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CORRELATIONS AMONG PARAMETERS AND INDICATORS WITHIN A WASTEWATER TREATMENT PLANT. CASE STUDY: THE WWTP OF MEDIAS, ROMANIA

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Abstract

This paper presents the results of many years of operating the wastewater treatment plant of Medias, Romania. The influent and effluent parameters (mainly the chemical oxygen demand, COD, biological oxygen demand, BOD, and total suspended solids, TSS) and the dosage of ferric chloride (FeCl_3) used as a coagulant have been monitored. We have observed, in addition to a direct correlation between the influent load and FeCl_3 dosage, a reverse dependence between the water temperature and FeCl_3 consumption. For a better understanding of this process, we have introduced a new parameter: the ferric chloride power of coagulation relative to the COD, BOD, and TSS, respectively. With the means of all of these values available for three years (2018–2020), we have demonstrated a direct correlation between the water temperature and the coagulation power. If the coagulation powers for COD, BOD, and TSS, respectively, are represented as a function of temperature, all of the diagrams present a hysteresis. As a value that is easily determined, the coagulation power may be used to predict or confirm the dosage of FeCl_3 for a certain load and temperature, and the given example confirms the accuracy of the method.

Key words: coagulation power, ferric chloride, hysteresis, water temperature

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