DEVELOPING ELECTRICAL ENERGY EFFICIENCY INDEX OF WASTEWATER TREATMENT PLANTS IN IRAN'S INDUSTRIAL ZONES USING DATA ENVELOPMENT ANALYSIS

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Abstract
The economics of wastewater management and treatment is the subject of growing interest by water agencies and wastewater treatment plant (WWTP) operators. Currently, the plant production process and efficiency improvement of WWT plants became a challenge for WWT plants. The need of cost-efficient and reliable treatment processes has significantly increased so as to meet the level of environmental regulations and national goals. WWTPs are energy-intensive facilities. In addition, energy efficiency of WWTPs is the starting point for any energy-saving initiative. In this paper, energy efficiency of wastewater treatment plants is investigated. A case study has been carry out in 79 sampling of WWTPs in Iran's industrial zones with the purpose to identify electrical energy efficiency indices (EEEI). For this goal, Data Envelopment Analysis (DEA) methodology was applied Data and the problem was implemented in Lingo11 software. The great advantage of this methodology is that it enables the identification of cost items on which to act to increase the efficiency at plant level. In a second stage analysis, the electrical energy efficiency index was estimated for different quality effluent with regression equation and formulated usingMinitab17 software.

Keywords: Industrial wastewater, Electrical energy efficiency, Wastewater treatment, Data envelopment analysis

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