APPLICATION OF EXPANDED POLYSTYRENE FILTER
FOR TERTIARY TREATMENT OF DOMESTIC WASTE EFFLUENT IN THE UK

Abstract

The use of expanded polystyrene filters is a promising method for tertiary treatment of domestic waste effluent where biologically treated effluent is filtered through a layer of buoyant polystyrene beads. The advantage of such filters is in the absence of backwashing pumps, containers of clean washing water, while having low energy costs, high resistance of polystyrene to various chemical contaminants that may be in the effluent, easy automation of switching modes.

The article describes the features of the design and principles of the expanded polystyrene filter operation with an upward filtration flow which works in automatic mode. The article includes the comparison of operation and the structural technological characteristics of polystyrene filters with disc filters, which are usually used in practice of tertiary-treatment of effluent in the UK.

Experimental results were obtained from the operation of expanded polystyrene filters with an upward flow of filtration at two operational wastewater treatment plants. The effectiveness of the tertiary-treatment of waste effluent was evaluated by measures of BOD and COD in non-filtered and filtered samples, as well as total suspended solids during the months of the year and hours of the day. The filter demonstrated an average removal of 40% BOD, 28% of COD and 66% of TSS.

Key words: disc filters, domestic waste effluent, effectiveness and efficiency of effluent tertiary treatment, expanded polystyrene filter, upward filtration