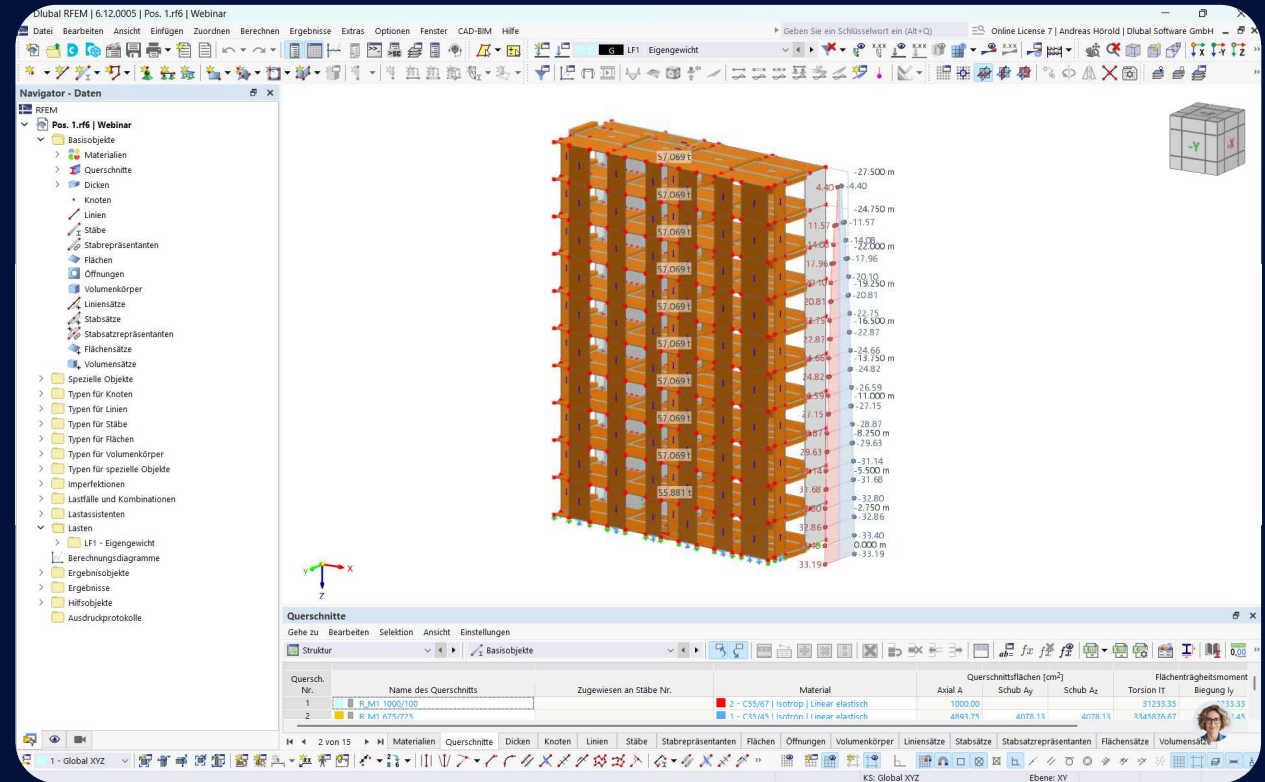


Webinar

Dlubal

Seismic Safety of Hybrid Structures

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Today with



**Dipl.-Ing. (FH)
Andreas Hörold**
Organizer

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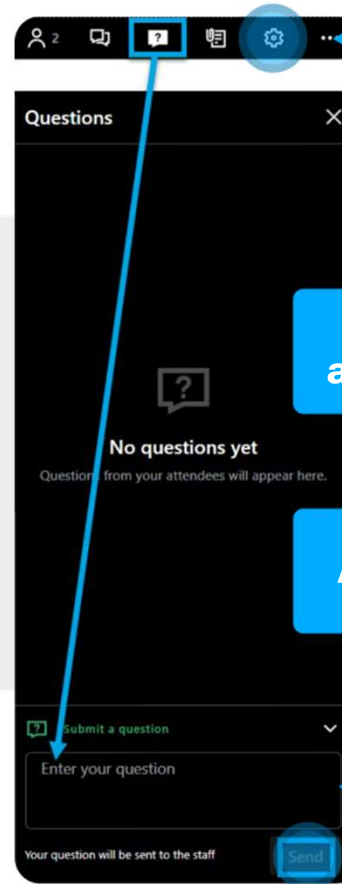


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Co-Organizer

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Questions During the Presentation

1
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Content

1

Fly Mode

2

Stiffness

3

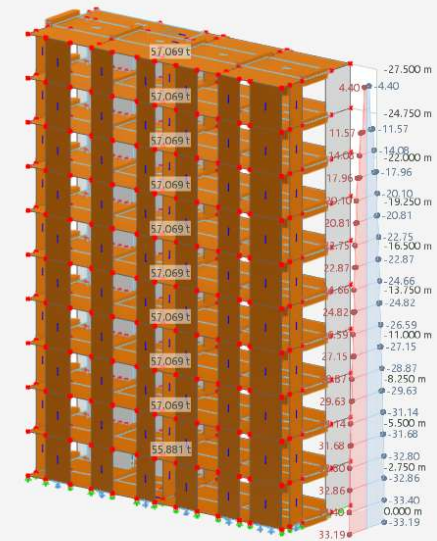
3D/2D Components

4

CLT Stability (Walls + RSECTION)

5

Dynamics with the BM



Fly Mode

Linear

CONTENTS

- Activate Fly Mode
- Live modeling of walls, openings, columns
- Advantages over 3D input + short participant exercise

Stiffness

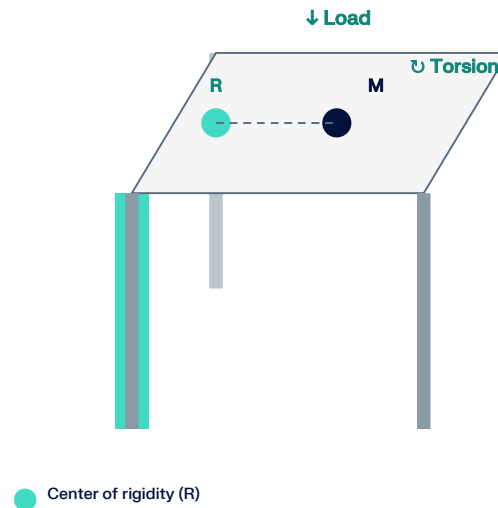
CONTENTS

- Create a dedicated thickness type “Wall – Shear-Free” in RFEM 6
- Distinguish it from a shear-stiff wall based on the results
- Determine the center of rigidity per story in the GBM
- Rigid vs. semi-rigid floor diaphragm: effect on the result

Floor diaphragm stiffness: [Rigid Diaphragm](#) | [Semi-Rigid Diaphragm](#)

Determining the Center of Rigidity

- 3 unit load cases at the center of mass of each story:
 - LC1: unit load in X direction
 - LC2: unit load in Y direction
 - LC3: unit moment about the Z axis
- Each load case produces deformations (X, Y, ϕ_z)
- Iterative back-calculation until $\phi_z = 0 \rightarrow$ this yields the location of the center of rigidity in the diaphragm plane



3D/2D Components

CONTENTS

- Isolated walls: meaning of “isolated” and setup in the GBM
- Isolated members: setup in the GBM for beams and ribs
- Analyze the same model in 2D (per story) vs. 3D
- Compare the results (load distribution, deformation)

CLT Stability (Walls + RSECTION)

CONTENTS

- Define the CLT wall type in the GBM
- Transfer/coupling to RSECTION
- Possible verifications and limits of the method

Seismic Displacement in the Building Model

CONTENTS

- New factor in the response spectrum analysis:

$$d_{\text{seismic}} = d_{\text{reduced}} \times \text{Factor}$$

- Integration into the Building Model add-on: “Results by Story”
→ tables “Story Displacements” and “Sensitivity Coefficients”
- Automatic output per story – no more manual back-calculation needed

Verification of Story Sensitivity (θ)

CONTENTS

- According to Eurocode, Section 4.4.2.2(2):

$$\theta = \frac{P_{\text{tot}} \cdot d_r}{V_{\text{tot}} \cdot h}$$

- $\theta \leq 0.10 \rightarrow$ not considered · $0.10 < \theta \leq 0.2 \rightarrow$ considered · θ must not exceed 0.3 (limit)
- d_r is calculated according to Section 4.3.4
- Alternatively: verification according to ASCE 7, Section 12.8.7

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All you need to know for a start!



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Eurocode 2 Masterclass

Deep Dive in Reinforced Concrete Design with RFEM 6!



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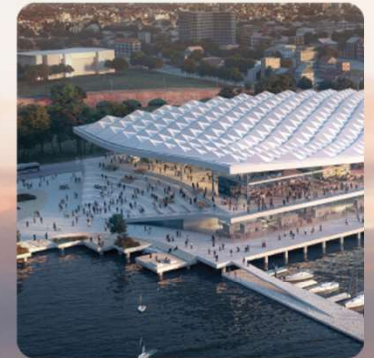


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