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# Energy efficiency evaluation for wastewater treatment plant

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**ABSTRACT**

Wastewater treatment plant (WWTP) is one of the energy-intensive industries. Energy efficiency evaluation is critical to energy-saving and emission-reduction. The energy efficiency was closely associated with the influent loads, organic, nutrient and other factors. It is difficult to identify the complex relationships between energy efficiency and wastewater. This article presents grey fixed weight clustering for evaluating the energy efficiency of WWTP. An overall energy efficiency index for WWTP is calculated from the individual energy use device indices. The weights of each devices were according with the energy end use consumption breakdown. The application of this method enabled the identification of device-specific measure to increase the energy use efficiency. In addition, a new grey correlation degree method was used to analyze the relationship between energy efficiency and the influence factors. The results of this study allow wastewater managers to better develop sewage-treatment strategies for wastewater treatment plants.

*Keywords:* Wastewater treatment plant; Energy efficiency; Grey fixed weight clustering; New grey correlation analysis

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