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ANALYSIS OF THREE-STATE REACTOR IN THE INDUSTRIAL WASTEWATER TREATMENT SYSTEM BASED ON PULSED DISCHARGE PLASMA

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The effective treatment of the industrial wastewater is very significant to the protection of our environment. The system of wastewater treatment based on pulsed discharge plasma provides a new way for the disposal of industrial wastewater. However, the traditional reactor cannot meet the demand of degradation rate and the treatment efficiency. In order to improve the degradation rate and disposal efficiency of the wastewater, a solid-liquid-gas (SLG) three-state reactor for the high voltage pulsed discharge plasma system is put forward, and then the working principle of the reactor is introduced. Furthermore, a simulation model of the reactor is built. After that the electric field distribution of the SLG reactor is analyzed by numerical simulation. The contrast between the traditional reactor and the SLG reactor is carried out. Furthermore, the effect of the voltage and the diameter of the solid ball in the reactor are analyzed. It can be seen from the results of the analysis that the SLG reactor of the wastewater treatment system based on the high voltage pulsed discharge plasma has better effect than two-state reactors. The conclusion that the discharge voltage has great effect on the disposal efficiency can also be drawn. Meanwhile, the diameter of the solid packing can affect the distribution of the electric field. The research results are very important to the application of the SLG reactor in the wastewater treatment system.

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