

عنوان مقاله:

Experimental verification of finite element model of the strain-based dynamometer

محل انتشار:

کنفرانس دو سالانه بین المللی مکانیک جامدات تجربی (سال: 1392)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

In this study, a FE Model of strain-based dynamometer was developed consisting of: octagonal rings, supporting plates and cutting tool. Since the accuracy of the dynamometer, highly depends upon the rings, therefore the FE model of the ring was analyzed separately and the results were verified by experiment. The experiment consists of making four rings with installed strain gauges on them. The applied boundary conditions and forces of the model, were the same as the ones of the real model, as far as possible. The measured strains on the faces of the real rings, were compared with those of the FE Model. The obtained results by the FE Model showed good agreement with the experiment. By the obtained results, one could couple the real dynamometer with the FE model to utilize in several applications such as minimizing the errors. Monitoring and measurement of cutting forces in machining process is of great importance in industry. The importance is due to the effect of the forces on tool-wear, finished surface, the heat generation, energy consumption, etc. One of the methods in measurement of the cutting forces is strain-based dynamometer in which the forces are measured based upon strain gauges fixed on the rings

کلمات کلیدی:

Strain gauges, Octagonal rings, Experimental analysis, Finite Element

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