A Fast Approach to Obtain High-Precision Measurement of the Minimum Circumscribed Cylinder Using Computer Drawing

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Abstract. Roundness and spindle error motion measurements are two fundamental issues in the geometrical measuring techniques. Most of the fixture with rotating cylindrical shaft, cylinder defined by the minimum circumscribed axis, can be obtained the minimum circumscribed rotation surface high-precision axis. Generally, a more accurate measurement points, can result in a more accurate cylindrical shaft, but the longer the time of the calculation time. In this paper, the drawing method can handle a large number of measurement data to avoid lengthy and complicated calculations, and can quickly obtain the minimum circumscribed cylindrical axis precise location, deviation and cylindrical radius and tolerance. This article is the use of the minimum circumscribed cylinder theoretical approach with computer drawing ways. Comparison is relatively quick and easy. The actual display of the results, which can be easily, obtained the position, skew and deviation of the spindle. This paper will be established a cylindrical outer edge quality assessment model and provided a basis for the cylindrical outer edge quality assessment. This paper for seeking the axis of cylindrical shank is based on minimum circumscribed cylindrical theory with computer drawing method and instances for verification. The computer drawing method can be determined spindle eccentric angle and the distance of deviation, to provide a reliable model for the evaluation of rotary spindle, the mode established by the paper at the same time applicable to any other rotating spindle error evaluation.