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Structural Analysis and Design Software

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Marketing & Public Relations
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Dipl.-Ing. (FH) Paul Kieloch
Co-Organizer

Product Engineering & Customer Support
Dlubal Software GmbH

Dipl.-Ing. (BA) Andreas Niemeier, M.Eng.
Co-Organizer

Product Engineering & Customer Support
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Dipl.-Ing. (FH) Gerhard Rehm
Co-Organizer

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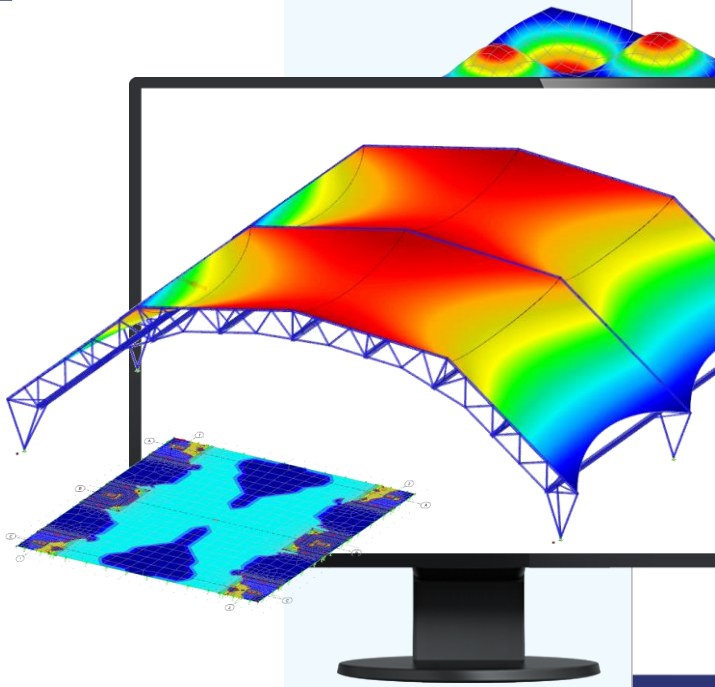
Webinar

Dlubal Info Day Online 2020

Welcome to our webinar today!



Questions During the Presentation

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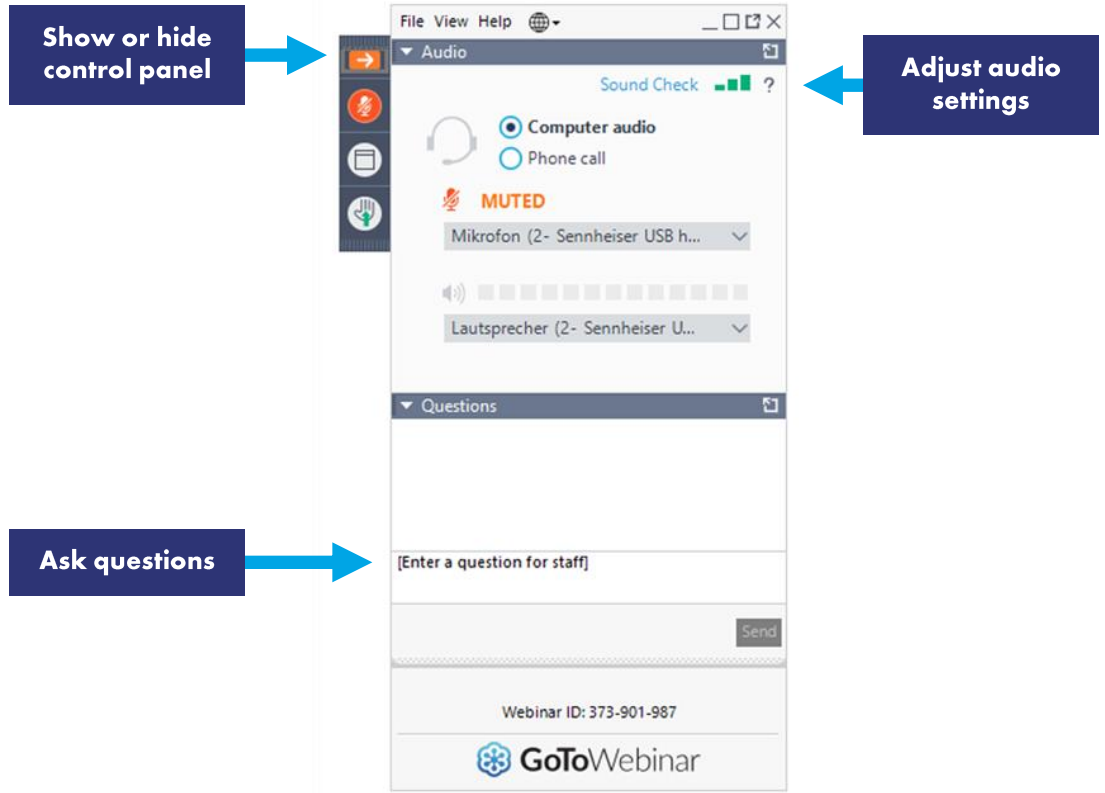
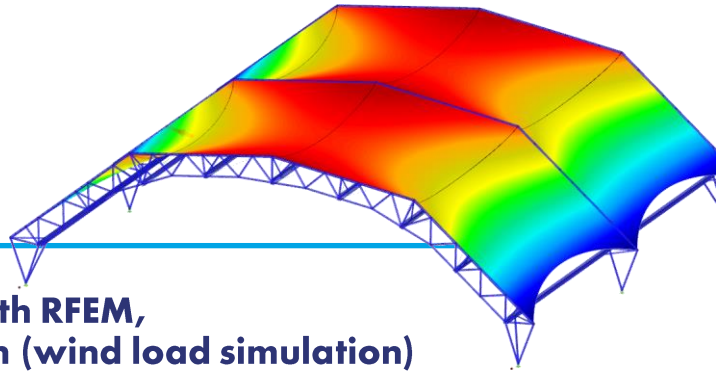


WEBINAR

Content



9 a.m. **Design steel and membrane structures with RFEM, RF-FORM-FINDING and RWIND Simulation (wind load simulation)**

Modeling | Loads (RWIND) and Combinations | Form-finding

Speaker: Andreas Niemeier

11a.m. **Design a reinforced concrete floor slab in RFEM**

Load import | Design for ULS and SLS | Relevant add-on modules

Speaker: Paul Kieloch

1 p.m. **Design cross-laminated timber wall elements**

Basic approach | RFEM and RF-LAMINATE

Speaker: Gerhard Rehm

2:30 p.m. **Tips and tricks as well as current news from Dlubal Software**

Speakers: G. Rehm, P. Kieloch, A. Niemeier

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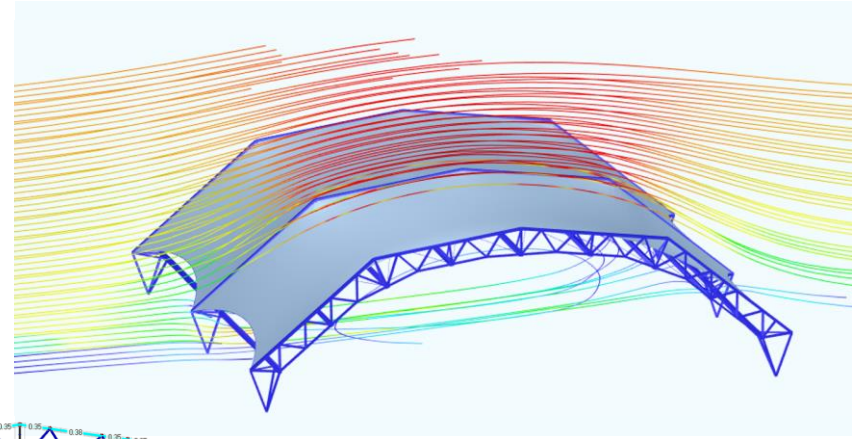
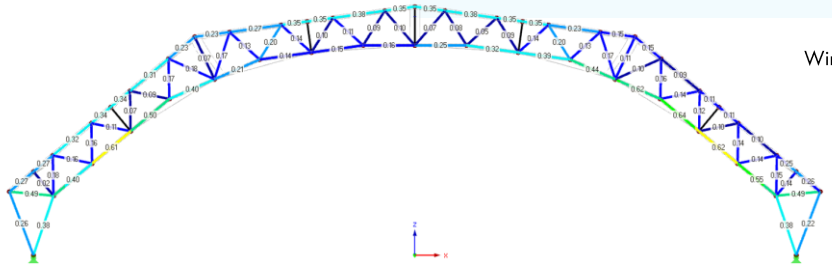
Steel and Membrane Structures

- Modeling a tennis court roof
- Loads
- Wind load generation based on CFD
- Load case combinatorics
- Stability analysis
- Generating imperfections
- Member and surface component design



Wind load determination with RWIND Simulation ▲



Member design with RF-/ STEEL EC3 ▶

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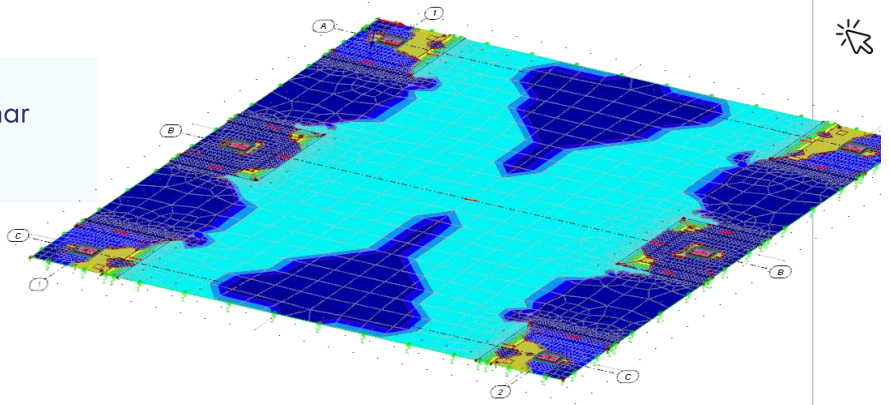

At the moment, we're taking a short break.

Next Presentations

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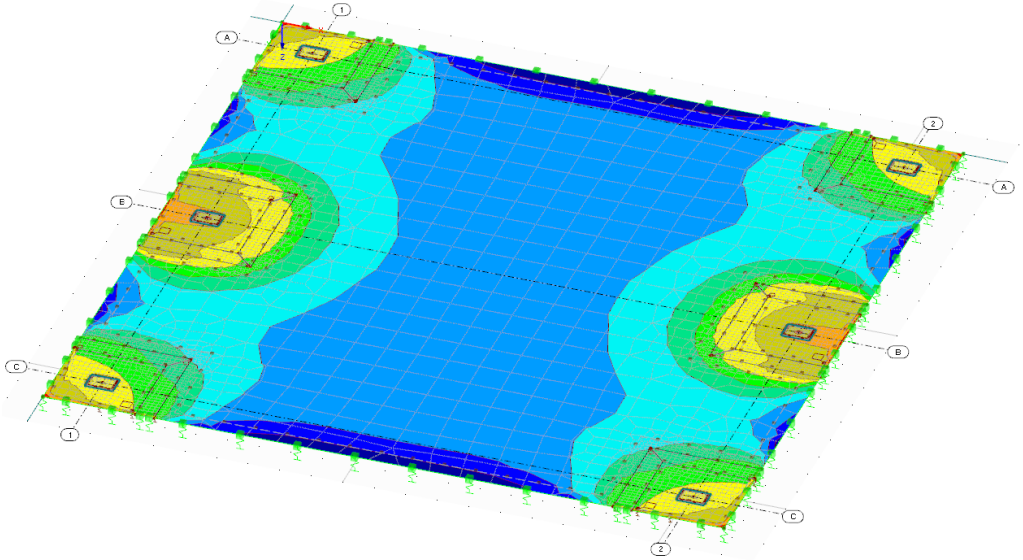
Basic approach | RFEM and RF-LAMINATE

Speaker: Gerhard Rehm

2:30 p.m. **Tips and tricks as well as current news from Dlubal Software**

Referenten: G. Rehm, P. Kieloch, A. Niemeier

Design a Reinforced Concrete Floor Slab Utilizing RFEM 5 and the Add-on Modules



Design a Reinforced Concrete Floor Slab Utilizing RFEM 5 and the Add-on Modules

Structure

- Steel hall with nodal support forces as a basis for the design
- Modeling the floor slab with the dxf background layer
- Supporting the surface model
- Load case definition and load case import
- Calculation parameters and FE mesh settings
- Creating the combinations for the design
- Internal forces determination in RFEM 5
- Design in the reinforced concrete add-on modules for RFEM

Content

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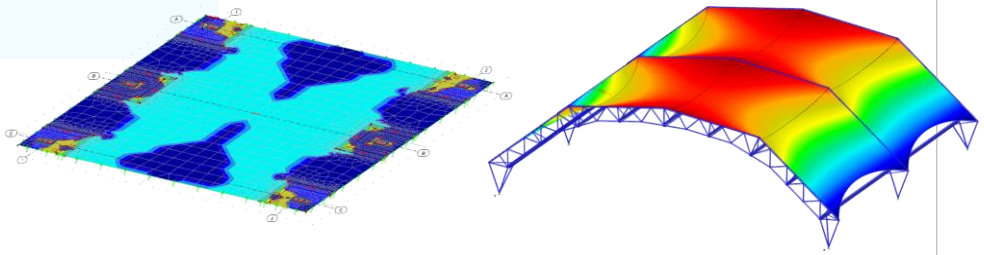

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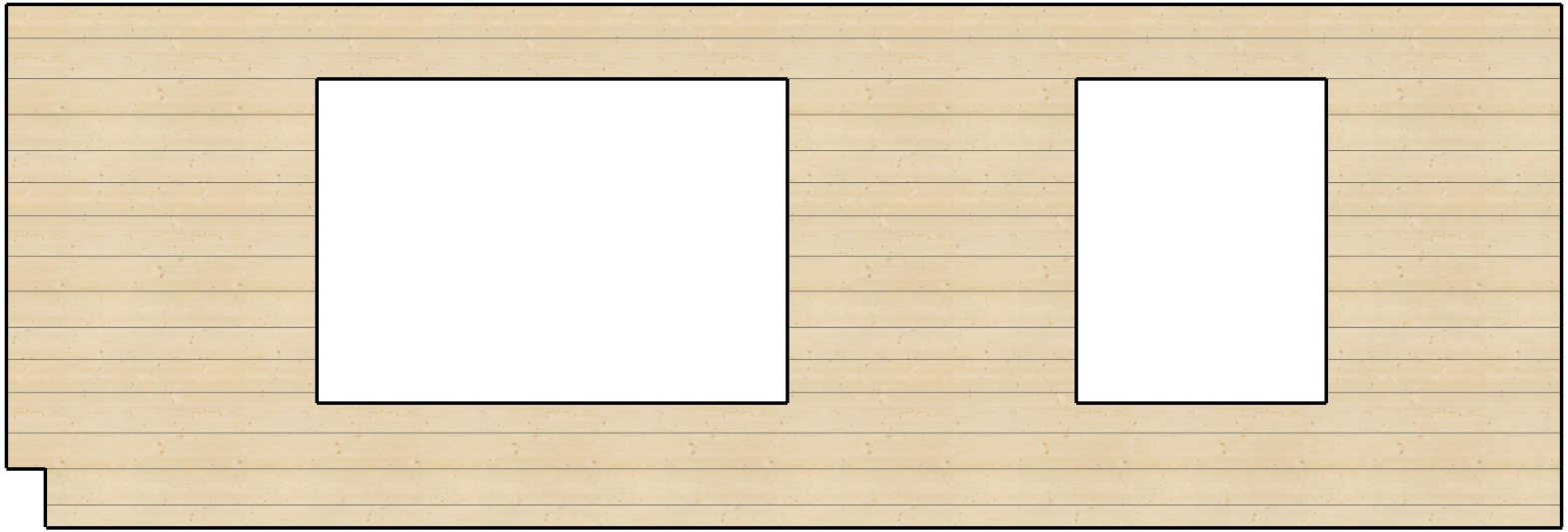
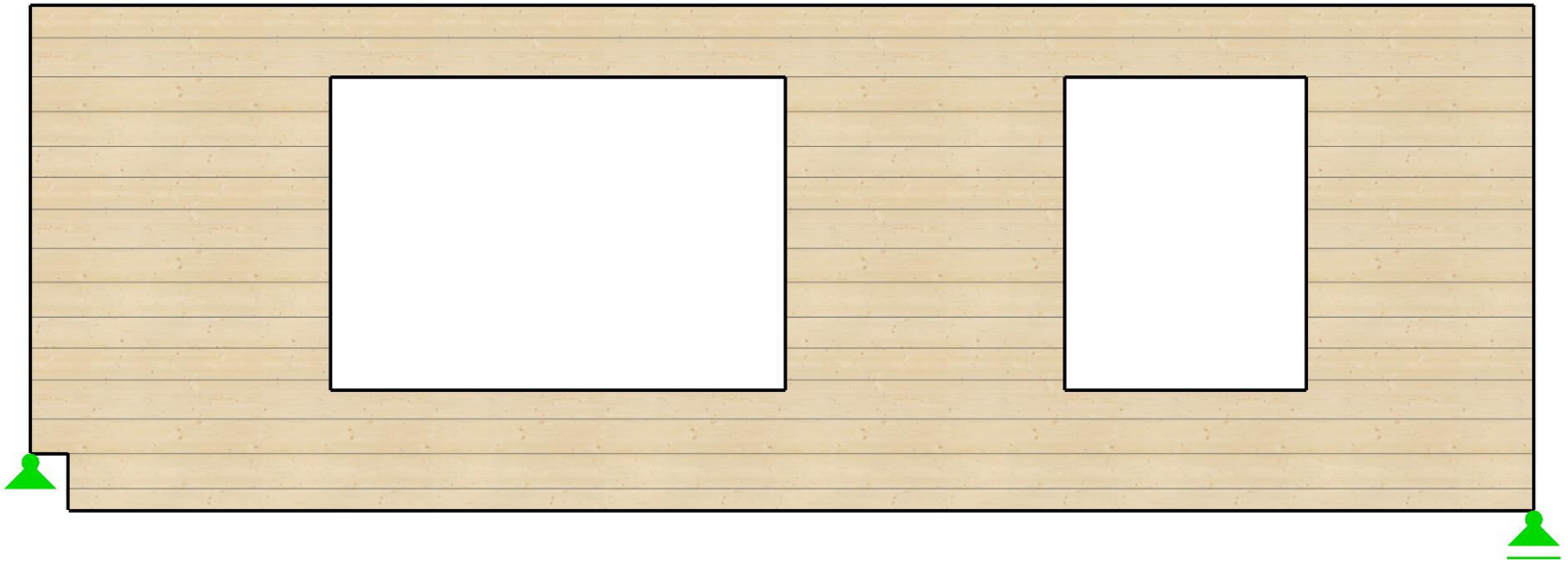
1 p.m. **Design cross-laminated timber wall elements**
Basic approach | RFEM and RF-LAMINATE
Speaker: Gerhard Rehm

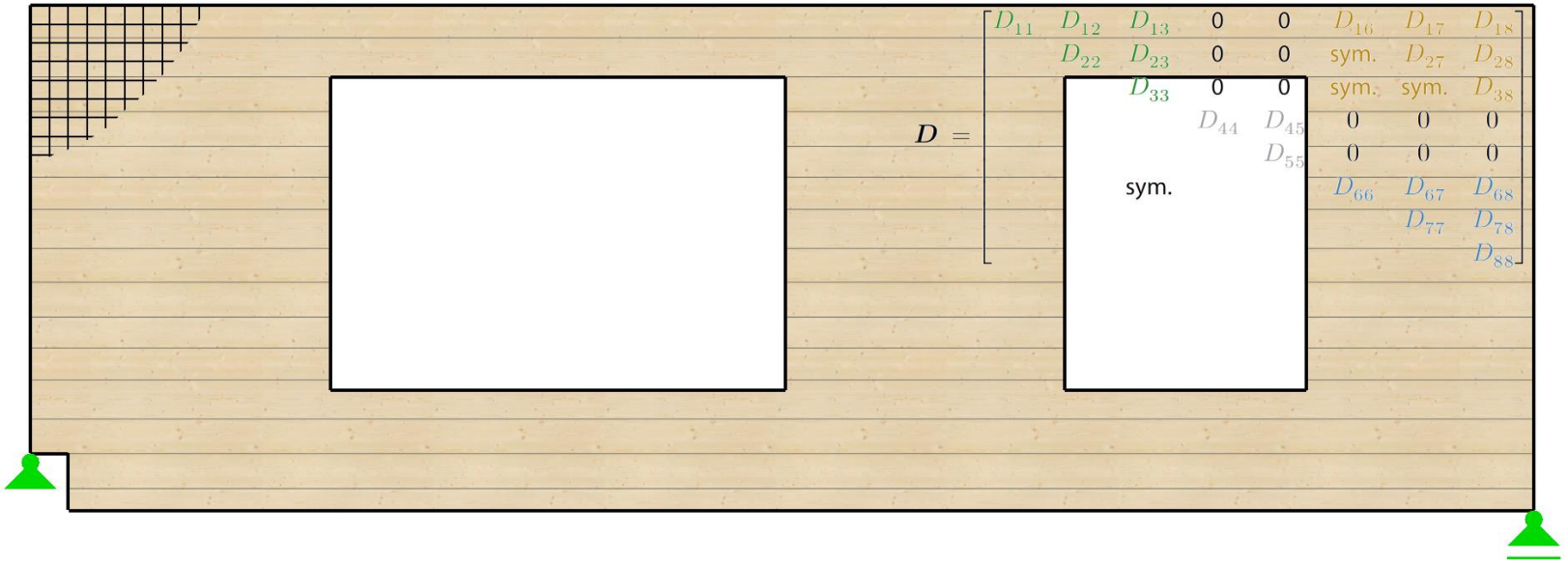
2:30 p.m. **Tips and tricks as well as current news from Dlubal Software**
Speakers: G. Rehm, P. Kieloch, A. Niemeier

Design Cross-Laminated Timber Wall Elements

Practical example: **Deep beam**



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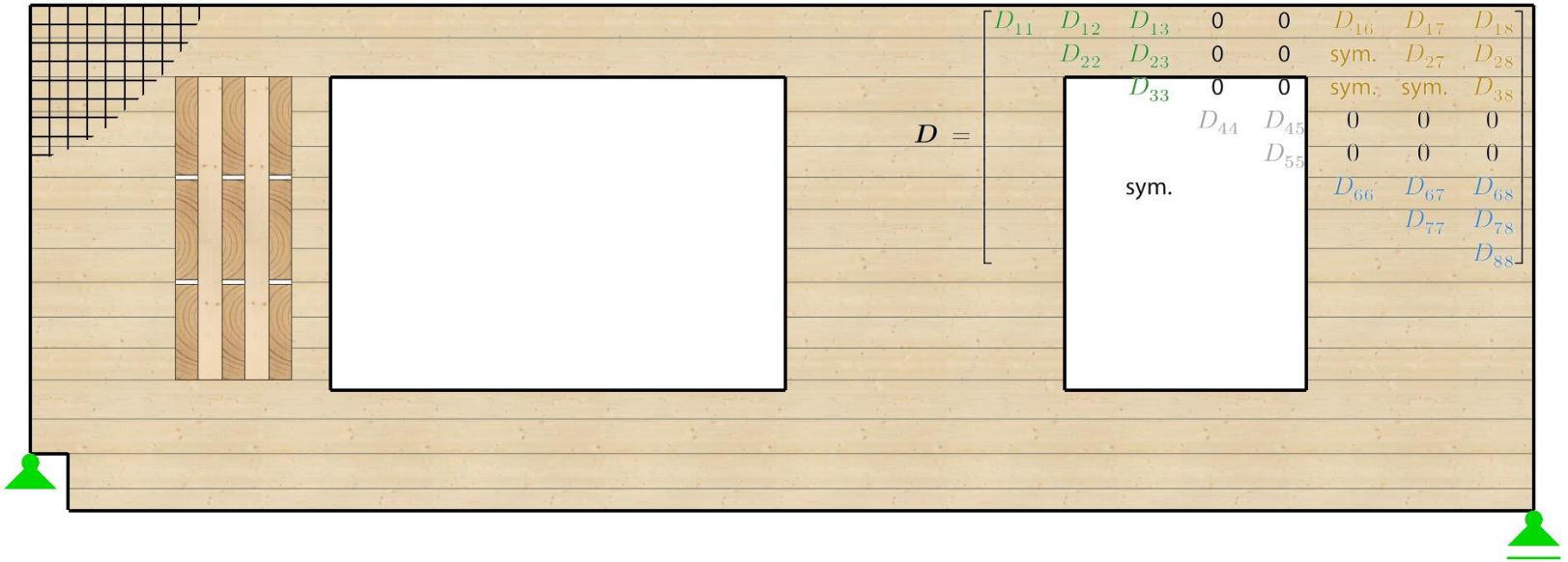

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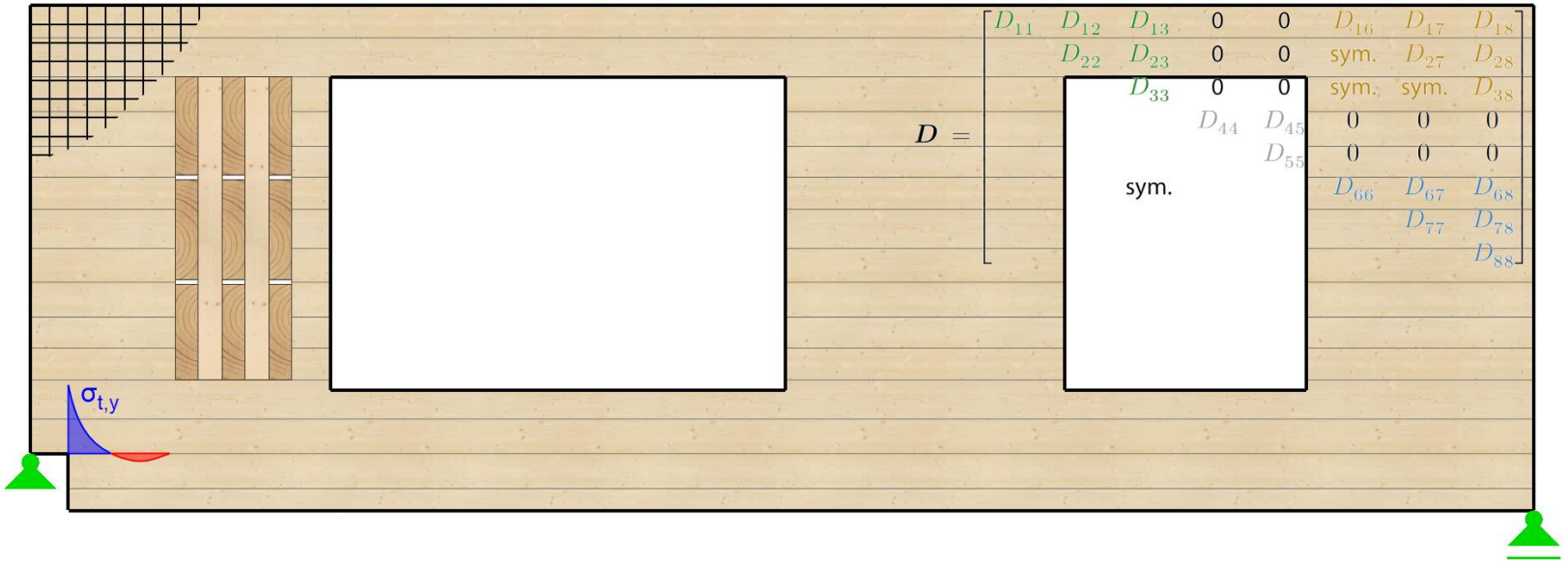
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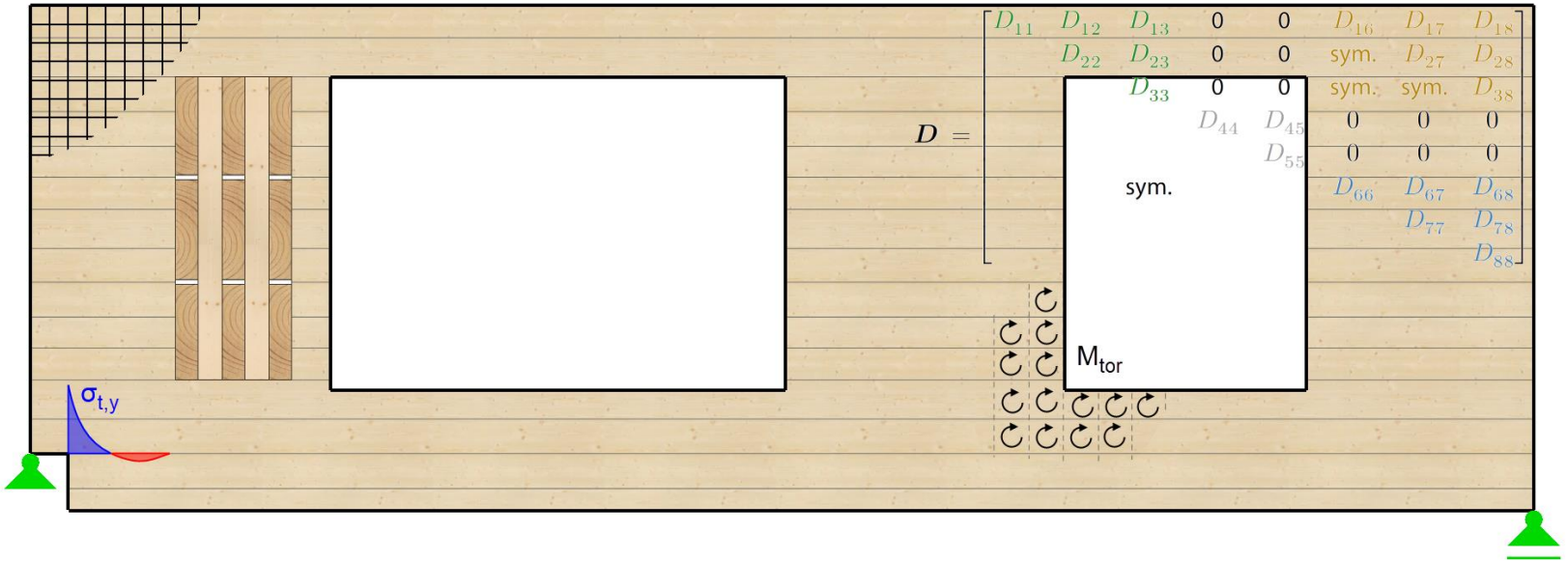
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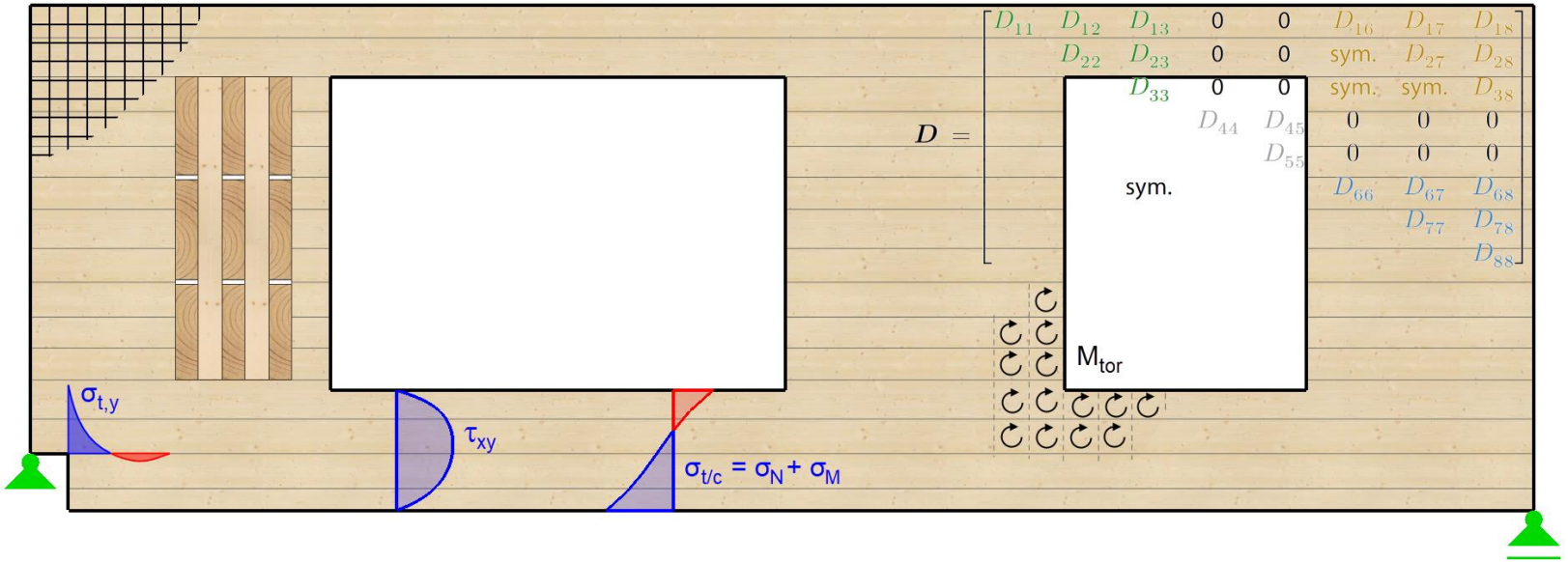
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D =
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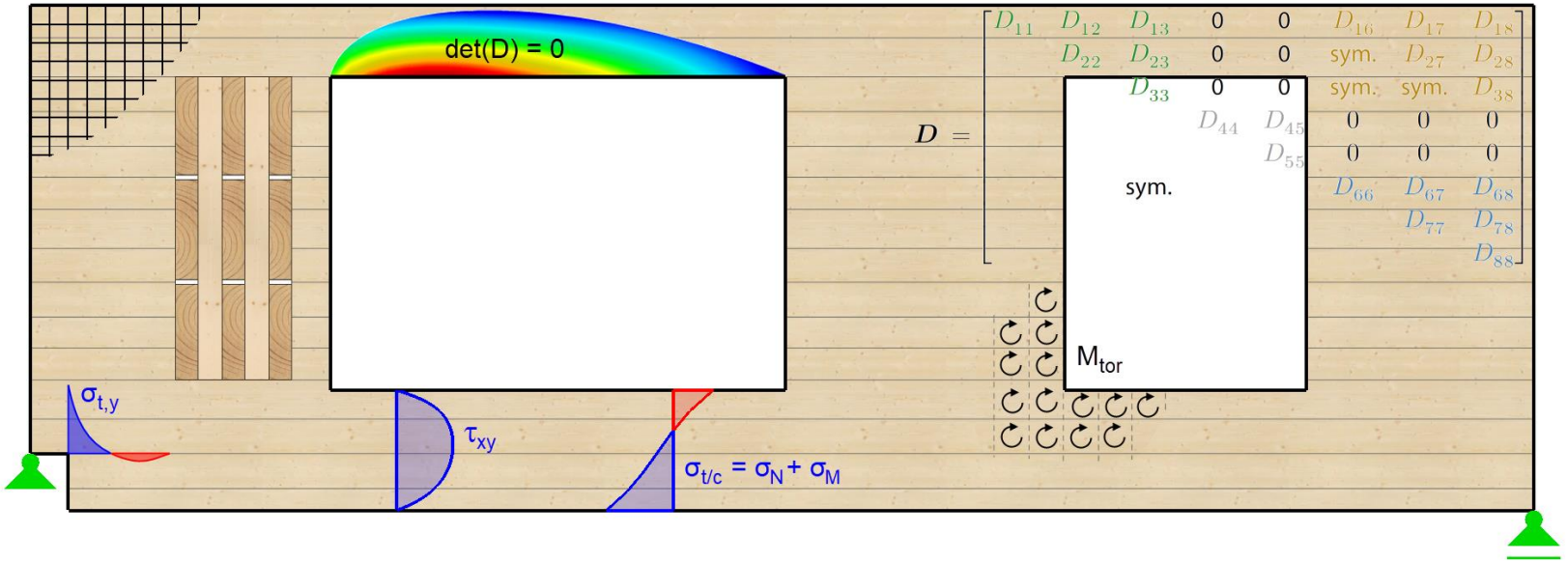
M_{tor}
$\sigma_{t,y}$
τ_{xy}
$\sigma_{t/c} = \sigma_N + \sigma_M$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σ_t,y
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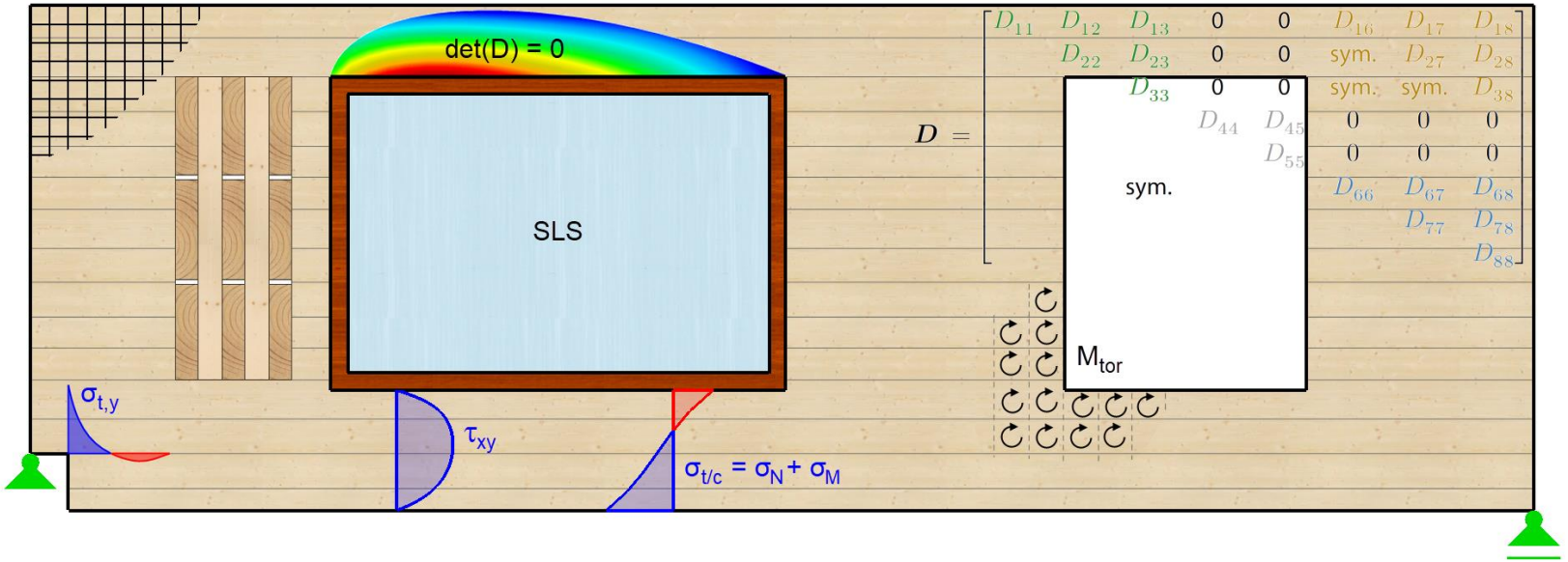
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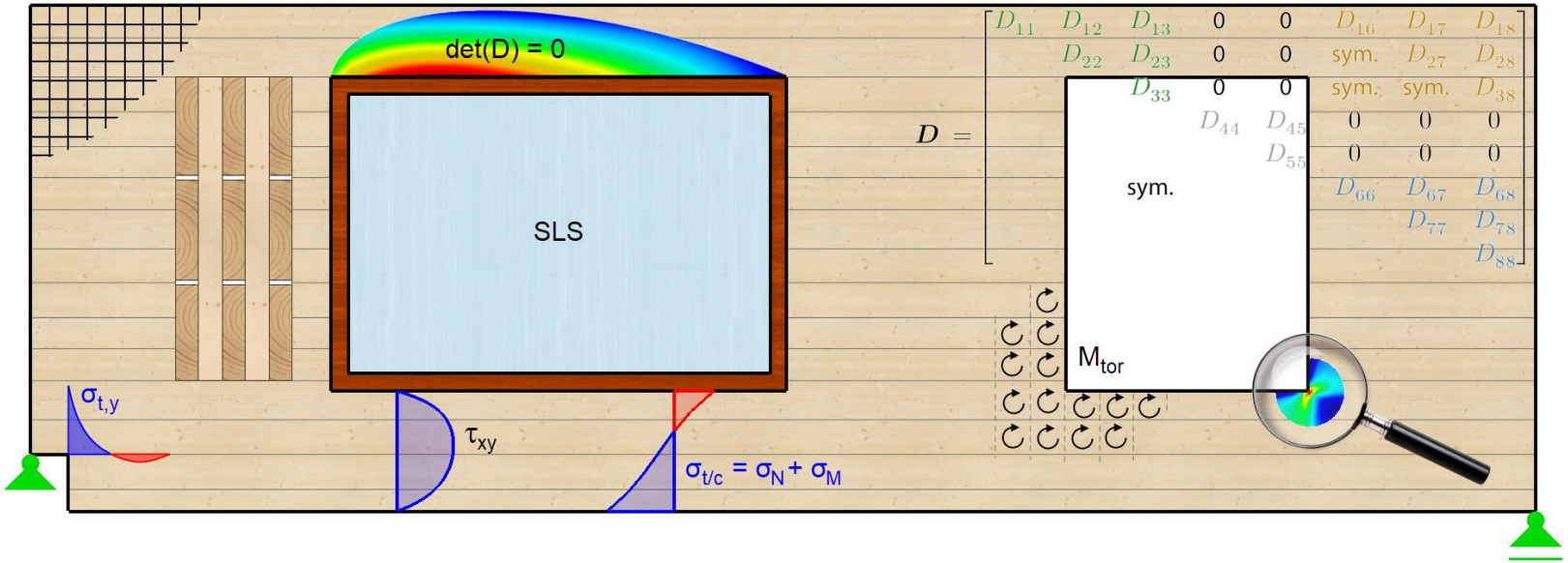
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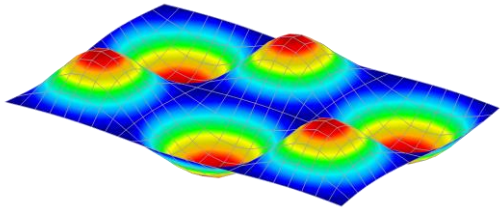
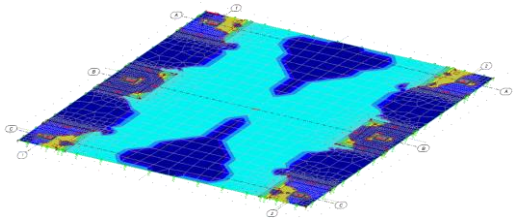
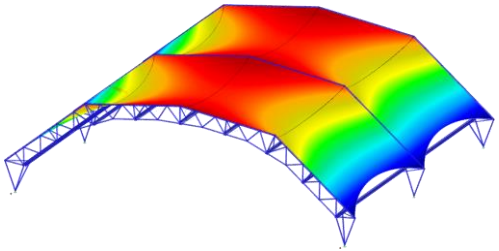
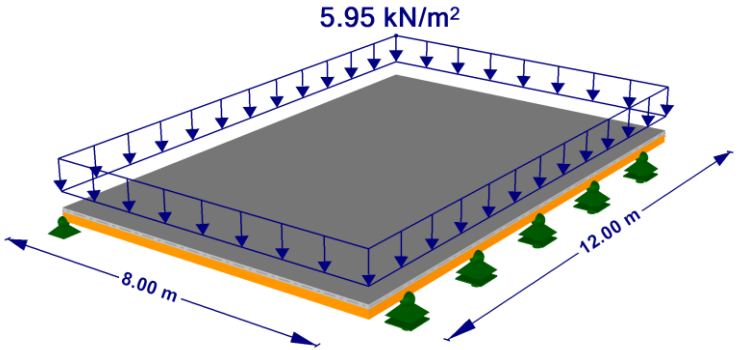






Example: Timber Concrete Composite Floor Slab

$E_{Timber} = 10\,000\ N/mm^2$
$E_{Concrete} = 30\,000\ N/mm^2$
$K_{ser} = 1\,720\,000\ kN/m^3$
$D = 1.5\ \%$
$h_{Timber} = 200\ mm$
$h_{Concrete} = 100\ mm$



Blass, H. J.; Ehlbeck J.; Kreuzinger H.; Steck G.: Erläuterungen zu DIN 1052: Entwurf, Berechnung und Bemessung von Holzbauwerken, 2nd edition. Karlsruhe: Bruderverlag, 2005, page 93

Example: Timber Concrete Composite Floor Slab

Deflection analysis	$9.5\ \text{mm} > 6.0\ \text{mm}$	→ $> 7.2\ \text{Hz}$
Natural frequency	$5.87\ \text{Hz} < 8.0\ \text{Hz}$	→ additional designs required
Stiffness design (1kN)	$0.083\ \text{mm} < 0.5\ \text{mm}$ to $4.0\ \text{mm}$	
Acceleration	$0.064\ \text{m/s}^2 < 0.1\ \text{m/s}^2$	

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$$a = \frac{0.4 \cdot 0.1 \cdot 700\text{N}}{m \cdot 0.5 \cdot l \cdot 0.5 \cdot b \cdot 2 \cdot D} = \frac{56}{m \cdot l \cdot b \cdot D} \left[\frac{m}{s^2}\right]$$

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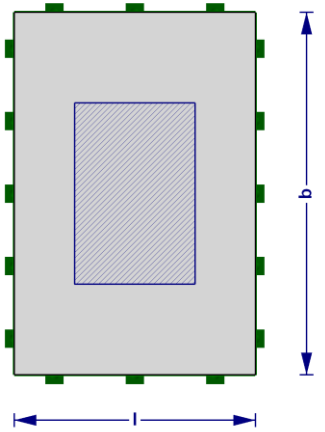

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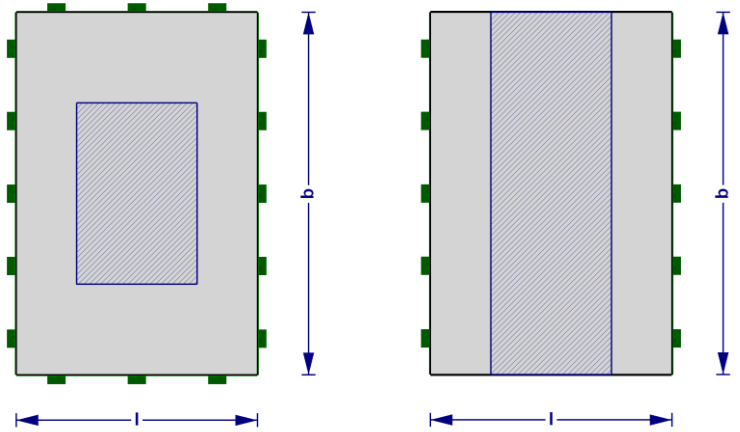

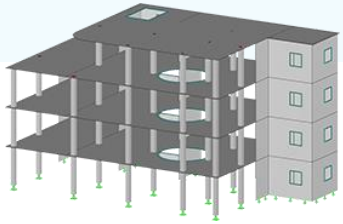

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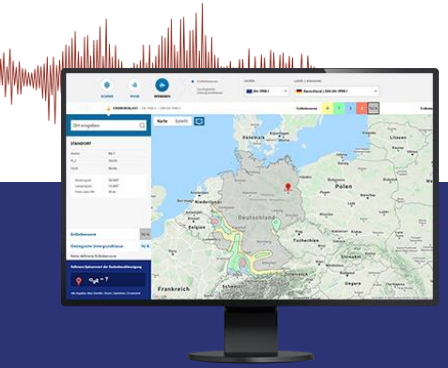

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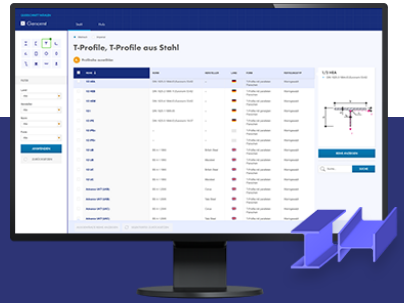
With this free online tool, you can select standardized sections from an extensive section library, define parametrized cross-sections and calculate its cross-section properties.



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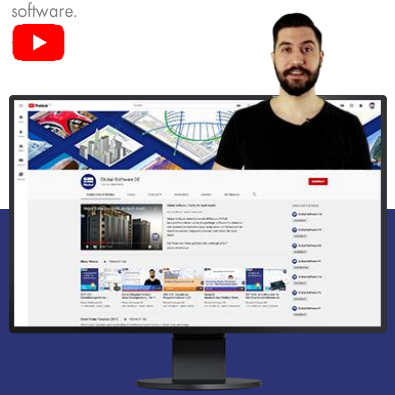

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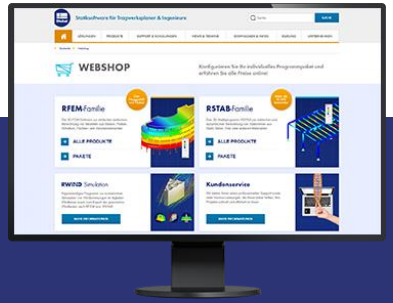

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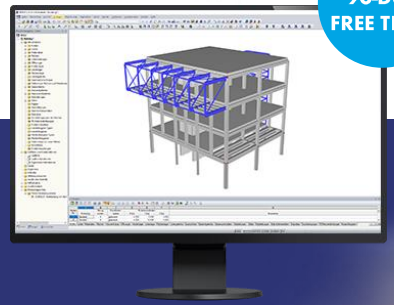
The best way to learn our program is to simply test them yourself. Download the 90-day trial version of our structural analysis and design software today.



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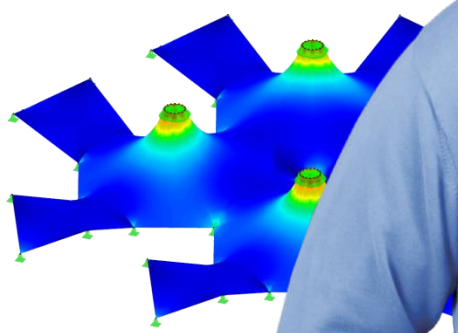

Dlubal Software GmbH
Am Zellweg 2, 93464 Tiefenbach
Germany

Phone: +49 9673 9203-0
Email: info@dlubal.com

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