



*Tavria State Agrotechnological University*

# **Intensification of the fermentation of waste in biogas plants by electromagnetic stimulation of methane-producing bacteria**

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# Project Summary

- ◆ **OUR GOAL** is to apply techniques of low-intensity millimeter-band electromagnetic waves radiation of anaerobic bacteria to intensify the process of methane fermentation of biomass and reduce process cycle time of biogas plants.
- ◆ **GROUNDS**
  - the urge for diversification of Europe's energy supply, increasing the share of renewable energy and reducing reliance on imported energy,
  - a reduction in greenhouse gas emissions,
  - production of environmentally friendly organic fertilizer for agriculture
- ◆ **BIOGAS** - mixture of 60-80% methane, 20-40% carbon dioxide

# Problem and Known Solutions

- ◆ **PROBLEM** – technological cycle of production of biogas is 1-30 days, depending on the substrate, that needs large digesters.
- ◆ **KNOWN SOLUTIONS**
  - optimization of digester design,
  - parameters optimization:  $t^{\circ}$ , pH, substrate mixing frequency,
  - use of biological catalysts.

# Proposed Solution

- ◆ The impact of low-intensity millimeter-band electromagnetic waves on anaerobic methane-producing bacteria
- ◆ **Ways to use it:**
  - control and management of the life processes of cultivated methane-producing anaerobic bacteria using millimeter-band electromagnetic waves,
  - development of an automated system of electrophysical stimulation of anaerobic bacteria directly in the biogas digester.

# We are Looking for

## ◆ Scientists:

- Microbiology,
- Microwave technology.

# Contacts

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