

Project Note

Technical review of an easy chair

An electric-powered easy chair was optimised to meet the customers' high expectations of quality and ergonomics. Zühlke conducted a technical review to check the functionality, ergonomics and long-time stability of the chair.

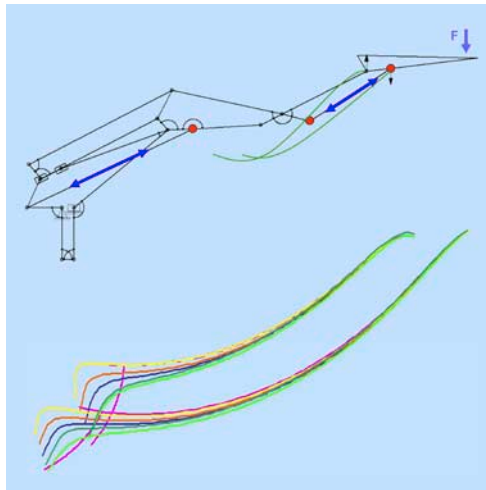
Task

De Sede is a Swiss maker of top-end leather and upholstered furniture. The electric-powered easy chair is a premium product and already well established on the market. This project involved optimising the product to meet the customers' high expectations of quality and ergonomics. In a technical review, Zühlke examined the functionality, ergonomics and long-time stability of the chair as a whole and came up with various suggestions for optimisation.

Implementation

Together with the customer's developers, Zühlke's interdisciplinary project team analysed the entire system. Then two separate groups examined the mechanical and electronic systems in detail. The specialist found room for improvement in a simulation of the movement mechanism in the footrest. A change in the mechanical design that was quick to implement allowed a smoother dynamic sequence of movements while reducing the production costs. Zühlke pointed out critical interfaces, calculated the axial stresses and suggested corrections viable for production and insensitive to tolerance.

The performance limits of the system were demonstrated by measuring power input into the chair in different positions. The detailed review also uncovered possible weak points in the mobile cable guides. The project team came up with suggested approaches for this task and for an optimum placement of the limit switch.



Technical Data

CAD-System:
ProEngineer/
Wildfire

Problem analysis
overview:
Mindmap

Analysis of
kinematics:
SAM
(gear design tool)

Customer benefits

- Zühlke's systematic problem analysis quickly revealed weak points in the design.
- The overall system (mechanical and electronic) was able to be optimised thanks to the broad experience of the interdisciplinary project team from Zühlke.
- The service life of the easy chair was also prolonged thanks to the design changes Zühlke suggested. This longer product life increased customer satisfaction.

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