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ADVANCED SYSTEM CONTROL FOR HYDROGEN PLASMA CONVERSION OF INDUSTRIAL HAZARDOUS RECYCLABLE LIQUID WASTE

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Abstract

This paper presents the design of some equipment within an installation for plasma processing of liquid hazardous waste with hydrogen. The authors present the design and simulation in Solidworks and Ansys of hydrogen plasma torches components used for heat treatment of hazardous industrial liquids, the development in Matlab & Simulink of algorithms for controlling the power sources of torches and the non-interactive multivariable control system through thermoregulatory with PID and PID one step ahead control laws from the power supply of the reactor, and the dimensional design and functional simulation of the pump blade that ensures the circulation of the cooling liquid (water) in the torch.

Key words: hydrogen, liquid waste, management, plasma, PID and one-step predictive, recycling, systems design, zero emissions

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