



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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Technical code for large and medium-scale biogas engineering

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1 General provisions

1.0.1 In order to standardize the design, construction, installation, acceptance, operation, maintenance of large and medium-scale biogas engineering, AND to ensure project quality and safe production, this Code is hereby formulated.

1.0.2 This Code applies to the design, construction and installation, acceptance, operation and maintenance of the newly-built, expanded, rebuilt biogas engineering, which uses anaerobic digestion technology to process the agricultural organic waste, industrial high-concentration organic wastewater, industrial organic waste residue, sludge, is mainly for gas supply, has a biogas output of not less than 500 m³/d.

1.0.3 Large and medium-sized biogas projects shall actively adopt new technologies, new processes, new materials, new equipment, on the basis of constantly summarizing practical experience in production and construction, so as to achieve stable operation, reliable equipment, advanced technology, economic feasibility.

1.0.4 The design, installation, acceptance, operation and maintenance of large and

medium-sized biogas projects shall not only comply with this Code, but also comply with the current relevant national standards.

2.1.1 Biogas

A combustible mixed gas, which is mainly composed of methane, has a low-level calorific value not less than 17 MJ/m³ as produced by the digestion of organic matter, under anaerobic conditions, by microorganisms.

2.1.2 Biogas station

A place which uses anaerobic digestion technology to produce, purity, store biogas.

2.2 Abbreviations

CSTR - Complete stirred tank reactor USR - Upflow solid reactor UASB - Upflow anaerobic
sludge blanket reactor IC - Internal circulation anaerobic reactor EGSB - Expanded
granular sludge blanket reactor HCPF - High concentrations of plug-flow reactor

3.0.1 The design of the biogas project shall meet the requirements of comprehensive

utilization, environmental protection, occupational hygiene.

3.0.2 The construction scale of the biogas project shall be comprehensively determined, based on factors such as the source and nature of raw materials, user category and gas consumption. It should comply with the following requirements.

3.0.3 The quality of biogas, which is used for civil use, power generation, purification

compression, shall meet the requirements in Table 3.0.3.

3.0.4 The biogas project shall be equipped with facilities to ensure gas supply safety; the materials and equipment used shall meet the relevant provisions of the current national standards.

3.0.7 Biogas used for civil use shall be odorized. The odorizing device and odorizing

agent shall meet the relevant provisions of the current industry standard "Technical specification for city gas odorization" CJJ/T 148.

3.0.8 Biogas projects shall take measures to reduce noise, odor and other pollution; the

treatment of discharges shall comply with the relevant provisions of the current national environmental protection standards.

4.1.1 The site selection shall conform to the overall planning of urban and rural
construction. It shall meet the following requirements.

4.1.2 The overall layout of the station area shall be divided according to the production

area and production auxiliary area. It shall meet the following requirements.

4.1.3 The overall layout of the station area shall be reasonably designed, according to

the functions and technological requirements of various facilities in the station, combined with terrain, wind direction and other factors. Meanwhile it shall meet the following requirements.

4.1.4 Anaerobic digesters shall be arranged in groups; the distance between anaerobic

digesters and between anaerobic digesters and other facilities in the station shall meet the requirements of maintenance and operation.

5.0.1 The biogas transmission and distribution pipeline network shall be based on

factors, such as gas consumption and distribution, construction and operation of biogas users, after comparing multiple plans, to choose a technically economical, reasonable, safe, reliable medium and low-pressure gas supply plan. The design shall be carried out, to gradually form a ring-shaped gas supply pipeline network.

5.0.3 Medium-pressure gas supply should be equipped with a pressure regulating device; the process design of the pressure regulating device shall comply with the relevant provisions of the current national standard "Code for design of city gas engineering" GB 50028.

5.0.8 The design of indoor biogas pipelines, biogas metering, gas consumption

equipment for civil centralized gas supply shall comply with the relevant provisions of the current national standard "Code for design of city gas engineering" GB 50028.

5.0.9 The calorific value, water dew point, hydrogen sulfide concentration of the biogas, which is used for power generation, shall comply with the provisions of clause 3.0.3 of this Code. Other parameters such as temperature, pressure, pressure fluctuation, dust content shall comply with the technical requirements of the selected power generator sets.

6.1.1 For the biogas project, it shall prepare the construction program or construction

plan, according to design drawings, technical documents, equipment installation drawings and other materials. When it is necessary to change the design or substitute materials, it shall be implemented after obtaining the consent of the original design organization.