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PROCESS WATER TREATMENT IN A THERMAL POWER PLANT: CHARACTERISTICS AND SEDIMENT/SLUDGE DISPOSAL

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Abstract

The industrial water quality of a thermal power plant is of high importance, and a process water treatment station being always required. Whatever the adopted treatment system is, it is accompanied by the production of different amounts of sediment and sludge, which must be disposed and valorized. This paper presents in detail, the physical-chemical treatment system applied for the industrial water production in a Romanian thermal power plant (Veolia Energy Iasi Co.), referring to its installations, performance achieved, and also the quality characteristics of the treated industrial process water and certain types of produced sludges (i.e. primary and desulfurization ones).

The industrial water treatment performance is very good (85-100%) in terms of suspended solids, turbidity, organics (expressed by COD), fixed residues, heavy metals content, total hardness and microbiological inhibitors. The water and total iron contents were high in the primary sludge and, for the desulfurization sludge, low water and moderate calcium contents were found to be present. Information on the applied treatment and valorization possibilities of primary sediment and sludge are recommended, all being dependent on the operational and maintenance costs of used conditioning and dehydration installations. The final result can be a newly added-value byproduct which would be used as raw or auxiliary material (uniform compact plates), but also the minimization of produced sludge amounts in association with the environment protection and the control of environmental pollution due to industrial water treatment station functioning.

Key words: ferrous salts-based coagulation, industrial water softening, process water treatment, sediment/sludge thickening, thermal power plant

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