Systematic design through the integration of TRIZ and optimization tools

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Abstract

Marketing strategies are focusing on innovation as the key for being competitive; as a consequence, product development processes must be improved in order to have a link as close as possible between conceptual design and detailed design activities. Within this context, TRIZ and TRIZ-based methodologies and tools are still poorly integrated with product embodiment means: CAD/CAE systems are not suited for supporting the designer in the conceptual design phase and at the same time inventive/separation principles, standard solutions etc. can hardly be translated into a modification of a CAD model and the only opportunity is to restart the modeling process. A small consortium of Italian Universities is analyzing the opportunity to use Design Optimization tools as a means for linking Computer-Aided Innovation (CAI) tools with Product Lifecycle Management (PLM) systems: www.kaemart.it/prosit. Among the specific objectives of the project, this paper describes how to analyze TRIZ technical contradictions by means of Design Optimization tools, with the aim of translating them into physical contradictions. The suggestions provided by inventive/separation principles are therefore converted into a new Design Optimization problem for the development of a novel solution.