

Songchai Suwannaporn 2010: Analysis of Fan Hub Connection. Master of Engineering (Industrial Production Technology) Major Field: Industrial Production Technology, Interdisciplinary Graduate Program. Thesis Advisor: Mr. Prapot Khunthong, Ph.D. 88 pages.

The purpose of this work is to study the clamping force in the squirrel cage blower wheel hub using finite element method. The analysis began with a simulation of clamping the hub to the blower wheel in which it can be described as 2D axisymmetrical model. The residual strains obtained from the analysis were then confirmed with experimental measurements. The analysis also leads to the relationship between the pressing forces acting on the press block for attaching the hub to the wheel disc and the normal contact forces between the hub and the wheel disc. Moreover, the analysis provides an understanding of stress behavior in the hub occurred throughout the clamping process. The results of analysis were further used to analyze the clamping moment between the hub and the wheel disc. The 3-dimensional finite element model was created by revolving the axisymmetric model about the symmetry axis. The analysis provides the relationship between the forces used for clamping the workpieces and the torque used for breaking loose the wheel hub. The results of finite element analysis were compared to those of the experimental test and were used for the improvement of the design of press block in such a way that the wheel hub of the squirrel cage blower can withstand greater twisting moment.

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