

MDESIGN Seminar

## STRENGTH VERIFICATION OF MACHINE COMPONENTS ACCORDING TO FKM GUIDELINE

### These topics await you...

- Nominal voltage concept and local voltage concept
- Static strength verification and fatigue strength verification
- Material properties and Weld seam calculation
- Forming and notch effect figures in the FKM guideline
- Changes and additions of the 7th edition (2020)



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### Objectives of the seminar

#### Sound theory and practice

Understand the basics and apply the FKM guideline correctly

#### Cost efficiency

Material and cost savings through optimized design practices

#### Increasing safety

Increasing safety in parallel with optimization

#### Practical examples

Reliable assessment and new approaches for verifications

KNOWLEDGE UPDATE

### Use your advantages

- ✓ **Personal certificate**  
Documentation of your newly acquired knowledge after attending the seminar
- ✓ **Good integration into everyday working life**  
Compact seminar content spread over 2 days
- ✓ **Flexible choice of dates**  
Several seminar dates per year
- ✓ **Online & Live**  
Seminars from anywhere and ask our experts questions interactively
- ✓ **Seminar documents**  
We also provide you with all the relevant information for „afterwards“ for reference

### Target group

Engineers and specialists from the fields of development, design and calculation, teachers from educational institutions, experts from research institutions and testing companies.

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## Content & Details



### Introduction: Areas of application, voltage concepts

- ✓ Introduction to the topic of strength verification (concepts)
- ✓ Stress concept in the FKM guideline
- ✓ Areas of application and scope



### Calculations: Material properties and weld seam calculation

- ✓ Material properties according to FKM guideline
- ✓ Strength diagrams (Wöhler line, Smith diagram, Haigh diagram)
- ✓ Influence of size, influence of temperature
- ✓ Influence of notches on fatigue strength
- ✓ Weld seam calculation using the FKM guideline

### Overview of the changes to the FKM guideline (2020)

- ✓ Adjustments to the calculation of the technological size effect
- ✓ Extension of the calculation for the plastic support number
- ✓ Updated material data and new material group
- ✓ New support number calculation for aluminum casting
- ✓ New approach to evaluating welded components with notch and effective stresses
- ✓ Change in temperature influence



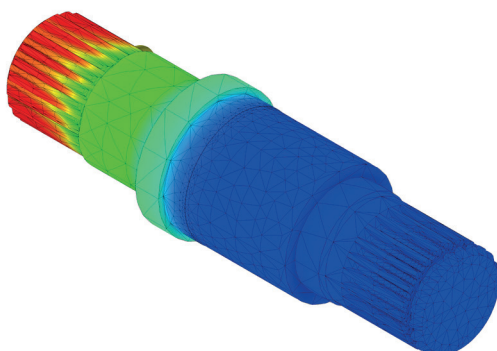
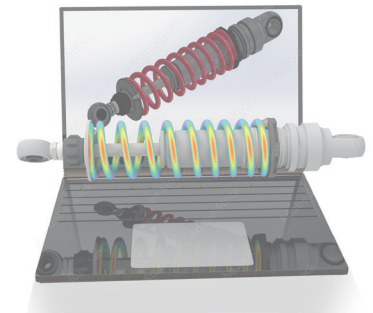
### Safety: Stress concepts and strength verifications

- ✓ Determination of notch stresses on components and structural stresses on weld seams
- ✓ Comparison of nominal voltage concept with local voltage concept
- ✓ Static strength verification
- ✓ Fatigue strength verification



### Practice: Influencing factors and sample calculations

- ✓ Difference between shape numbers and notch effect numbers
- ✓ Shape numbers and notch effect numbers in the FKM guideline
- ✓ Determination of shape numbers for individual notches
- ✓ Sample calculation according to nominal voltage concept and local concept
- ✓ Example calculation with structural stress on a weld seam



More info on  
[mdesign.de](https://www.mdesign.de)