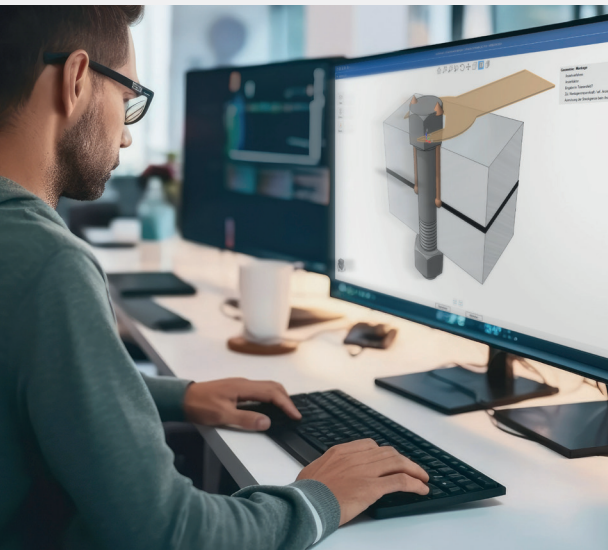


MDESIGN Seminar

BOLTED CONNECTIONS – DESIGN, SELECTION & OPTIMIZATION

These topics await you...

- VDI 2230 Sheet 1: Verification & Calculation
- Loads on a bolted connection
- Tightening and assembly methods
- Securing screw connections



BOLTED CONNECTIONS

Objectives of the seminar

Standard-compliant planning

Design and calculation of bolted joints according to VDI 2230

Cost efficiency

Material and cost savings through optimized designs

Increased security

Increased security for the verification process

Practical examples

Independent assessment of connections and tasks

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.

Content & Details



Calculations: Calculation steps R0 to R6 according to VDI 2230 Sheet 1

- ✓ Nominal diameter
- ✓ Tightening factor (torque-, angle- and yield point-controlled tightening methods)
- ✓ Pressure, loads due to shear forces/moments
- ✓ Operating force, bolt force and force ratio
- ✓ Preload losses (setting and temperature dependencies)
- ✓ Calculated and permissible mounting preload force



Safety: Strength Verification with the aid of calculation steps R7 to R13 and examples

- ✓ Safeties against yielding (maximum bolt force, torsional moment)
- ✓ Safety against fatigue fracture/time resistance
- ✓ Safety against excessive surface pressure
- ✓ Screw-in depth (maximum tensile forces)
- ✓ Safety against sliding and shearing (available residual clamping force)
- ✓ Tightening torque (influence of friction and lubrication)
- ✓ Constructive measures and design rules
- ✓ Examples from the VDI guideline
- ✓ Practical part I with MDESIGN bolt



Standards: VDI 2230 Sheet 2

- ✓ Methods for determining the load distribution (rigid body, elastomechanical and FE approach)
- ✓ Torsional moment-loaded bolt bays, tensile load, moment load
- ✓ Elastomechanics - Bedding
- ✓ Model classes for FE calculations
- ✓ FEM - Necessary calculation parameters for VDI Sheet 1
- ✓ Practical part II with MDESIGN multibolt
- ✓ Overview: Bolt calculation according to Eurocode 3



Practice: Introduction to the topic of screws

- ✓ Failure mechanisms of bolted joints
- ✓ Use of screw locking devices
- ✓ Presentation of screw types and strength classes
- ✓ Scope and limits of the VDI guideline
- ✓ Force ratios and tension diagram

