IMPROVEMENT OF SECONDARY WATER TREATMENT TECHNOLOGY IN OIL AND GAS PROCESSING ENTERPRISES

Karimova Sadokat Amrilloyevna
Teacher, Bukhara Medical Institute
Quchqorova Shahodat Roziyevna
Senior teacher, Bukhara Institute of Engineering Technology

Annotation. The article discusses the improvement of the technology of secondary water purification at oil and gas processing enterprises, the main and stages of purification as mechanical, physicochemical, biological, post-treatment, desalination and sludge dehydration. The most optimal and effective methods are offered.

Key words: Secondary Treatment, Mechanical, Physicochemical, Biological, Additional Treatment, Desalting, Sludge Dewatering.

Most enterprises have developed and are implementing programs for reconstruction and technical re-equipment, which entails a change in the quality and quantity of wastewater. Let us note some urgent problems associated with the treatment of wastewater generated at the enterprise:

1. The inability of treatment facilities to ensure the degree of wastewater treatment to meet the requirements. Most of the treatment facilities of oil refineries and petrochemical enterprises were built decades ago, so the equipment used is physically and morally outdated. Another reason may be the change in the composition of the wastewater entering the treatment plant.

2. Lack of effective economic incentives for the rational use of water resources. The introduction of recirculating and re-sequential water supply allows to reduce not only the consumption of fresh water, but also to reduce the amount of discharged wastewater, thereby obtaining both economic and environmental benefits. The very presence of a circulating water supply system is a rather important indicator of the level of technical equipment of an enterprise.

3. Lack of facilities at the enterprises for the treatment of sediments released during treatment, with their subsequent disposal. Most often, waste is sent to open sludge collectors, which has a significant negative impact on the environment.

The low efficiency of wastewater treatment at existing facilities is due to the following reasons: - the lack of the ability to quickly change and rebuild the technological regime of treatment, depending on the composition of the incoming wastewater; - lack of equipment for processing sediments - oil sludge, actually captured oil foam from sand traps, oil traps, flotation devices and bottom sediment are pumped out for temporary storage into sludge ponds; - there are no biological treatment and wastewater treatment facilities with disinfection in the technological scheme, while there is no way to direct the stream of treated wastewater for re-consumption for the needs of the enterprise. As a result of the above, at the existing treatment facilities, it became necessary to build an improved local installation using modern technologies for wastewater treatment and energy efficient equipment.

The improved technological scheme includes the following stages: 1) mechanical cleaning; 2) physical and chemical cleaning; 3) biological treatment; 4) additional treatment; 5) desalination of treated wastewater by reverse osmosis; 6) dehydration of flotation sludge and excess activated sludge. Let's take a look at some of these steps.

Mechanical cleaning. Mechanical treatment is a pre-treatment method and is used to separate undissolved mineral and organic impurities from wastewater. At the stage of mechanical cleaning, it is proposed to use a rotating drum sieve, the advantages of which are fine mechanical cleaning, automatic washing, compactness of equipment, and the possibility of automation.

Physical and chemical cleaning (Table 4). Industrial waste water from petrochemical enterprises in most cases is a weakly concentrated emulsion or suspension containing colloidal particles with a size of 0.003-0.1 microns, fine particles of 0.1-10 microns, as well as particles with a size of 10 microns or more. For cleaning from fine and colloidal particles before biological treatment, physical and chemical treatment of waste water is provided, including coagulation, flocculation and flotation. This set of methods is most effective in the extraction of impurities with natural hydrophobicity (oil products, poorly soluble aromatic hydrocarbons,

synthetic detergents, etc.). Coagulation and flocculation significantly intensify the process of flotation of contaminants, since in this case the hydrophobization of particles increases, the size of aeroflocules increases, and, consequently, the forces that raise contaminants to the surface of the water in the flotation chamber increase. Mixing of waste water with coagulant and flocculant takes place in a pipe mixer. It is a closed, once-through reactor providing intensive mixing. Pipe mixer advantages:

- the uniformity of the formed floccules is achieved due to the accuracy in the reaction rate and mixing time;
- there is no back mixing;
- no agitator is required, therefore energy consumption is less;
- reagents are dosed in the middle of the pipes, as a result of which the consumption of reagents is minimal;
- compact design, requires a minimum of space.

Biological treatment. After physicochemical treatment, wastewater containing soluble organic substances, not removed at the stage of physicochemical treatment, is sent for biochemical treatment.

Desalting. To achieve the required parameters of treated wastewater for sulfates and chlorides, a reverse osmosis unit was designed. Membrane treatment allows a high level of wastewater treatment to be achieved with a relatively low level of energy consumption.

So, we have selected the optimal modern technologies for the implementation of wastewater treatment from a petrochemical enterprise based on the specified concentrations. The implementation of mechanical and physicochemical purification, a full cycle of a two-stage process of biological oxidation of organic pollutants will ensure a decrease in the concentration of harmful impurities to the values of the maximum permissible discharge of treated water. This technology ensures the achievement of the standard indicators established for the return of waste water to the recycling water supply system.

BIBLIOGRAPHY

1. Ksenofontov B.S. Water and soil purification by flotation. - M.: New technologies, 2004. - 224 p.
2. Reverse water supply of industrial enterprises / D.V. Pavlov, S.O. Varaksin, A.A. Stepanova, V.A. Kolesnikov // Plumbing. - 2010. - No. 2. - P. 30–39.
3. Pavlov D.V., Varaksin S.O., Kolesnikov V.A. Modernization of treatment facilities of galvanic production // Sanitary engineering. - 2010. - No. 3. - P. 26–35
4. Bakirova H.B. Teaching foreign language terminology at non-language universities. International journal of discourse on innovation. Integration and education. Volume: 01 Issue: 01. 2020 http://summusjournals.uz/index.php/ijdiie
5. Bakirova H.B. Formation of terminological competence in ESP education. Novateur publications. Journal NX- A Multidisciplinary Peer Reviewed Journal, ISSN No: 2581 – 4230 VOLUME 6, ISSUE 11, India.-2020. P 63.
6. Bakirova H.B. Formation of lexical skills in learning foreign language terminology in a non-language university/ Emergent: journal of educational discoveries and lifelong learning (EJEDL) ISSN 2776-0995 Vol. 2, Issue 5, 2021, Indonesia.
7. Bakirova H.B. Terminological competence of the specialist in training vocabulary of specialty/ Web of scientist: International scientific research journal. ISSN 2776-0979 Vol. 2, Issue 5, 2021, Indonesia.