

TECHNICAL SERVICE OF BIOGAS DEVICES

Tolanboy Kholmiraevich Kayumov

*Andijan Institute of Agriculture and Agro-Technology, Senior Lecturer of
the Department of Use of Electric Energy and Pumping Stations*

Abstract. The article provides recommendations for the organization of technical service work aimed at ensuring long-term quality operation of biogas extraction devices. Also the sequence of work in the technical services of an organization of the map the sequence is clearly defined. There are listed possible inconveniences and measures to eliminate them.

Key words: biogas, bioreactor, startup, conditioning, scheduled maintenance, periodically examination, repair, maintenance.

Introduction. In the decision of the President of Uzbekistan dated May 26, 2017 No. 3012 "On the program of measures for the further development of renewable energy in 2017-2021, measures to increase energy efficiency in economic sectors and the social sphere" "expanding the use of renewable energy sources, reducing the energy capacity of production, implementing national scientific and technical developments and targeted implementation of tested international energy-saving advanced technologies".

The demand for energy is increasing day by day, and along with this direction, there is a demand to find a solution to environmental problems, to fully meet the modern requirements of energy production in the world. It is known that during the aerobic treatment of organic waste, there are no natural ways to capture the toxic gases and gels released into the atmosphere, and the work that is being done requires a long time. Anaerobic treatment of organic waste is one of the only possibilities today to obtain alternative energy and protect nature from pests and harmful gases, as well as to obtain high-quality organic fertilizer. Harmful gases released from any organic waste treated with this technology lose their power up

to 100 times, and organic waste turns into high-quality organic fertilizer in a short time.

The above-mentioned Decisions of the President, aimed at ensuring the increase of devices for obtaining biological gas from organic waste in most cases, pave the way for the introduction of devices for obtaining alternative fuel in each of the Republic's production organizations and farms with organic waste.

Modern biogas plants incorporate mixing, heating, biogas absorption and gas retention systems. So, it can be seen that there is a need for maintenance of parts and assemblies of devices. The fact that the liquid mass involved in the process of biomass digestion in biogas plants is non-Newtonian liquids requires the establishment of a maintenance system for the plant. In the analysis of the literature, the service of biological gas extraction devices is presented in different ways, but if they are not carried out in the sequence of scheduled maintenance and periodic inspection and repair, the anaerobic process in the device will cause artificial breakdown.

Based on this, at first, all parts of the device are examined. A complete inspection of damaged rubber seals, expired rubber seals and moving parts in need of lubrication is carried out. Connections of gas suction and collection containers are checked with soapy foam or special liquids. Non-repairable parts, parts and assemblies that cannot be repaired or completely used are identified. Depending on their condition, the technical condition is assessed and spare parts that do not need repair are found. According to the determined results, the need for current and capital repairs is determined.

The elements of device repair and maintenance can be listed as follows:

- Launch
- Refreshment;
- Provision of planned technical service;
- Periodic inspection;
- Repair;

- Save.

Start-up refers to the actual state of the gas volume when the bioreactor is filled with liquefied biomass of 92% humidity and the heating system is started. In most cases, the actual state of the gas volume is stated.

Conditioning is a technological process aimed at preparing the biogas plant for normal operation at the time of restart, during which all the parameters of the plant are adapted to the environment by gradually increasing. The purpose of this is that all new details and systems should be able to transition normally to the loaded state.

Scheduled technical service (maintenance) is the basis of all systems, which ensures high efficiency of the device, prevents premature wear and tear of parts, as well as increases in operational costs. It is forbidden to continue using the device without carrying out the next planned technical service on the biogas device. Scheduled technical service mainly cleans the external appearance of the device, i.e. heat protection devices, dust and mud. Loose systems are reinforced, liquid dripping or leaks in the heating system are stopped if detected, biogas leakage into the atmosphere is checked, filter media is cleaned, and monitoring instruments are checked for proper operation.

Periodic inspection works should be carried out mainly in accordance with the period of change of seasons. In addition to paying more attention to the heating system, a number of scheduled maintenance works are carried out. parts that are ending their service life will be replaced.

In the repair of biological gas extraction devices - individual parts are repaired in an aggregate way. In this case, the parts are replaced with completely new ones. Due to the composition of biological gas and organic matter, which consists of highly variable and aggressive substances, rubber gaskets and fast-expanding-condensing parts are destroyed (all faucets). Taking this into account, the parts and links named above will be completely replaced.

In the storage of bioreactors, it is required to be filled with biomass in a constant state of operation. When the bioreactors are kept in the state of receiving pure organic (100%) fertilizer from the biological gas mode, it is necessary to maintain its hermeticity, or when it is stopped for a long time, the parts and the bioreactor should be washed completely free of biomass and measures should be taken to prevent rusting of the walls. The gas holder is degassed and the sediments are completely drained and washed in soapy water and dried.

Summary. Timely and high-quality implementation of the above agrotechnical requirements will create a thorough basis for long-term (35...50 years) operation of devices for obtaining biological gas from organic waste. This, in turn, prevents unpleasant performance indicators such as premature bending and breakage of parts and eliminates the occurrence of excess costs. As a result of improving technical service literacy, it helps to partially eliminate the common defects of devices in our country, i.e., "Unsuccessful start-up".

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