

INTRODUCTION TO MIDAS MESHFREE: AN ANALYSIS SOLUTION FOR DESIGNERS

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ABSTRACT

Although finite element analysis technologies and commercial applications have matured and utilized in various industries to boost productivity, small businesses lag behind and have still more or less failed to adopt the technologies. These businesses lack the experienced analysis experts and the training program for product designers. It has also been identified that the foremost difficulty facing product designers in incorporating analysis in their design is associated with converting CAD models into analysis models. The immediate obstacle is the mesh generation phase of complex CAD parts, which entail laboring process of geometry cleanups and simplifications.

A method and its commercial solution that enables direct structural and heat transfer analyses of CAD models are introduced. Linear structural and heat transfer analyses can be carried out without geometry cleanup and mesh generation by the end user. The formulation is based on a solution structures method where the solution field that intrinsically satisfies the boundary and special conditions is employed. Key theory and methods for accurate analyses as well as commercial features for the designers are presented. Also, some of the example problems analyzed with MIDAS Meshfree are demonstrated and future roadmap for development is presented.