

Thesis Title	Simulation of Connector Pin in Precision Stamping of Bending Process by Finite Element Method
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Abstract

The elasticity of bent metal is an important factor for die design industry as it causes workpiece to spring back. Therefore, it is essential that, in the design of die surface, the bending angle has to be sufficiently provided to compensate the springback effect. In this thesis, the springback of connector pin in precision stamping is studied using finite element method (FEM). First, the material to be used in the experiments; i.e. copper plate of grade 5191H reaching JIS H 3110:1992 Standard, is prepared and blanked into a connector pin shape. Next, the bending process of the part for a given condition is analyzed using *OPTRIS™*. Subsequently, a die surface is produced from finite element results which is later used in bending connector pin. Finally, the bending angle of the connector pin obtained from the experiment is compared with that obtained from FEM.

The bending angles required at 4 different positions of connector pin are 21.092, -33.005, -44.526 and 18.738 degrees. The values of bending angle obtained from the FEM and experiment, however are 21.040, -32.835, -43.703, 18.416, and 21.804, -32.575, -43.564, 18.118, respectively. It can be seen that the differences in percentage of the values produced by these two methods are 2.037, 0.792, 0.319 and 1.644 which are negligible. It shows that FEM can be used to design die surface in precision stamping.