

***Abstract: A Robot Design with Energy Saving Performance via an Effective Regenerative Braking Control System***

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**Abstract**

This study is aimed at the “design model of regenerative braking control” that provides a more convenient energy using methods for a tripedal-robot product to be saved the energy from brake regeneration energy. Authors use the “Time Ratio Control ( TRC ) method Work Module” for the robot design. A design model of regenerative braking control of the tripedal-robot and an experimental identification is presented to achieve regenerative current effectively. A simulation and experimental results show that are effective in tracking the regenerative current command. By evaluating the simulation results, a simulator could provide valuable data to design and analyze prototypes of the tripedal-robot. Therefore, rapid prototyping can be achieved to speed up the development of the robots. The platform of the tripedal robot will become a significant design reference for the commercialization of different industrial robots, and it will provide the design of industrial robots with more options and useful applications. It finds that the robot moved forward smoothly, and indicates that the regenerative braking control can be used for the robot. A renewable energy system can provide the tripedal-robot with a high efficiency power source storing mechanism and can accomplish the circular use of “Energy Saving”.