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Abstract
CMM is one of the new types of precise measurement machine that has been developed rapidly in the past forty years. It can be used in measuring different geometric variables of components in various manufacturing industry. In modern manufacturing industry, CMM has shown its importance and effect, and it is indeed included in automated production and FMS, and becomes one of the main combining parts. Presently, the functions of orthogonal CMM become more powerful and precious, but the prime cost and the price of orthogonal CMM also increase. In addition, its size is large, so it is inconvenient for moving and carrying. Orthogonal CMM is extremely restricted in environment when measuring. It is used in the laboratory that has constant moistness and temperature. Since orthogonal CMM is limited in its mobility, traditional orthogonal CMM cannot reach the requirement of fast and online measuring in modern industry. Thus, it is essential to develop a system that is non-orthogonal CMM and achieve all the above-mentioned requirements. Due to the advantages of great mobility and high measuring speed, traditional orthogonal CMM will soon be replaced by non-orthogonal CMM. The research of new non-orthogonal CMM with parallel double joints in this plan uses a linearity displacement sensor and two-angle displacement sensors to assist the accomplishment of online immediate 3D measurement.

Keywords: CMM(Coordinate Measuring Machine); D-H(Denavit-Hartenberg)matrix