

### **Simulation tests of accuracy of two freeform surfaces' fitting**

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One of the important problems in the milling of injection moulds is to ensure the accuracy of fitting of the closing surfaces. These surfaces are often freeform. Deviations of the treated surfaces from the nominal form cause leaks in the connection and, as a result, a leakage of the material.

The paper proposes a new method of simulation tests of the accuracy of two freeform surfaces' fitting. For this purpose, the CAD models of both actual surfaces should be determined. The basis for determining the model are coordinate measurement data obtained in measurements according to the regular grid of points in the  $u$ - $v$  space [1, 2]. The NURBS regression surface is modelled on the measurement data. An adequate regression model is sought in the iterative procedure. In the following steps of the procedure, the number of control points and/or the degree of the surface is changed, and the autocorrelation of residuals from the model are tested using the spatial statistics methods. The designated model is an optimal CAD representation of the surface treated [3]. Tests of accuracy of the treated surfaces' fitting are carried out virtually, by associating both models in the CAD software. The outcome of the study is a spatial model of the gap between the surfaces. On this basis, corrections can be calculated to compensate for the machining errors [4] and, depending on the results of the test, the errors of one or both surfaces can be corrected by modifying the nominal CAD model, and then, additional machining can be carried out.

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