

عنوان مقاله:

Energy productivity analysis of industrial wastewater treatment plants: A Data Envelopment Analysis approach

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خلاصه مقاله:

Currently, the efficiency improvement of industrial wastewater treatment plant (IWWTP) has turned into a noticeable challenge for plants operator. In addition, decreasing the cost and energy consumption of wastewater treatment plants has attracted great interest by water agencies and IWWTP operators. Since IWWTPs are energy-intensive facilities, the need for cost-efficient and reliable treatment processes has significantly increased so as to meet the standards of environmental regulations and national goals. Determination of energy efficiency of IWWTPs is a starting point for any energy-saving initiative. In this paper, a case study has been carried out in 79 WWTPs in Iran s industrial zones to identify electrical energy efficiency indices (EEI). In order to achieve a reliable result, Data Envelopment Analysis (DEA) was applied by Lingo11 software. The electrical energy efficiency index was estimated by regression equations for plants with different level of treatment (ready to discharge to the river, irrigation of green spaces, and agriculture) using Minitab17 software. The obtained results enable IWWTP operators to identify the cost items to improve the productivity at plants.

کلمات کلیدی:

Industrial Wastewater, electrical energy efficiency, Wastewater Treatment, Data Envelopment Analysis

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