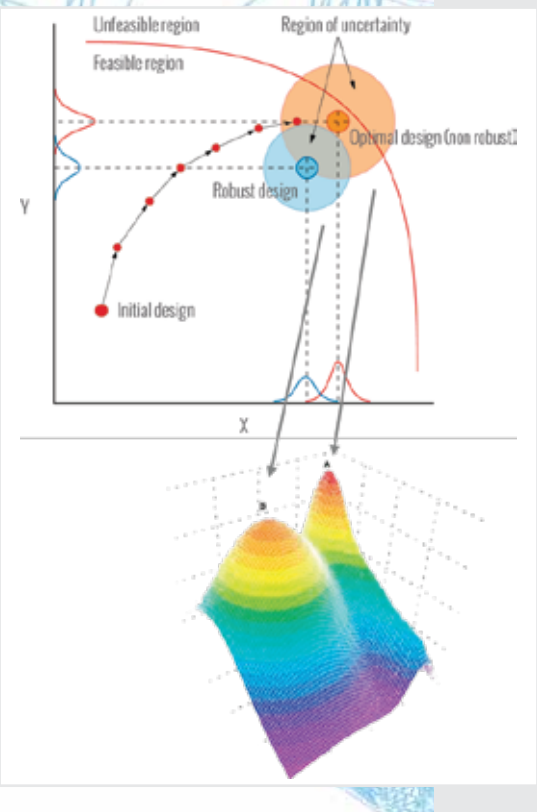
modeFRONTIER Training Courses

MORDO | 1-Day Training

Multi-Objective Robust Design Optimization

FOR MORE INFORMATION:

Hakan Strandberg
h.strandberg@enginsoft.se
EnginSoft Nordic
IDEON Science Park
223 70 Lund - Sweden
Phone: +46 46 286 89 00



modeFRONTIER
is a product of ESTECO® SpA

modeFRONTIER provides an innovative optimization environment with modular, profiled-based access. This integration platform for multi-objective and multi-disciplinary optimization offers a seamless coupling with third party engineering tools, enables the automation of the design simulation process and facilitates analytic decision making.
modeFRONTIER streamlines the design process with powerful workflows, innovative algorithms and sophisticated post-processing tools allowing the user to perform statistical analysis, data visualization and decision making. Its multidisciplinary design enabling technology, critical to successful new product development today, keeps it at the forefront of engineering technology.

In many engineering design problems the design parameters may only be known to some extent or, in some cases, they may be described by a probability distribution. Moreover, designing a product for a specific environmental scenario does not guarantee an equally good performance in other environments: there is a risk associated to the chosen design, but another design may entail a lower risk. Thus the designer has to take into account the robustness of his solution, which is defined as the characteristic of the system response to be insensitive to the variation of the input parameters working effectively in a range of circumstances and not being adversely affected by small changes therein. Accordingly, it is possible that the best solution is not the same as the best stable solution. The generalized solution to robust design problems is to use probabilistic or stochastic models instead of the deterministic model inside the optimization loop. The deterministic model is replaced by an iterative stochastic model in an uncertainty space. The uncertainty space is usually represented in terms of moments like mean and standard deviation of the output variables.

Duration: 1 day

AGENDA

During the training will be shown how assess the design robustness and reliability using optimization techniques:

- Introduction
- Sampling methodologies and Polynomial Chaos
- Robust Design Optimization
- Reliability - Based Optimization

Using modeFRONTIER's Multi Objective Robust Design Optimization (MORDO) approach it is possible to identify the best robust design. For these reasons, MORDO evaluates different values:

- the mean value of the function inside the distribution of variables
- the standard deviation that should be minimized or at least monitored (i.e. constrained)
- the minimum and maximum value of the function inside the distribution of variables

www.enginsoft.com