

# Fractional PID controller of MIMO Gas Metal Arc Welding process.

**Sami KAHLA, Amar BOUTAGHANE, Lemita Abdallah, Ahmed KELLAI, Boubakr Bossiala, Said Dehimi**

**Abstract :** Gas metal arc welding (GMAW) plays the great importance in the welding industry on account of high flexibility in the welding of different metals, high welding productivity, and automatic run capabilities. This paper focuses on the development of a fractional PID control of gas metal arc welding system, wherein the current and voltage of welding process are controlled using a fractional PID controller, then the system analyzed and the results compared with conventional PID controller show adequate improvement in the efficiency and performance of the proposed controller.

**Keywords :** GMAW, MIMO system, P ID controller, Fractional PID controller