

Heat Forging Analysis Method on Blank Consist of Two Metals

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Abstract : Forging parts is used to automobiles. Because they have high strength and it is possible to press them into complicated shape. When it is possible to manufacture hollow forging parts, it leads to reduce weight of the automobiles. But, hollow forging parts are confined to axisymmetrical shape. Hollow forging parts that were pressed to complicated shape are expected. Therefore, we forge a blank that aluminum alloy was inserted in stainless steel. After that, we can provide complex forging parts that are reduced weight, if it is possible to be melted the aluminum alloy away by using different of melting points. It is necessary to establish heat forging analysis method on blank consist of stainless steel and aluminum alloy. Because, this forging is different from conventional forging and this technology is not confirmed. In this study, we compared forging experiment with numerical analysis on the view point of forming load and shape after forming and establish how to set the material temperatures of two metals and material property of stainless steel on the analysis method. Consequently, temperature difference of stainless steel and aluminum alloy was obtained by experiment. We got material property of stainless steel on forging experimental by compression tests. We had compared numerical analysis that was used the temperature difference of two metals and the material property of stainless steel on forging experimental with forging experiment. Forging analysis method on blank consist of two metals was established by result of numerical analysis having agreed with result of forging experiment.

Keywords : forging, lightweight, analysis, hollow

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