MASTER OF DESIGN – CAE-BASED ROBUST DESIGN OPTIMIZATION WITH OPTISLANG

Sensitivity analysis, optimization and robustness evaluation with a minimum amount of user input and solver runs for your effective virtual product development

OPTIMAL DEFAULTS

- Stochastic sampling (LHS) for optimized scanning of multi-dimensional parameter spaces
- Quantification of prognosis quality (CoP) of meta-models
- Generation of the Metamodel of Optimal Prognosis (MOP)

SENSITIVITY ANALYSIS

1

Coefficient of Prognosis (CoP)

The CoP quantifies the forecast quality of a meta-model (regression model) for the prognosis of a result value.

Metamodel of Optimal Prognosis (MOP)

The MoP represents the meta-model with the best prognosis quality of the result value. For the determination of the MOP, subspaces of important input variables are evaluated with the help of meta-models. Thus, a No Run Too Much-strategy will be implemented with a maximum of prognosis quality for correlations in regard to design evaluations.

Best-Practise-Management

Wizard-based assistants for the modules of sensitivity analysis, optimization and robustness evaluation select the most appropriate defaults of the statistical and stochastic methods as well as for the optimization algorithms.

MINIMAL PARAMETER VARIATION

AUTOMATED

- Identification of the relevant input parameters and response values (sensitivity analysis + CoP/MOP)
- Pre-optimization of the parameter sets with MOP without additional solver runs
- Further optimization of the parameter sets with the most appropriate algorithms (Best-Practice-Management)

OPTIMIZATION

2

MODULAR

Optimal Design

LESS SOLVER-RUNS

- Efficient methods of stochastic analysis for the determination of failure probabilities
- Evaluation of result value variation
- Identification of the relevant scatter input parameter (CoP + MOP)

ROBUSTNESS EVALUATION

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