

NGO "Infrastructure Council" together with Bioenergy Association of Ukraine UABIO (<https://uabio.org/en/>) address Biogas Associations and producers of biogas equipment in Europe with the following.

1. Producers of Modular/Small Biogas Technology to Support Efforts to Decentralize Energy in Ukraine

Overview: Decentralized energy generation is crucial for enhancing energy resilience and sustainability in Ukraine. A key component of this strategy is establishing a network of biogas and biomethane plants strategically located based on feedstock availability, proximity to district heating systems, natural gas grids, and electrical grids.

The current request involves developing business tactics for the rapid deployment of biogas plants in Ukraine, addressing the potential lack of awareness among Ukrainian businesses about biogas/biomethane technology, financial aspects (costs and benefits), project duration until "ready-to-operate," and other relevant factors.

A standardized, well-established program with a guaranteed "price list" and cost/benefit assurance, supported by European OEMs and integrators, can significantly simplify the "take-away" approach for the Ukrainian market, as well as the application of any funding, grants, and support programs.

This paper also aims to secure support from the WBA for the approach design and mapping, as well as to identify several optimal cost-quality solutions from OEMs for setting up this program.

Objective: To ensure the rapid and optimal deployment of biogas installations that meet the following key requirements:

- Standardized
- Quickly installable
- Cost-effective
- Minimal civil engineering requirements
- High quality
- Expandable

Proposed Solution:

1. Standardized Digesters:

- Utilize "glass-coated," bolted tank digesters that require only a simple concrete flat foundation.
- These digesters can be erected within days, with all civil engineering works prepared by local contractors based on standard design drawings.

2. Gas Holder:

- Install a double-membrane gas holder on top of the digester for efficient gas storage.

3. Expandability:

- Achieve expandability by installing multiple digesters of the same size as needed, based on feedstock volume availability. This can be done either before or after the plant starts up.

4. Building Structure:

- Employ metal structures with sandwich wall panels and inclined roof panels, insulated with at least 100mm of mineral wool, for housing equipment, control rooms, and laboratories.

5. Equipment and Components:

- Standard designs for waste reception, pretreatment, feeding systems, balance tanks, and dewatering units.
- Deliver and install parts of the equipment in containers or on skids, requiring only a concrete slab and appropriate connections.

6. Biogas Upgrade (Biomethane):

- Biogas upgrading to biomethane can be installed post-initial setup.
- Use containerized, pretested solutions from the manufacturer that are installed on a concrete slab with necessary biogas and electrical connections.
- These systems can be integrated before or after the plant start-up, depending on feedstock availability and connectivity to the natural gas grid.

Benefits:**• Standardization:**

- The configuration using "glass-coated" metal bolted tanks is widely accepted and can be delivered by any OEM, ensuring consistency and reliability.

• Rapid Deployment:

- The standardized and pretested solutions facilitate a swift and efficient setup of biogas plants, minimizing downtime and accelerating the decentralization of energy in Ukraine.

• Cost-Effectiveness:

- Reduced civil engineering requirements and the use of local contractors for foundation preparation lower overall project costs.

• Scalability:

- The modular nature of the system allows for easy scalability, enabling the addition of more digesters as feedstock availability increases.

• Quality and Reliability:

- High-quality materials and standardized designs ensure long-term reliability and minimal maintenance requirements.

• Environmental Benefits:

- Promotes the use of renewable energy sources, reducing reliance on fossil fuels and lowering greenhouse gas emissions.

• Economic Growth:

- Creates job opportunities for local contractors and technicians, contributing to economic development in the regions where plants are installed.

• Energy Security:

- Enhances energy resilience and security by decentralizing energy generation and reducing dependence on centralized energy systems.

Simplified Selection and Supply Approach:

- **Clear and Transparent Process:**
 - Establish a clear and transparent process for selecting suppliers and integrators, ensuring that all potential stakeholders understand the requirements and benefits.
- **Guaranteed Price List:**
 - Provide a guaranteed price list for the standardized components and solutions, offering financial predictability and ease of planning for Ukrainian businesses.
- **Cost/Benefits Guarantee:**
 - Offer a cost/benefits guarantee supported by European OEMs and integrators, assuring businesses of the economic viability and return on investment for biogas technology.
- **Comprehensive Support:**
 - Provide comprehensive support, including training and education for local contractors and businesses to ensure smooth implementation and operation of biogas plants.
- **Fast Track Deployment:**
 - Implement a fast-track deployment strategy with pretested, containerized solutions that can be quickly delivered and installed, reducing lead times and accelerating project timelines.

By adopting this simplified selection and supply approach, Ukraine can efficiently transition to a more sustainable and resilient energy model, leveraging biogas technology to support its decentralized energy goals.

2. Proposal to Supply CHP Systems for Decentralized Energy Generation in Ukraine

Objective: To provide Combined Heat and Power (CHP) generators and gas reciprocating (piston) engines that utilize biogas, biomethane, and natural gas for electricity production, thereby promoting the decentralization of energy generation in Ukraine.

Concept: CHP systems are essential for decentralizing energy generation. Standardized, containerized CHP generators can be easily installed on concrete slab foundations near electrical grid distribution stations, natural gas sources, biogas/biomethane plants, and thermal energy consumers.

This paper also aims to secure support from the WBA for developing a "CHP hub" to lead Ukraine's decentralized electrical generation. The "CHP hub" will ensure businesses are well-informed and secure regarding available CHP options, while optimizing cost-performance and providing ongoing support from manufacturers/OEMs, thereby preventing Ukrainian businesses from chaotically seeking necessary units in the market for a double price, and to be disconnected with manufacturer support.

Implementation Plan:**1. Standardization and Installation:**

- Utilize standardized, containerized CHP generators for straightforward installation.
- Position generators near electrical grids (preferably 10kV), natural gas, biogas/biomethane sources, and thermal energy consumers.

2. Equipment Options:

- Offer new, second-hand, or refurbished CHP gas piston engines.
- Provide generators with either 400V or 10kV outputs (preferable).
- Ensure engines requiring overhauls after 60,000-80,000 hours of operation are:
 - New
 - Operated for less than 2-3 years
 - Recently overhauled
- Deliver CHP systems with comprehensive technical documentation, including manuals, overhaul records, operation time guarantees, and information on potential technical support and spare parts sourcing.

3. Certification and Fuel Flexibility:

- Ensure CHP systems are certified for operation on natural gas, biomethane, and biogas (after pretreatment).
- Allow for flexible installation near natural gas grids or biogas/biomethane plants.
- Ensure availability of EU certification.

4. Electrical Connection (Optional):

- Provide a standard power supply cabinet, preferably 10kV, with standard solutions for grid synchronization.

5. Heat Recovery Systems (Optional):

- Equip CHP systems with comprehensive heat recovery systems (air, jacket water, oil, flue gases).
- Utilize recovered thermal energy for district heating systems or to heat biogas plant digesters.

Benefits: This approach ensures a robust, flexible, and efficient energy infrastructure, enhancing the sustainability and reliability of energy generation in Ukraine.

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