

Abstract

A coordinate measuring machine (CMM) is a device for measuring the physical geometrical characteristics of an object.

Measurements are defined by a probe attached to the third moving axis of this machine. Probes may be mechanical, optical, laser, or white light, amongst others. It will be implement the idea of measurement and sensory. It will provide us with a deep understanding of the working principles of the laser modeling system and the motion control system. Also, the interfacing between these two systems will be of great significance.

The reasons of using the CMM instead of manual measurement of part that the CMM have recently become popular as a quick and accurate means of dimensionally checking a manufactured part. Which consider cheaper, more accurate, and consume less of time.

To satisfy the operation of CMM, one type of controller like PD and PID can be used, the comparison between these controllers is taken from many aspects i.e. ease of control, time response, range of control for speed and position.

Since the use of the computer is flexible and make the control of the machine more safety, easier, faster, beside that the measuring operation need high accuracy, difficult time response, high range for speed and position control, and control of three dimensions, it is represented as the ask controller, by this we reached a high technical machine which is the coordinate measuring machine (CMM).

The plant (machine) consists of (in general) three motors, sensors. The three motors use to control the moving of the laser arm that used to measure the parts in the three directions; one for X-axis, the second for Y-axis, and the third for Z-axis. The moving of the motors is restricted in specific range determined by the sensors.