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Project Title : The Design and Demonstrative Creation by using Delta Robot 3 Axis
Major of : Teacher Training in Mechanical Engineering
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Abstract

This project concerns the design and construction of the demonstration set of 3-axis robot by using Delta. 3-axis Delta robot is currently popular in the industrial section. However, to study about 3-axis Delta robot is complicated since it requires high imagination, especially the topics about 3 dimensional moving position and kinematics of robot. The demonstration set can carry 300 grams load. It has been designed to determine the tolerance for ±1 millimeter. The Likert's rating scale is used for assessment if it is appropriate for integrating in learning Industrial Robotics subject (213360).

The construction process starts from using fiber carbon to make upper and lower arms because it is lighter than aluminum which makes the demonstration set become more mobilized. Secondly, the construction of the controller uses Programmable Logic Control (PLC) to controls AC servo motor by CANOpen transmission. The demonstration set can be controlled by using monitor screen that is created by using Microsoft Visual Studio program and transmitted by Modbus TCP/IP to process in PLC. The screen has more functions; such as Forward/Inverse, Jog X, Y, Z, and Linear Motion. After finishing the construction, 5 specialists are requested to assess this project.

It has been found that the tolerances with no load ; in X axis is 0.15, Y is 0.12 ,Z is 0.08 and with 300 grams load ; in X axis is 0.16 ,Y is 0.13, Z is 0.03 millimeter which relate to the preliminary evaluation. Additionally, it has been proved that this demonstration set is suitable for Industrial Robotics learning with the rate of 4.40 out of 5, standard deviation is 0.51, which can be interpreted as very suitable for classroom learning.

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