



# **Structural Analysis & Design Software**

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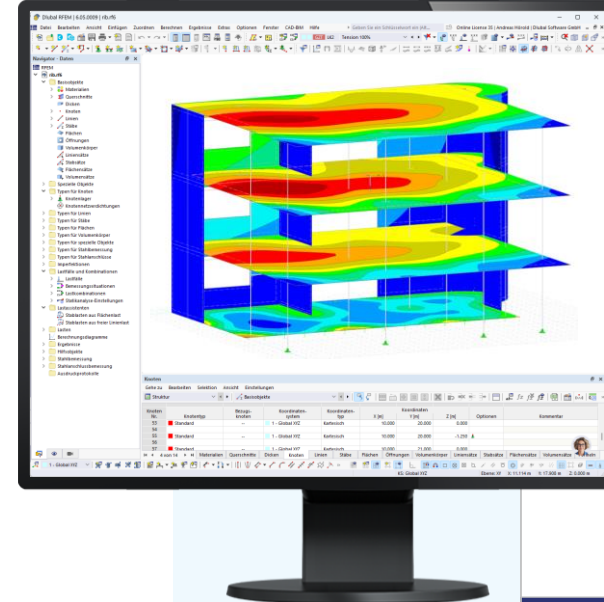


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## Webinar

# Selected Concrete Features in RFEM 6



# Questions During the Presentation



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2

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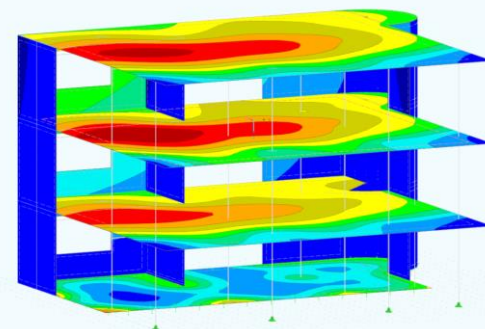
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# CONTENT

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- 01 Reinforcement layout
  - 02 Fire resistance design using the table method
  - 03 Punching shear reinforcement
  - 04 SLS design
  - 05 Fatigue design



# Reinforcement layout

- Reinforcement on surfaces / Reinforcement types
- „froze“ the results
- Automatic function for Reinforcement

Location Type

Free Rectangular

Reinforcement

Material

2 - B500S(A) | Isotropic | Linear Elastic

Reinforcement type

Rebar

Diameter

$d_s$  Auto... [mm]

Determined

12.0 [mm]

Rebar spacing

$s$  0.150 [m]

☒ Additional transverse reinforcement

$d_{s,90^\circ}$  Auto... [mm]

10.0 [mm]

$s_{90^\circ}$  0.150 [m]

[m]

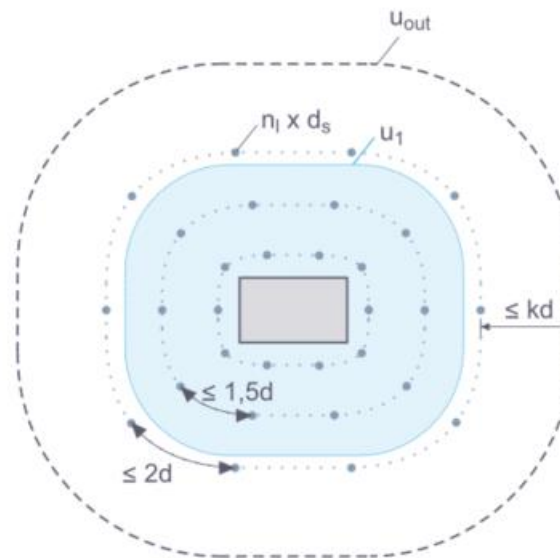
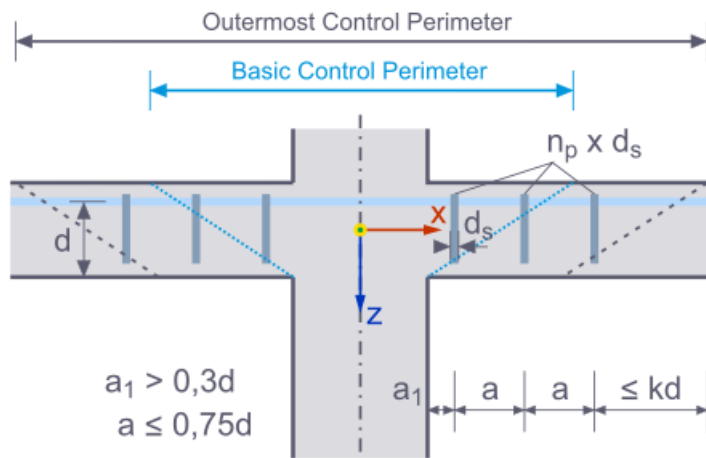


# — Fire resistance design

- Table method with minimum section dimension and rebar axis distances
- Surfaces with result beams
- Columns with Fire-buckling length factors
- Columns Fire duration equation
- Beam statically determined and indeterminate

# Punching shear reinforcement

Punching Reinforcement  
Type 'Vertical'  
Placement 'Uniform'



# SLS Design

- Deflection Analysis
- Limitation of steel stress
- Required reinforcement in SLS
- Creep and Shrinkage
- Tension Stiffening

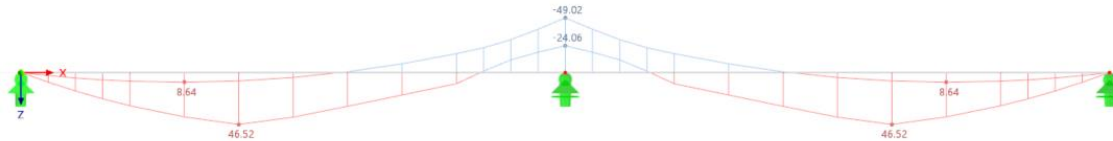
## Tension Stiffening

When parts of the reinforced concrete are cracked, we know from the design in the ultimate limit state that the tension forces occurring in the crack must be absorbed by the reinforcement only. Between two cracks, however, tension stresses are transferred into the concrete by means of the (movable) bond. Thus, in relation to the length of the structural component, the concrete participates in the absorption of internal tension forces, which leads to increased structural component stiffness. This effect is called *effectiveness of concrete for tension between cracks* or *Tension Stiffening*.

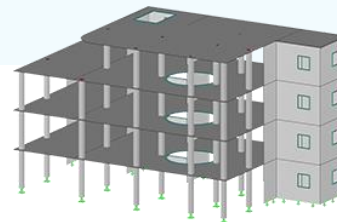


# Fatigue design

- two alternative fatigue design possible
- Level 1 = Simplified Design Check (allowed stress range)
- Level 2 = Method of damage equivalent stress range  
(define number of cycles/ reduction of material stiffness acc. Wöhler line)

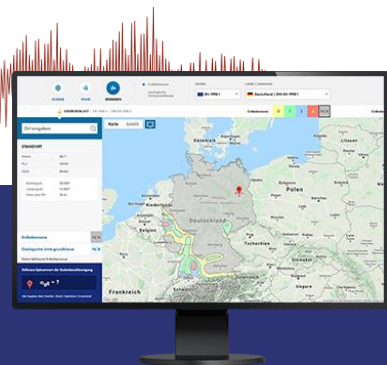


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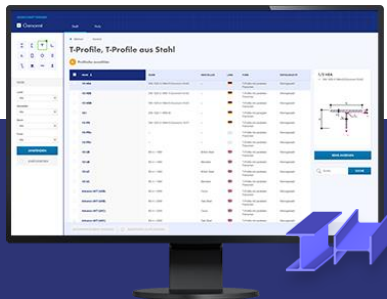
## Geo-Zone Tool

Dlubal Software provides an online tool with snow, wind and seismic zone maps.



## Cross-Section Properties

With this free online tool, you can select standardized sections from an extensive section library, define parametrized cross-sections and calculate its cross-section properties.



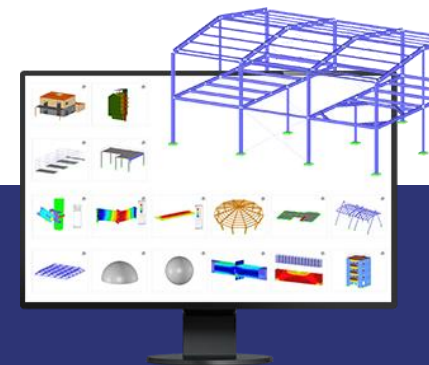
## FAQs & Knowledge Base

Access frequently asked questions commonly submitted to our customer support team and view helpful tips and tricks articles to improve your work.



## Models to Download

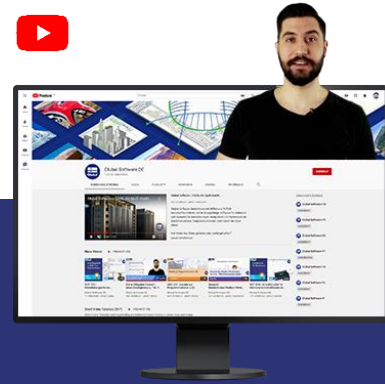
Download numerous example files here that will help you to get started and become familiar with the Dlubal programs.



# Free Online Services

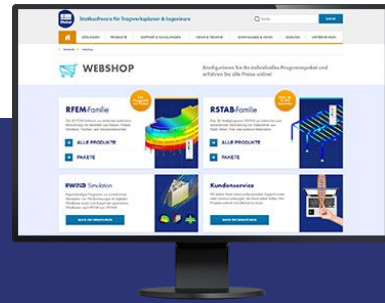
## Youtube Channel - Webinars, Videos

Videos and webinars about the structural engineering software.



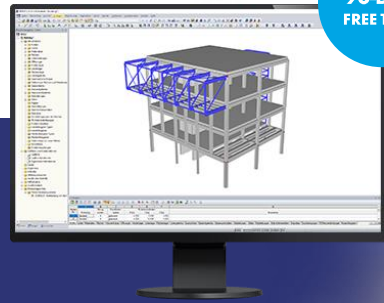
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## Trial Licenses

The best way how to learn using our programs is to simply test them for yourself. Download a 90-day free trial version of our structural analysis & design software.



We offer free support via email and chat



# — Get Further Details About Dlubal



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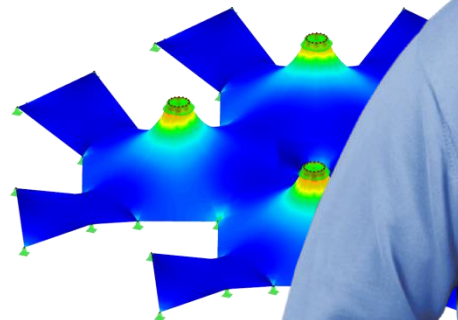
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