

## THE SIMULATION OF WELDING OPERATIONS IN ROBOTIZED PRODUCTION SYSTEMS

ENACHE Victor-Adrian<sup>1</sup>

**Rezumat.** În această lucrare am realizat un studiu privind posibilitățile de programare off-line pentru un robot industrial utilizat în operații de sudură cu arc electric. Studiul a fost realizat în vederea optimizării traiectoriilor de poziționare a cleștelui de sudură în anumite puncte pe o caroserie auto. Pentru simulări s-a utilizat DELMIA V5.

**Abstract.** In this paper it was made a study concerning the possibilities of off-line programming for an industrial robot used in arc welding operations. We tried to optimize the trajectory of an articulated arm robots for positing the welding device in the specific point on the body car parts using DELMIA V5.

**Keywords:** Industrial Robots, offline programming, welding points, DELMIA

### 1. Introduction

The social and technical needs of the industrial robots are liberating human beings from so-called 3K work (Kitui=hard, Kitanai=dirty, and Kiken=dangerous work) as workers in the age with a low birth rate and many elderly people, improving the work efficiency, reducing costs, providing highly reliable work (free from human errors), and cooperation with human workers in cell production.

The utilization of robots in the industries is due to a few factors, among them; firstly, robots are used to increase the productivity levels of production. Quality levels are also known to have increased with the use of industrial robots. This is because the characteristic of a robot is such that once has been taught to perform a certain task it will be able to perform that task at a consistent rate repeatedly.

Robotic applications are also gaining popularity because of its flexibility in the terms of usage as robots can be reprogrammed should there be any changes in the job scope or if the robot has to perform other tasks. In other words, robots can perform a variety of job functions with ease.

Today in the industry is a hard competition to getting out new better and cheaper products. The manufactures have to deal with the increasing demands of the customers. They have to improve continuously the conception methods of the products, to modernize the organization structure in order to create a fluent link, without limits, between studies, conception, preparation, manufacturing, commercialization and working life of the products.

---

<sup>1</sup>Student, IMST Faculty, University "Politehnica" of Bucharest, Bucharest, Romania.

---