

ABSTRACT

Optimization of water treatment process in water treatment plant Hvězdicka is the subject of this diploma thesis. The optimal dosage has been examined – the dosage of primary chemicals, the efficiency of blender and the function of filtration. The source of raw water of water treatment plant Hvezdicka is the reservoir Obecnice. The water works is one of the three sources of drinking water for Příbram. Water works function as one step coagulant filtration. The suspension is prepared by destabilization of contaminant impurities by aluminum sulphate.

The determination of primary chemicals has been conducted by jar test using the laboratory mixing column. The evaluation of aggregate efficiency of blender has been analyzed through degree of aggregation α and through test of aggregation of size distribution of particles leaving the blender. The length of filtration cycles has been evaluated by the quality of the filtrate.

The results of jar test as well as the daily experience have shown that the optimum dosage of basic chemicals depending on the raw water quality. The aggregation degree α values are insufficient. The size distribution of leaving particles is also unsatisfactory. The macro particles are nearly not forming and the non aggregated rate is too high. Non suitable size structure is also reflected in the length of filtration cycles which are extraordinary short. The more frequent washing of filters is then reflected in the economy of operations. It is necessary to change the inflow of dosage of coagulant for better condition of stirring. It is also necessary to optimize gradient of fast stirring as well as to check the filters. There is also a need to strengthen the process of water treatment due to a elder equipment of facility and due to a improper function of equipment.