



# **Structural Analysis & Design Software**

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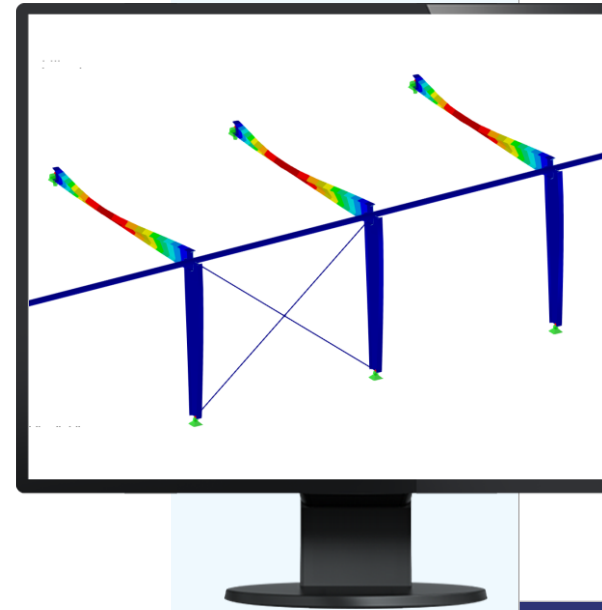


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Webinar

# Stability Analysis and Torsional Warping (7 DOF) in RFEM 6



# Questions During the Presentation



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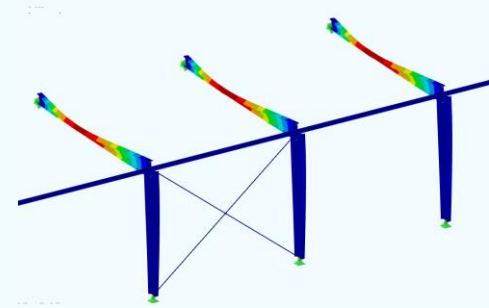
Adjust audio settings

Ask questions



# CONTENT

- 01** Determination of the critical load factor using the *Structure Stability* add-on
- 02** Consideration of cross-section warping in the global calculation of member structures using the *Torsional Warping* add-on
- 03** Lateral-torsional buckling analysis according to Eurocode 3 using the global calculation with 7 DOF, imperfections and second-order analysis

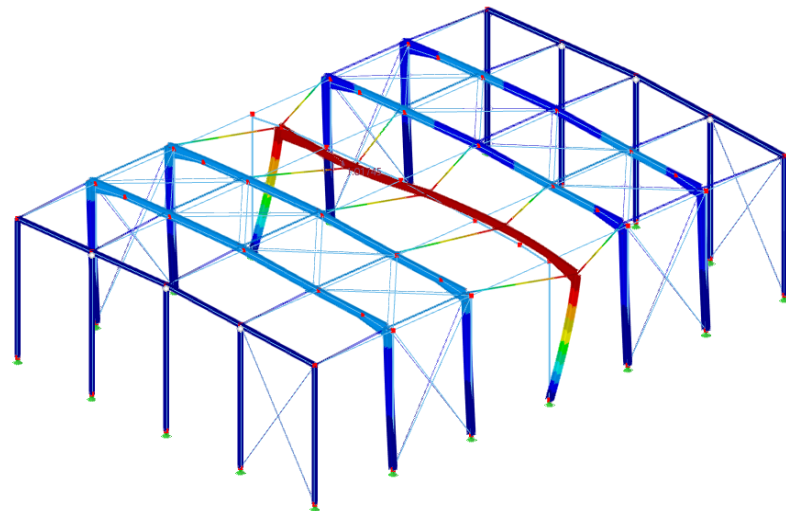




# Structure Stability Add-On

- Determination of critical load factors
- Calculation of models consisting of member, shell, and solid elements
- Nonlinear stability analysis using load increments
- Optional determination of mode shapes of unstable models (to find cause of instability)
- Visualisation of stability mode
- Basis for determination of imperfection

→ [Structure Stability for RFEM 6 / RSTAB 9](#)

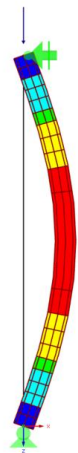


# Stability Failure of Member Structures

$$\alpha_{cr} = \frac{N_{cr,min}}{N_{Ed}}$$

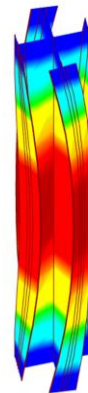
or

$$\alpha_{cr} = \frac{M_{cr}}{M_{Ed}}$$



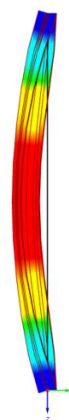
**Flexural Buckling**

$N_{cr,y/z}$  ;  $N_{cr,u/v}$



**Torsional Buckling**

$N_{cr,T}$



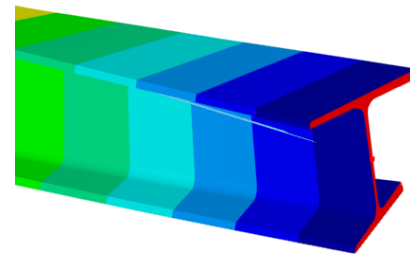
**Lateral-torsional Buckling  
Flexural-torsional Buckling**

$N_{cr,FTB}$  ;  $M_{cr}$



# Torsional Warping (7 DOF) Add-On

- Consideration of cross-section warping as additional degree of freedom when calculating member elements
- Usable in combination with Structure Stability add-on for determining critical load factors and mode shapes of stability problems such as torsional buckling and lateral-torsional buckling on entire structure
- Full integration with RFEM and RSTAB



→ [Torsional Warping \(7 DOF\) for RFEM 6 / RSTAB 9](#)



# Applications

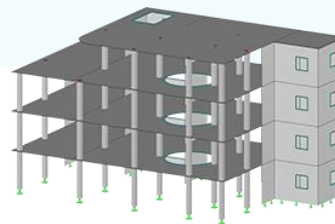
- **Thin-walled cross-sections with intended torsion, e.g. crane runway girders**
- **Lateral-torsional buckling analyses conforming to standards for non-doubly symmetric cross-sections, e.g. channels**
- **Consideration of stiffness of connected structural elements as part of a stability analysis on entire structure**

➔ [Torsional Warping \(7 DOF\) for RFEM 6 / RSTAB 9](#)



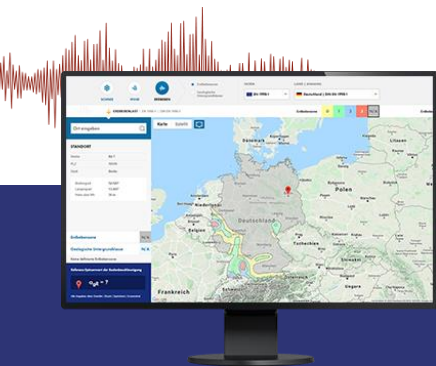


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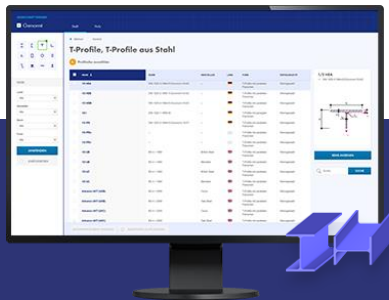
## Geo-Zone Tool

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



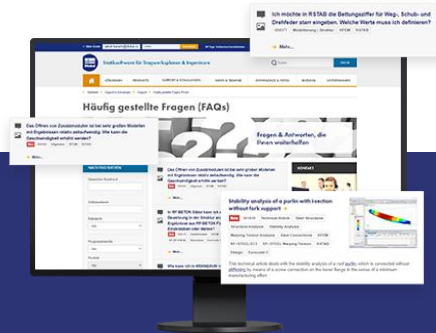
## Cross-Section Properties

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

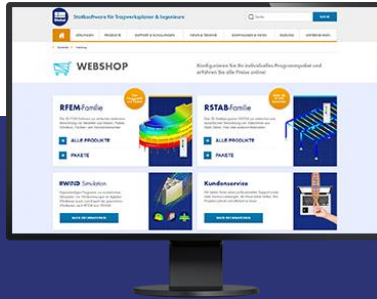
## Youtube Channel - Webinars, Videos

Videos and webinars about the structural engineering software.



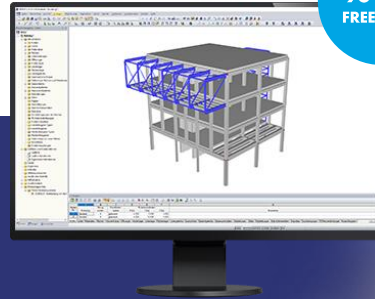
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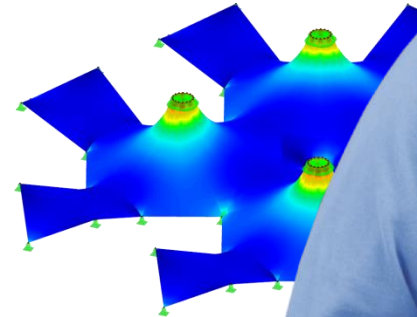
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