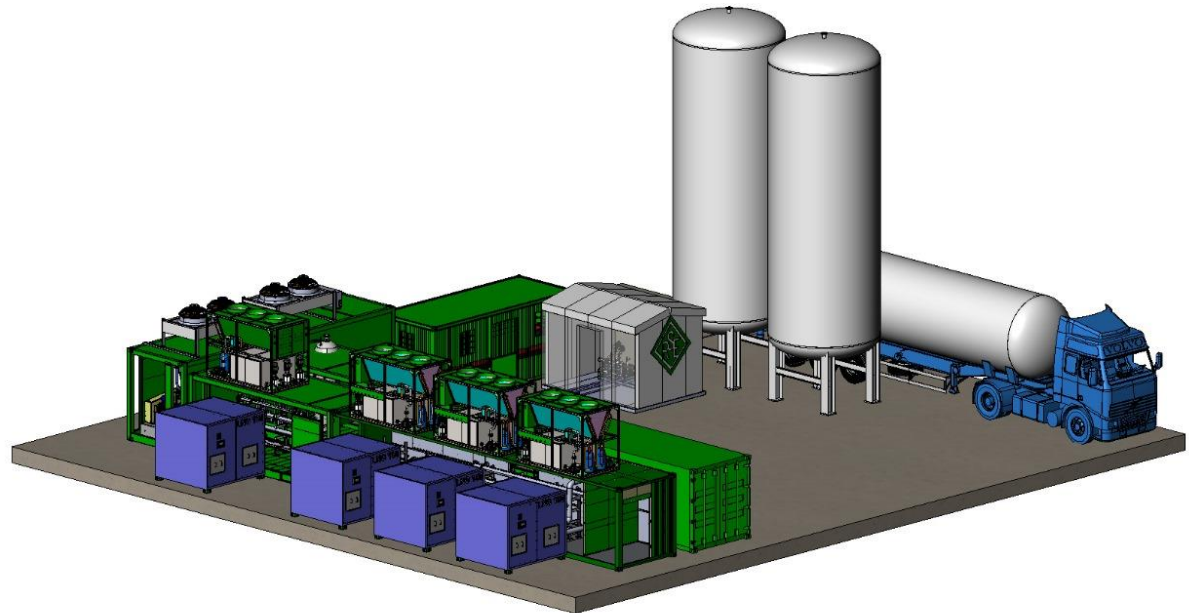
- **Biogas production 4262 m<sup>3</sup>/h**

- **Biogas utilization by RNG production 2558 m<sup>3</sup>/h**

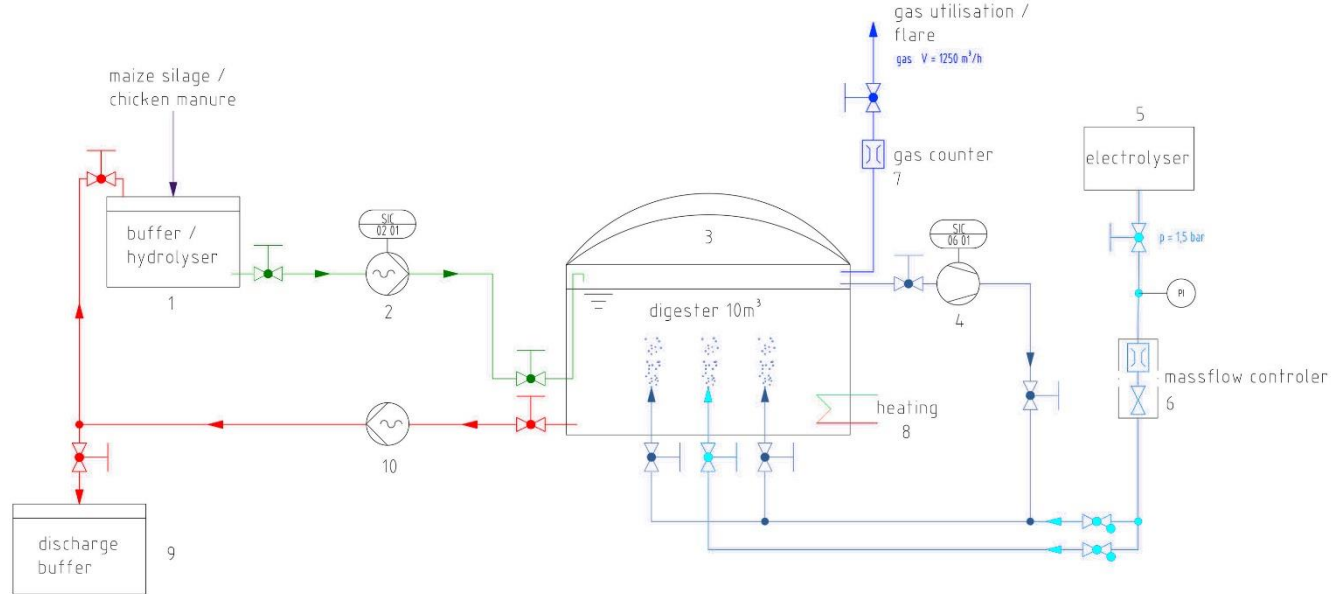


## Biogas Upgrading - RNG - LNG

- 22.4 Mio Nm<sup>3</sup>/a RNG
- 14.4 Mio t/a LNG
- 1700 Nm<sup>3</sup>/h Food Grade CO<sub>2</sub> - 12.2 Mio t/a Green CO<sub>2</sub>
- New and highly efficient Technology for Production of LNG







## New and innovative technology to produce additional methane and increase the efficiency of biogas plants:

- In-situ Application of H<sub>2</sub> for increased Methane production and concentration of up to 20-30% - **lifts RNG production from 22.4 to 29.12 Mio m<sup>3</sup>/a**
- Combination with Ex-sito **adds another increase from 29.12 to 49.5 Mio m<sup>3</sup>/a**
- **Achievements:**
  - Less Substrate (manure, waste) required for same RNG output
  - Smaller AD Plant and reduced CAPEX / OPEX
  - Significant higher Efficiency



**Ellmann Engineering and AVANGARDCO are planning a new and pioneering project for an AD plant.**

- Digestion of up to 750 tons of laying hen manure per day with new features for ammonia reduction and sand and grit separation.
- Produktion von 49.5Mio Nm<sup>3</sup>/a RNG
- **Innovative development stages:**
  - In-situ Hydrogenotrophic Methanisation will be integrated in a new developed Process
  - Increase of the Methane production is targeted up to 30% without additional substrate and in same digester volume
  - Integration of Ex-sito Methanisation to raise the Methane content to 90% plus in a biological process

**Thank you for your attention!**

