**GENERAL QUESTIONNAIRE for BIOGAS PLANTS for the design of an anaerobic wastewater and/or waste treatment plant including biogas utilization:**

Note for End User/ Project Intender: Preferably let your site engineer fill the form and in case any detail is not available in detail, do not retain it with you, JUST SENT IT TO US.

**[A). COOPERATION PARTNER / REPRESENTATIVE G E C INC:**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State\_\_\_\_\_\_\_\_\_\_ ZIP #: \_\_\_\_\_\_\_\_\_\_ Country:\_\_\_\_\_\_\_\_\_\_\_\_\_

Person in charge: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Telephone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Fax: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ e-mail: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**B). END USER / PROSPECT:**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ZIP #: \_\_\_\_\_\_\_\_\_\_ State\_\_\_\_\_\_\_\_\_\_\_ Country: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

person in charge: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Telephone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Fax: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ e-mail: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Website: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**I. Kind of plant:** (please choose)

a). Agricultural Facility :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b). Industrial Enterprise :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c). Sewage Treatment Plant :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**II. Substrates:**

**II.1. Agricultural Substrate**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| S. No. | species of animal / agri. waste | quantity | manure  kg/m³/a | dry matter  % | organic. dry matter  % | Press Mud / Spent Wash  MT or m³ / Day |
| 1 |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |

**II.1.1 Analysis (Data as available)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Type | 1 | 2 | 3 | 4 | 5 |
| TS  min / max. / average |  |  |  |  |  |
| TVS  min / max. / average |  |  |  |  |  |
| COD |  |  |  |  |  |
| TVA (Total Volatile Acetates) |  |  |  |  |  |
| C/N Ratio |  |  |  |  |  |

**II.2. Industrial wastewater**

**II.2.1 Analysis (Data as available)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Type | 1 | 2 | 3 | 4 | 5 |
| Origin, kind (please indicate details for every larger wastewater  stream) |  |  |  |  |  |
| COD (mg/l) resp. DM(%)  min / max. / average |  |  |  |  |  |
| BOD5 (mg/l) resp. oDM(%)  min / max. / average |  |  |  |  |  |
| TKN (mg/l) |  |  |  |  |  |
| Phosphorous (mg/l) |  |  |  |  |  |
| suspended solids (mg/l) |  |  |  |  |  |
| sulphate (mg/l) |  |  |  |  |  |
| Total sulphur (mg/l) |  |  |  |  |  |
| pH (-) min / max. / average |  |  |  |  |  |
| Alkalinity (mg CaCO3/l) |  |  |  |  |  |
| temperature (°C)  min / max. /average |  |  |  |  |  |

**II.2.2. Flows**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Type | 1 | 2 | 3 | 4 | 5 |
| m³/h  min / max. / average |  |  |  |  |  |
| m³/d  min / max. / average |  |  |  |  |  |
| Hours per day |  |  |  |  |  |
| days / week |  |  |  |  |  |
| weeks / year |  |  |  |  |  |

**II.3. Municipal and commercial waste and sludge**

**II.3.1. Quantities**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 |
| Description  (please give details for each larger flow stream) |  |  |  |  |  |
| Dry matter (%) |  |  |  |  |  |
| organic dry matter (%) |  |  |  |  |  |
| Temperature (°C)  min / max. / average |  |  |  |  |  |
| quantity (m³ resp. t / d)  min / max. / average |  |  |  |  |  |
| Hours per day |  |  |  |  |  |
| Days per week |  |  |  |  |  |
| weeks per year |  |  |  |  |  |

**II.4. Sewage Sludge (Septage)**

**II.4.1. quantities**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 |
| Description  (please give details for each larger flow stream) |  |  |  |  |  |
| Dry matter (%) |  |  |  |  |  |
| organic dry matter (%) |  |  |  |  |  |
| Temperature (°C)  min / max. / average |  |  |  |  |  |
| quantity (m³ resp. t / d)  min / max. / average |  |  |  |  |  |
| Hours per day |  |  |  |  |  |
| Days per week |  |  |  |  |  |
| weeks per year |  |  |  |  |  |

**III. Description of the site for the biogas plant**

a.) soil/max. surface pressure (t/m²): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b.) ground water level (m): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

c.) distance to next neighbour (m): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

d.) available space for the plant (m x m): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

e.) Is the site developed (water, electricity): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

f.) others : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**IV. Utilization of the digested material**

**IV.1. Kind of utilization**

a.) agriculturally in liquid form Ο yes Ο no

b.) agriculturally in solid form Ο yes Ο no

c.) after treatment for production of quality compost Ο yes Ο no

**IV.2 Storage of the liquid fertilizer**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Kind of storage | | | | Dimensions | | | | |
| Material | Closed | Open | Volume | Length  m | Width m | Depth m | Inventory | planned |
|  |  |  | m³ |  |  |  |  |  |
|  |  |  | m³ |  |  |  |  |  |
|  |  |  | m³ |  |  |  |  |  |
|  |  |  | m³ |  |  |  |  |  |
|  |  |  | m³ |  |  |  |  |  |
|  |  |  | m³ |  |  |  |  |  |

**IV.3 Utilization of the liquid and solid fertilizer**

Present utilization of liquid and solid fertilizer

1. in own premises \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m³ manure/year

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ t droppings/year

b.) delivery to other companies: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m³ manure/year

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ t droppings/year

**V. After composting**

Is a composting system existing? If Yes Which system? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Which materials are used? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Present capacity (t/a)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Available capacities (t/a)? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Ο no Do you prefer a certain system? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is there a market for the compost? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Which quantities of the compost are required?

(DM, ODM, particle size, contraries,

heavy metal content, etc.) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**VI. Treatment plant for excess water**

As a result of the anaerobic degradation of the organic substances in the digester, excess water is produced in the digestion process (apart from utilization as liquid fertilizer).

Is there a possibility to use the excess water on the plant’s site?

(spraying on fields, humidification of windrows, etc.)

If yes, Quantities: \_\_\_\_\_\_\_\_\_\_\_\_\_ (m³/a)?

If no. What are the parameters for discharging into the public sewage network?

COD : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mg/l

BOD5 : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mg/l

TKN : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mg/l

NH4-N : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mg/l

NO3N : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mg/l

P : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mg/l

others : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mg/l

: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ mg/l

**VII. Gas Utilization**

**VII.1. Fore seen utilization:**

a.) direct combustion for heating purposes, etc. a) yes b) no

b.) gas motor drive with heat recovery for

generator-heating pump drive, etc. a). yes b). no

c.) feed drying - yes - no

others: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**VII.2. Present Energy Consumption**

**a.) Heating System**

Energy source

Fuel, gas coal, wood, etc.

Consumption per year

price Per day max. (if data available)

Per day min. (if data available)

**b.) Electrical System**

electricity consumption kWh pro year \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(in kWh/month if possible) max. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ min. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

electric connected load in kW \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

price per kWh \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Remarks: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**VIII. Site drawing:**

Please mark the desired location of the planned plant.

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*We thank you for efforts. In case of any questions, please do not hesitate to contact us.*

*On:* [***technology@globalenergycollaborations.com***](mailto:technology@globalenergycollaborations.com) ***& c.c. to*** [***sales@globalenergycollaborations.com***](mailto:sales@globalenergycollaborations.com)