

Project name: Design Ergonomic Arm Manipulator for Manufacturing Facilities

Period: 2019-2020

Funding Organization: Ministry of Innovative Development of the Republic of Uzbekistan

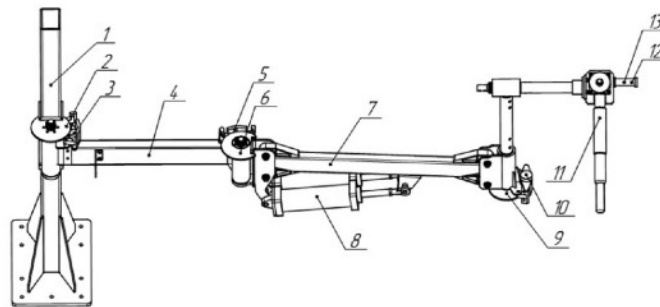
Application area: Automobile industry, mining industry and etc.

Description of the project:

This project investigates into the use of an arm manipulator system for performing manual assembly operations. The investigation is based on a case study, originating from the final assembly area of an automotive assembly plant. The motivation as well as the benefits derived from the employment of the arm manipulator are discussed. The station layout, tooling design and manipulator programming are elaborated. To deal with the aim of the paper four design requirements (Quality, minimum modification, cycle time reduction, ergonomics) of the assembly process coming from manufacturing plant were taken as an input parameters to setting up design, mechanical, hydraulic and programming parameters of the arm manipulator.

This Arm Manipulator allows:

- reducing the influence of the human factor;
- improves the accuracy of assembly operations;
- reduce the area of production facilities and ensure smooth operation;
- they make it possible to exclude injuries of varying severity for the operator



ARM manipulator design: 1- Column, 2- Brake disk No. 1, 3- Brake caliper No. 1, 4- Arrow



No. 1, 5- Brake caliper No. 2, 6- Brake disk

No. 2, 7- Arrow No. 2, 8- Air cylinder, 9- Brake disc No. 3, 10- Brake caliper No. 3, 11- Atlas Copco wrench, 12- Handle, 13- Brake button