STUDY OF PROCESSING LIQUID MEDIUM OPTICAL RADIATION

T. Knizhka, Ph.D.

L. Chervinsky, Ph.D.

A study of energy efficiency flowsheets bulk liquid media exposure. The parameters by which to assess possible energy efficiency of specific technological scheme irradiation volume, which will help to improve it.

Ultraviolet radiation exposure liquid media, electro-technological processes.

Optical radiation – a purposeful process of impact energy on the material environment that has certain properties and limited spatial coordinates. An important feature of this process is that the environment interacts directly with optical energy, has the ability to obtain new quality material, inaccessible to the natural process.

Currently, there are about forty major technological schemes irradiation of liquid media with different power characteristics of [1].

The purpose of research – defining parameters of evaluation of energy efficiency flow sheets bulk liquid media exposure.

Materials and methods research.

Analysis of energy radiation, determine the required doses per unit volume of fluid passing and UV irradiated volume flow in the environment were conducted using the theory of optics, including optics of moving media, energy and limit light beams, the quantum nature of the absorption and emission of light elementary particles.

Results. As in any electro-technological processes (ETP) is a measurable result [2]. In certain technology solution bactericidal radiation moves perpendicular to the flow of ultraviolet radiation [3]. As a result of the movement through the area of exposure, the layers of fluid gain the necessary dose Q_v^{num}. Because the spatial density of electromagnetic energy with depth of penetration in the treated environment decreases exponentially, in order to achieve the required

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doses Q_v^{num} in the lower layers of volume V_{ul}, the entire volume V should illuminate for the time t_h.

Modern technologies of surface exposure occur two energy processes: the transfer of the coordinate h and energy absorption solution.

To take into account the nature of the differences in flow UV irradiated volume environments must enter K factor, which takes into account differences in the amount of ultraviolet flux irradiated environment.

Evaluating the energy efficiency of particular technological scheme volumetric exposure contributes to its improvement.

Conclusions

Methods of assessing energy efficiency flow sheets bulk liquid media exposure should be based on the definition of two parameters: gain energy efficiency of energy transfer coefficient and energy efficiency of energy absorption.