COST-PERFORMANCE OPTIMIZATION

A METHOD TO IMPROVE COMPANY'S COMPETITIVENESS

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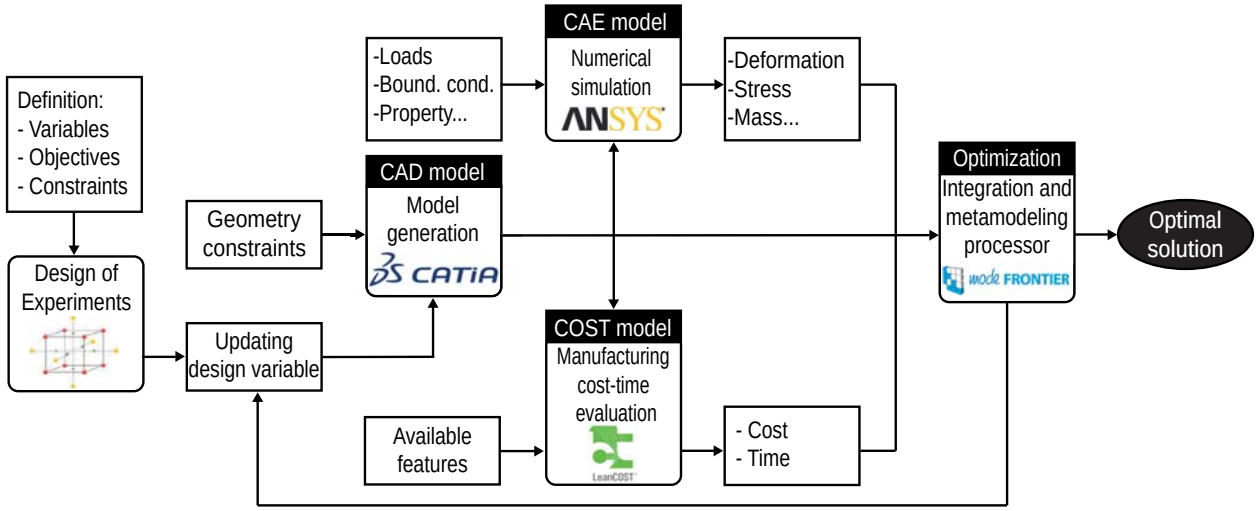
"This poster presents an approach for product *multi-objective optimization* based on Response Surface methodology, DOE techniques and CAD/CAE/DfC tools *integration*. This *automated methodology* demnostrates high reliability and ease of use. Results show significant improvements in product design and in the reduction of design effort."

Introduction & Background

- *Cost-performance optimization* is a key aspect of the design process to improve product attrativeness and business competitiveness.
- The *manual optimization* process does not allow a comprehensive analysis of the problem leading to a *suboptimal solution*.
- *CAE* software do *not* contain *accurate costing functions* and designers prefer to use stand alone CAD/CAE/DfC tools.
- This method provides an integration between different software tools and an *automated method to simplify optimization process*.

Methodology



Case study

Redesign of a modular structure for the rotation of armchairs under the floor level, with the goal to *improve structural performance* and *reduce manufacturing cost and time*.

Fig.1 Re-designed modular structure.

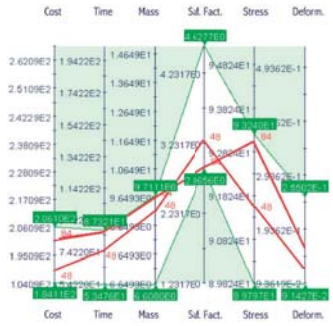


Fig.2 Optimal solution identification for the frame.

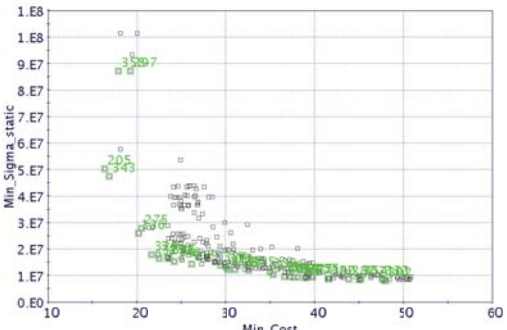


Fig.3 Pareto front of the idler gear optimization.

Results & Conclusion

- Two design teams carried out the same optimization, the first using the presented approach, and the second following the traditional method. The first team identified the optimal solution, *saving 13% of manufacturing cost* and *17% of manufacturing time*.
- *Saving of the engineers employment time* required for the optimization processes, designers are able to employ the saved time in other business activities.

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