JSSE.

JS Structural Engineering

Special structures - special loads - optimal solutions.

COMPANY PRESENTATION - 2026

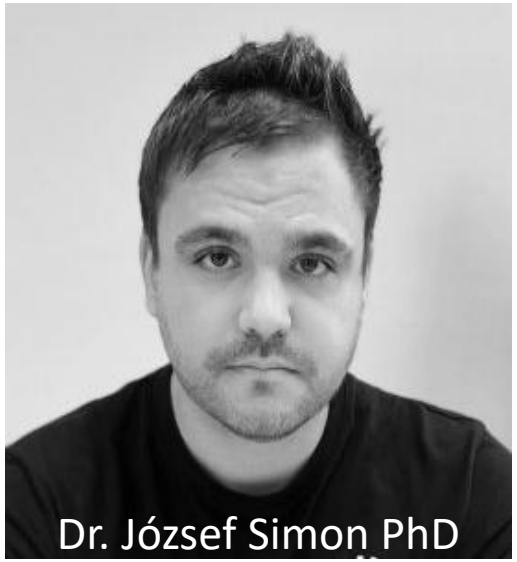
Website: https://jsse.eu E-Mail: j.simon@jsse.eu Phone: +36 30 425 2625

Company

"Special structures - special actions - optimal solutions"

Based on these keywords, the idea emerged in 2018 to establish a company that provides solutions for special engineering questions and tasks arising in design, both on the domestic and international markets.

- **5 years of research experience** (BME; 2012-2017) and a PhD dissertation in seismic design
  - Revision of Hungary's seismicity
  - **Development of site-specific spectra**
  - Stochastic seismic risk assessment of the entire Hungarian bridge stock


Dr. József Simon PhD

- **Member of the seismic research group** (BME; 2015-2017)
  - Revision of Hungary's seismicity
  - **Development of site-specific spectra**
- More than **14 years of experience** (2012-2026) **in seismic design** and dynamic analyses

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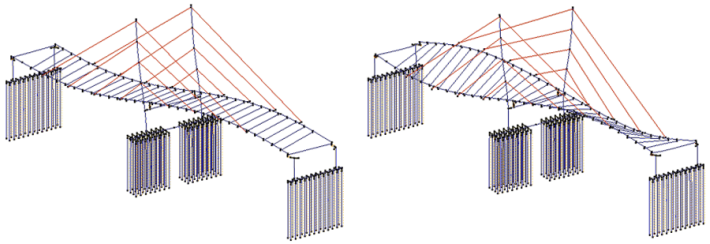
JSSE.

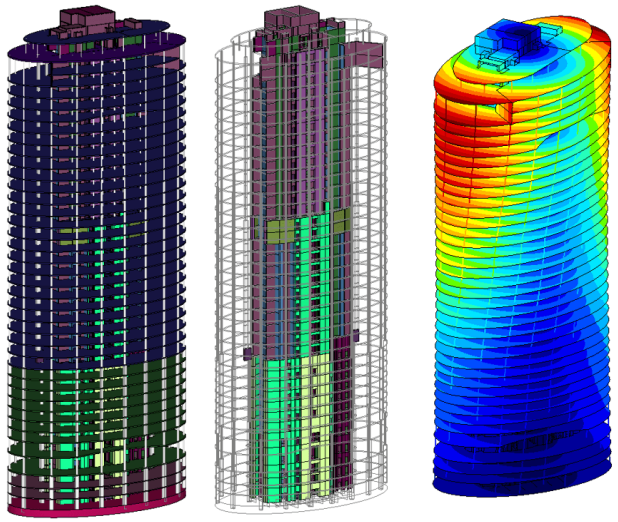
Main activities

Seismic assessment

- code-based seismic assessment
- response spectrum analysis
- push-over analysis
- linear and nonlinear time-history analysis
- design of strengthening and damping measures
- detailing rules and ductility assurance
- special modelling issues
- hysteresis material laws under seismic actions
- utilisation of plastic reserves
- stochastic-based analyses
- and statistical methods

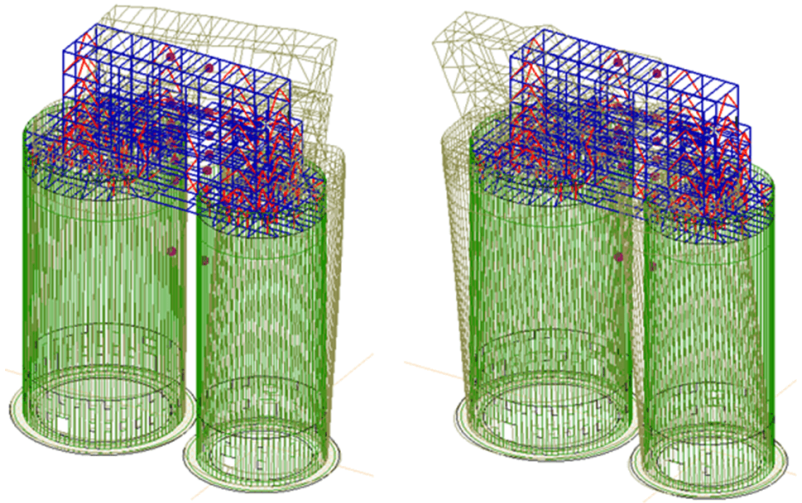
Bridges





Buildings

Industrial facilities



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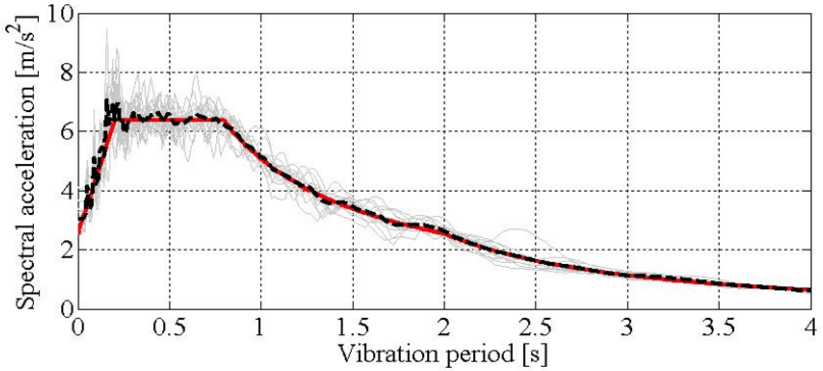
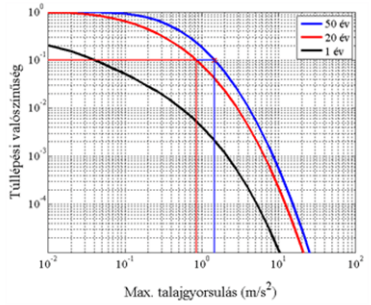
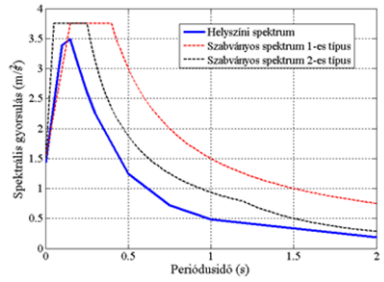
Main activities

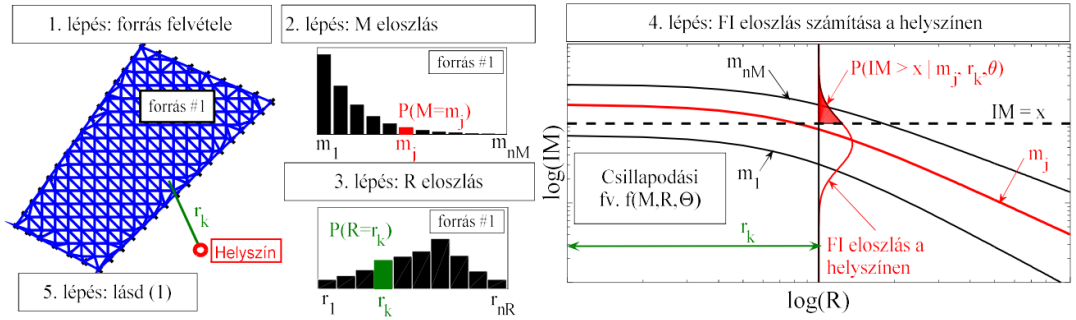
Site-specific seismic loading

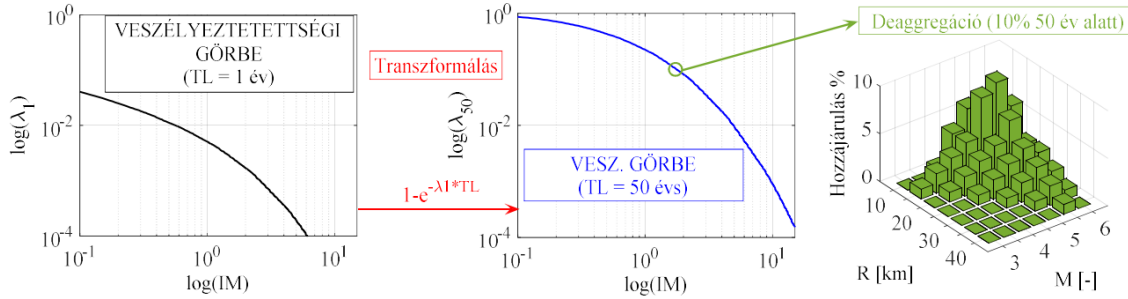
- site-specific hazard assessment
- definition of site-specific spectra
- spectra for different design working lives
- generation of artificial records
- selection of real records

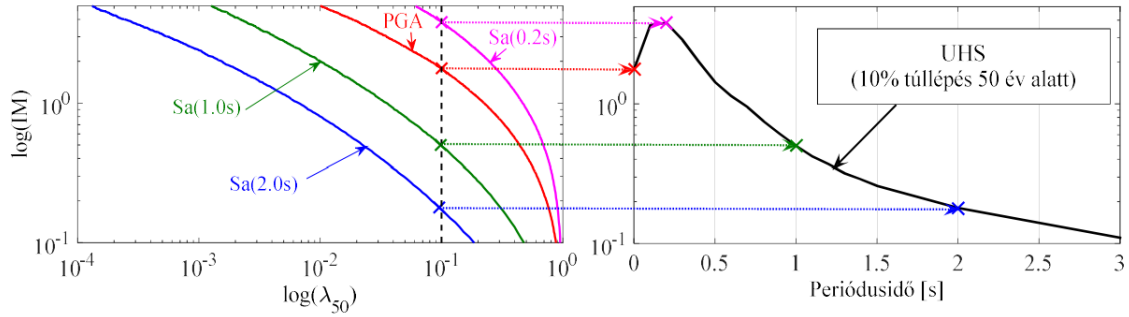








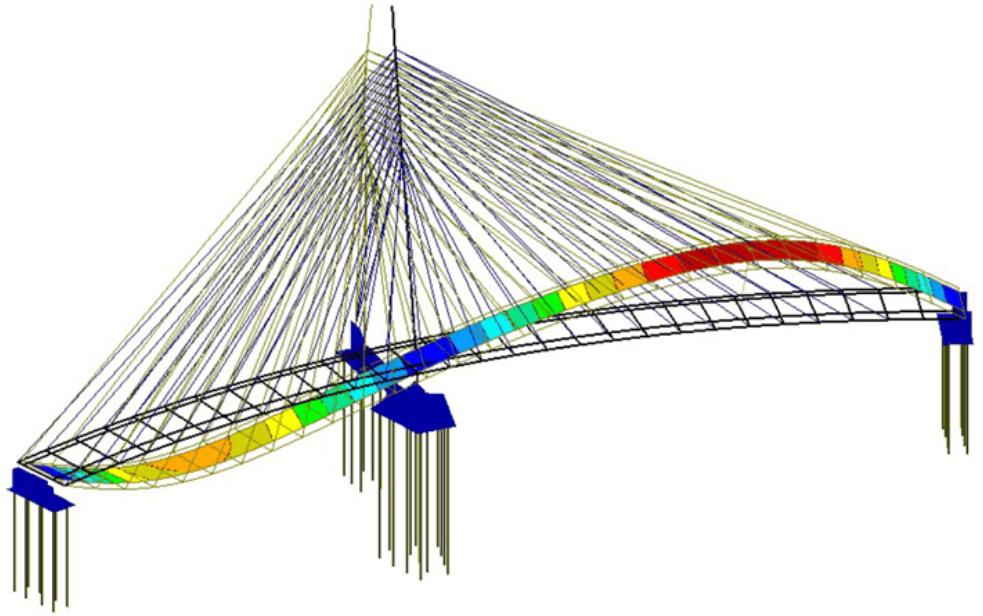


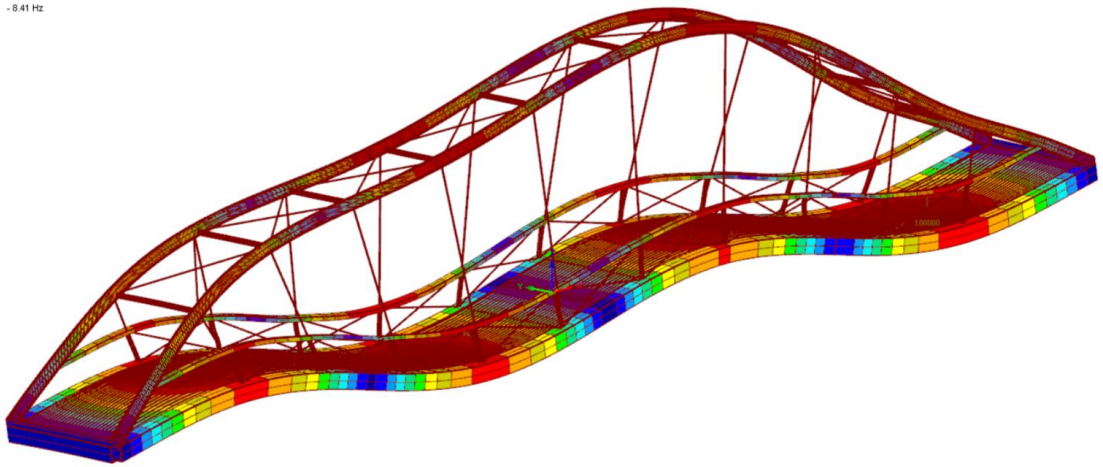


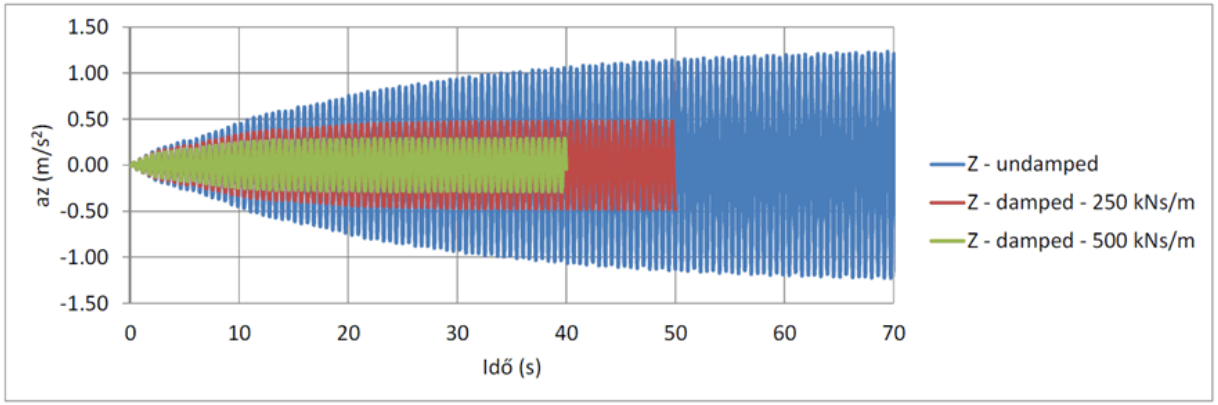
Main activities

Pedestrian dynamics

- floors, grandstands, bridges
- code-based assessment
- vibrations induced by moving loads
- planning and evaluation of load tests
- design of strengthening and damping measures
- tuning of dampers after construction







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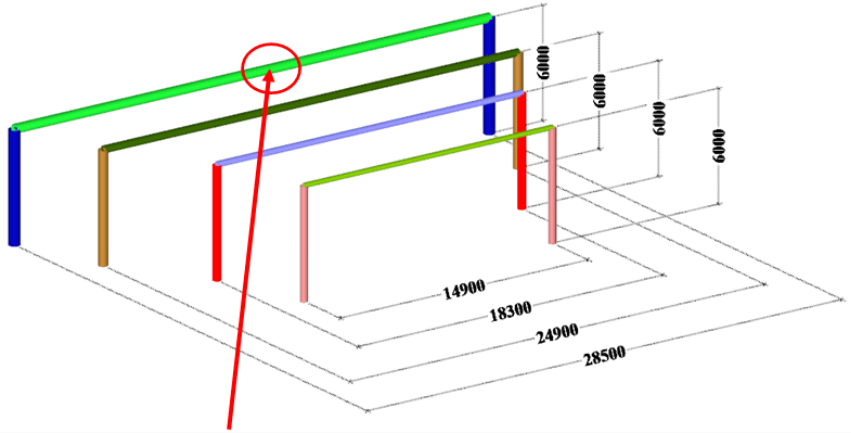
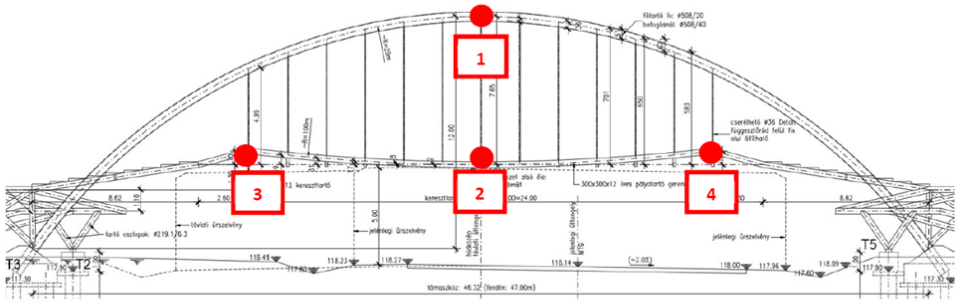
Main activities

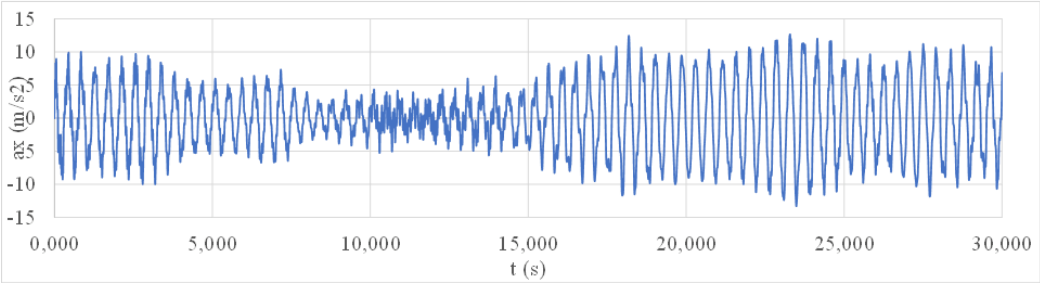
Wind dynamics

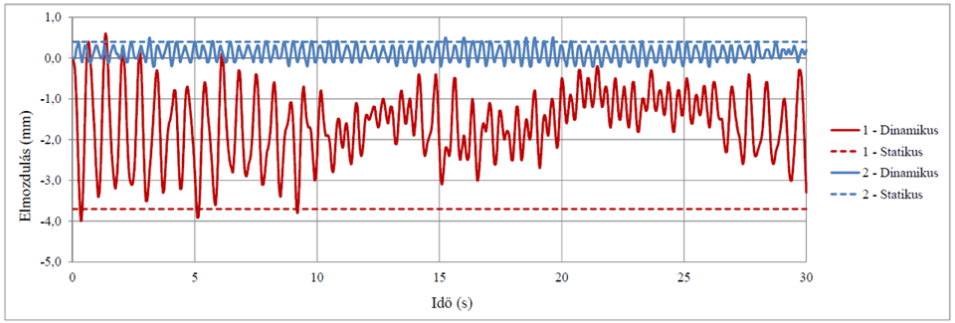
- towers, cables, arches, bridge decks, etc.
- quasi-static wind loading
- code-based determination of force coefficients
- generation of artificial wind records
- time-history analysis with wind records

- fatigue assessment under wind gusts
- code-based calculation of vortex shedding
- dynamic calculation of vortex shedding
- fatigue assessment due to vortex shedding
- aeroelastic instability assessment





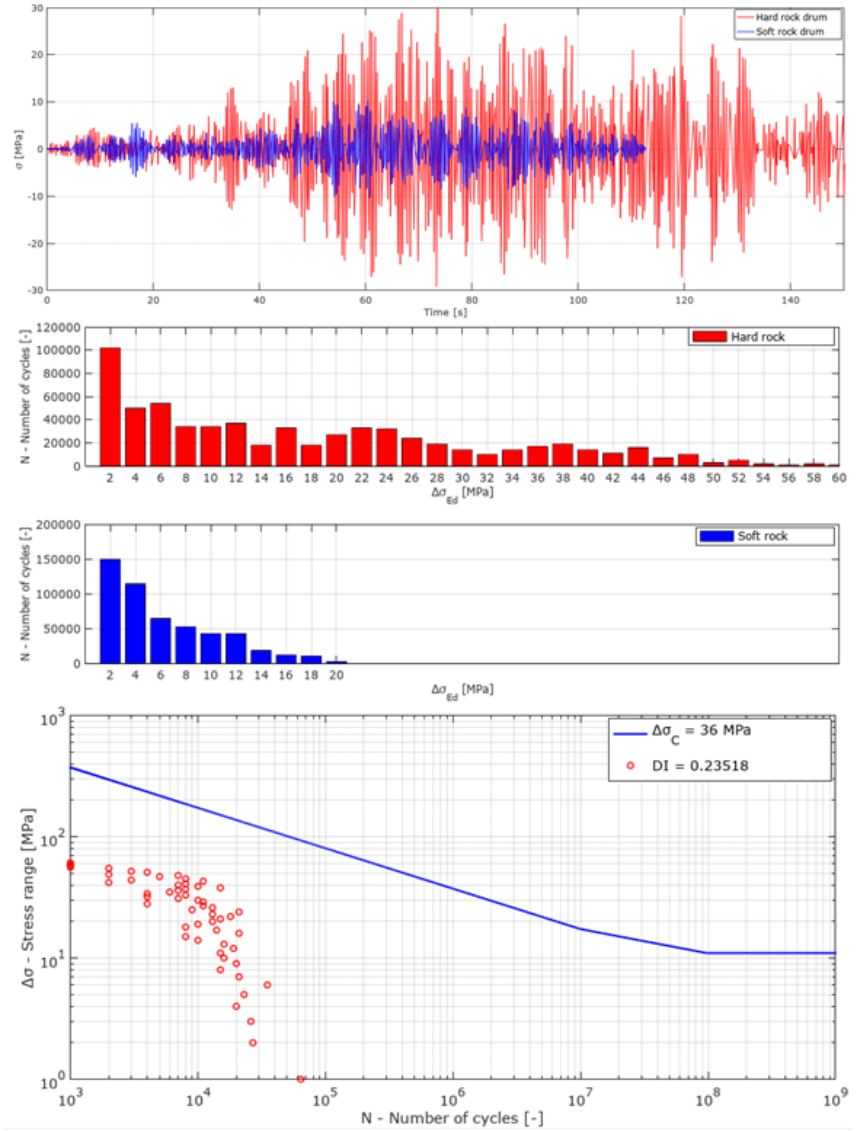




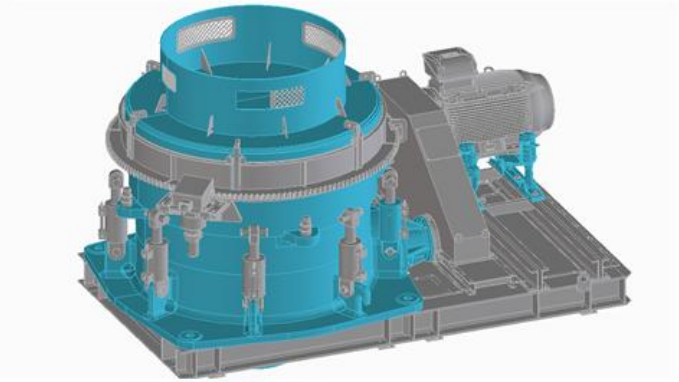
Main activities

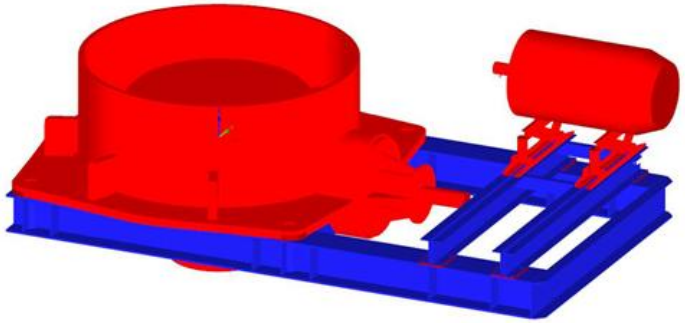
General vibration analysis

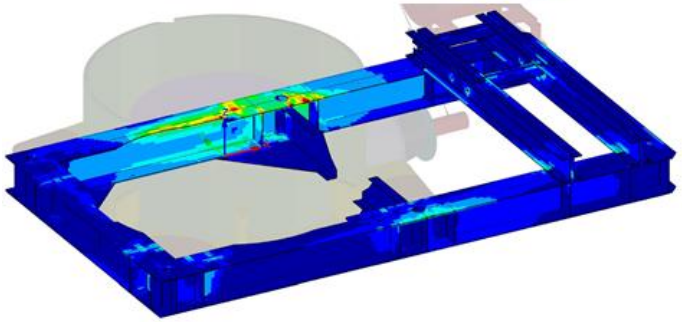
- machine-induced vibrations
- vibrations induced by moving vehicles
- determination of dynamic amplification factors
- crane-induced vibrations
- blast assessment using quasi-static analysis
- blast assessment using dynamic analysis
- impact assessment
- fatigue assessment based on dynamic loads



Main activities

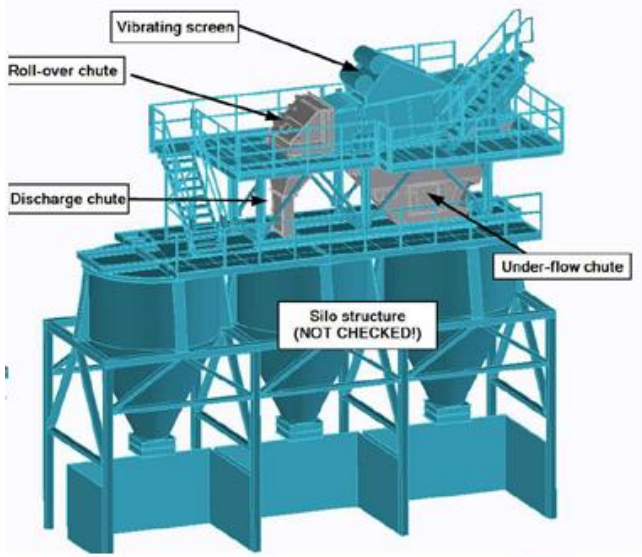


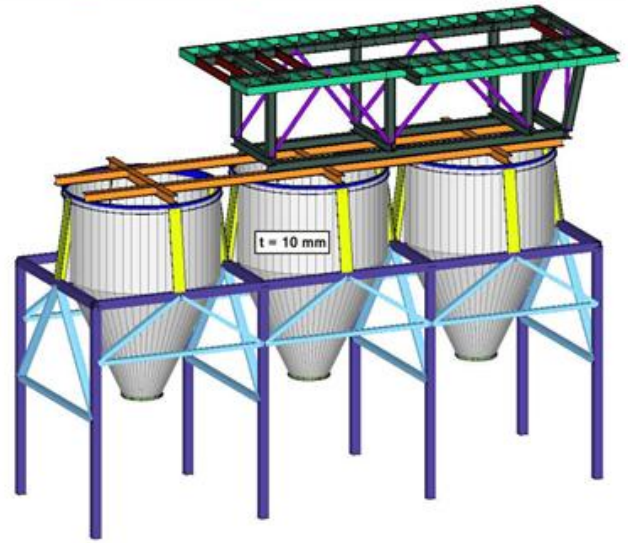




Industrial design

- industrial movable structures
- cable structures
- cable-suspended platforms
- buckling assessment of thin-walled structures
- advanced stability assessments
- shell buckling, arch stability, snap-through
- discrete-element analysis of masonry structures
- prestressed concrete structures
- silos and tanks
- screening machines
- material-handling structures
- railway wagons
- vehicle bodies





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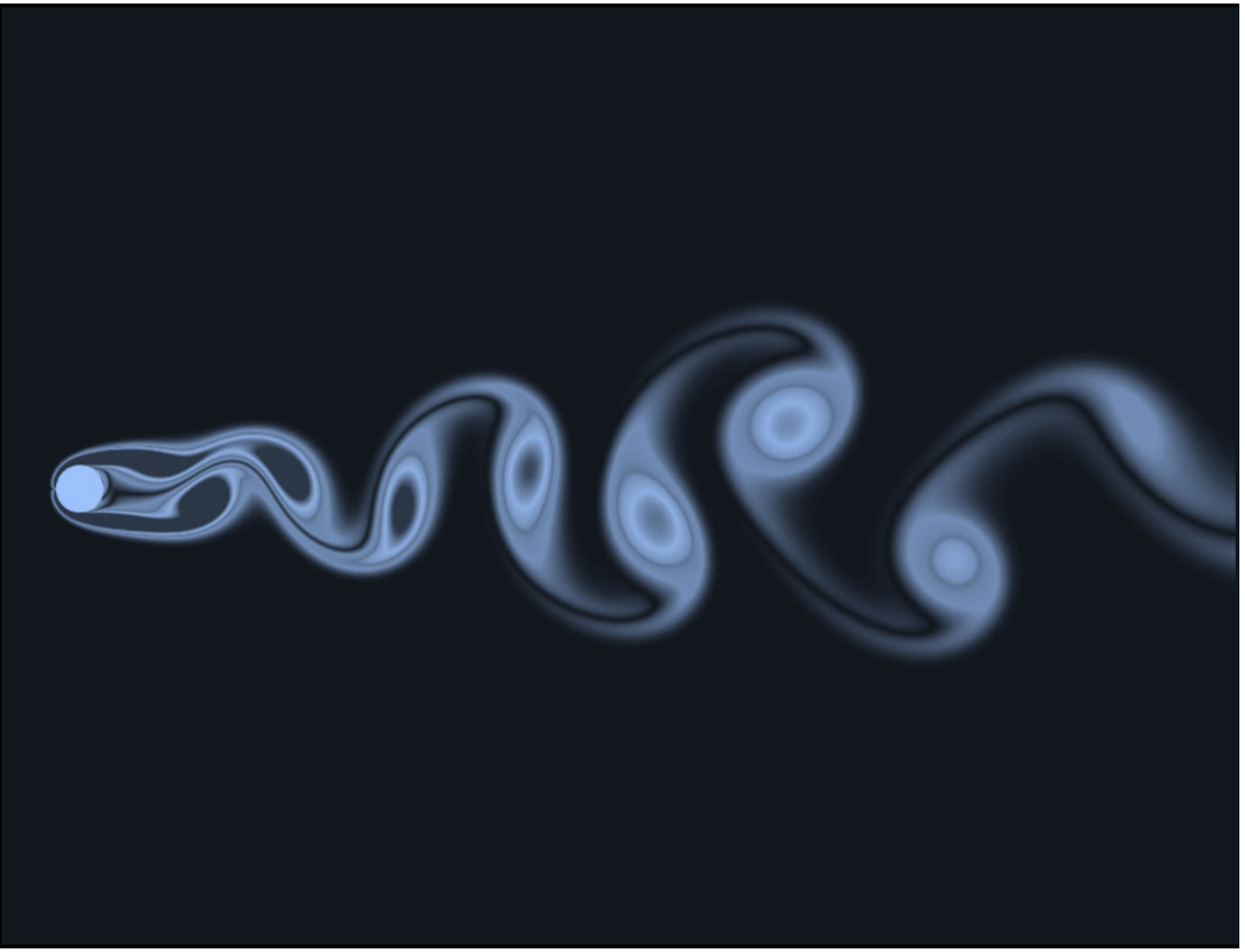
Main activities



Fluid-flow analyses

- wind pressure determination using CFD
- force coefficient determination using CFD
- vortex shedding calculation using CFD
- aeroelastic instability assessment using CFD
- fire-safety analyses and smoke-spread assessment
- virtual wind-tunnel experiments
- wind-structure interaction
- water flow around bridge piers, etc.

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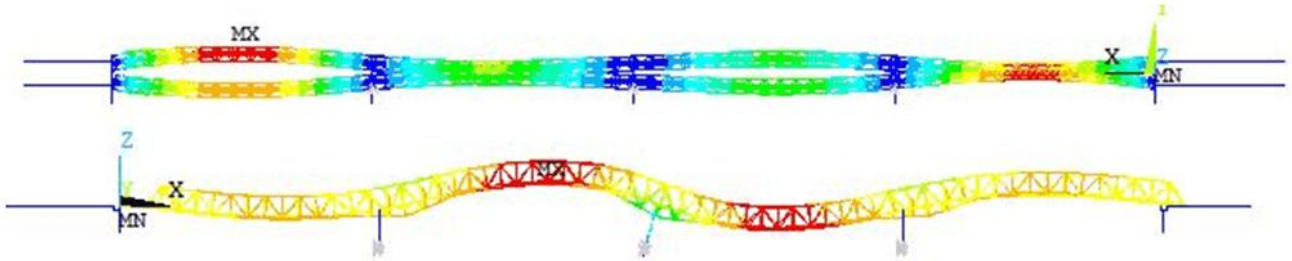
Selected references

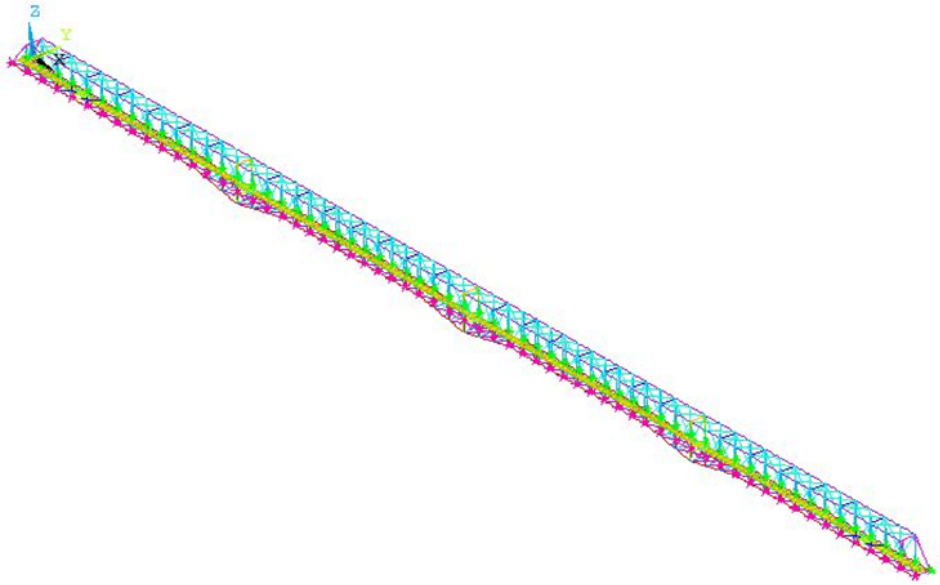
Southern Connecting Railway Bridge: seismic assessment

Year: *2018*

Client: *Speciálterv Építőmérnöki Kft.*

The seismic assessment of the new Southern Connecting Railway Bridge was carried out using a limited-ductility approach with time-history analysis.





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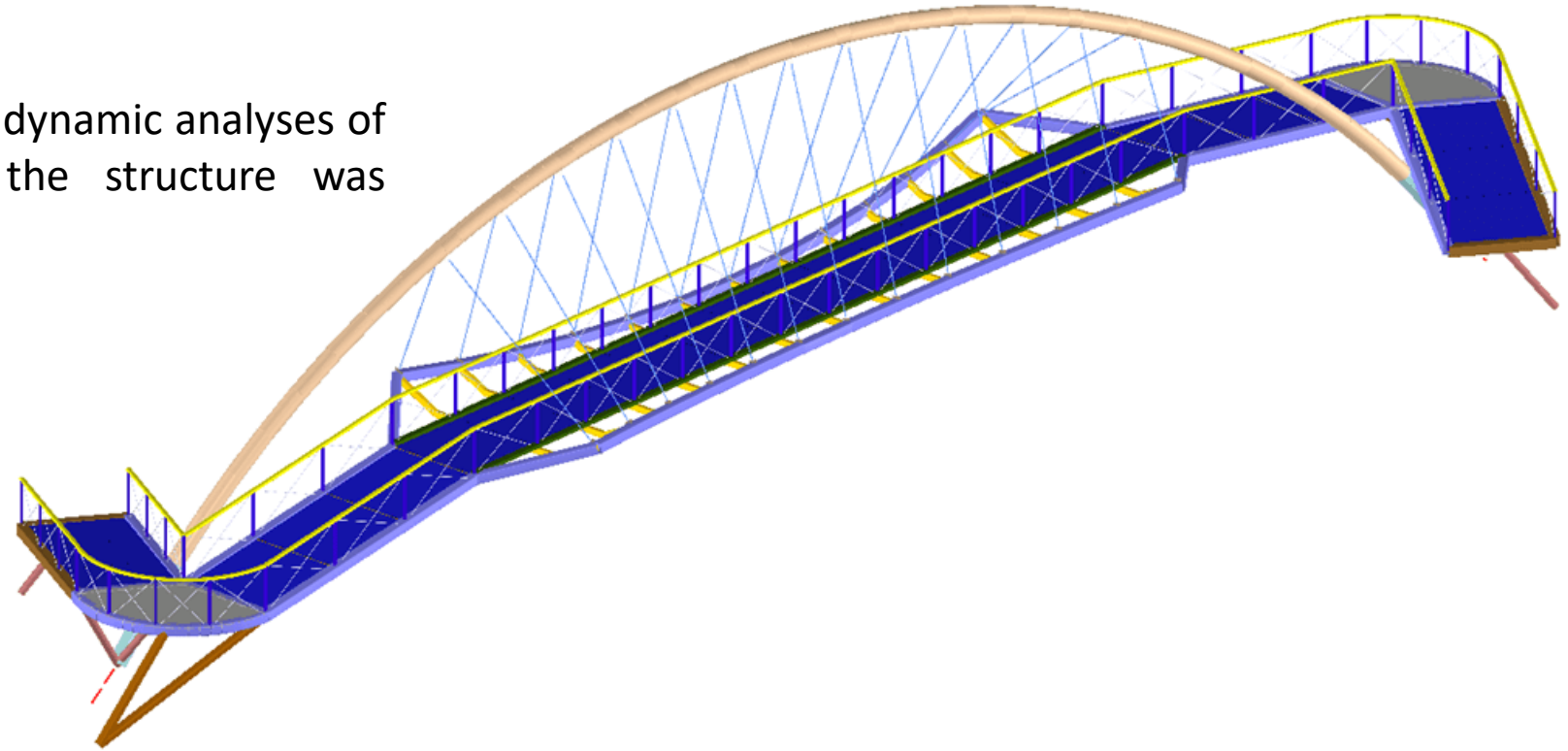
Selected references

Győrszentiván pedestrian bridge: pedestrian and wind dynamic analyses

Year: *2019*
Client: *UNIQUE-PLAN Kft.*

We performed the pedestrian and wind dynamic analyses of the bridge. Based on the results, the structure was optimised and stiffened.



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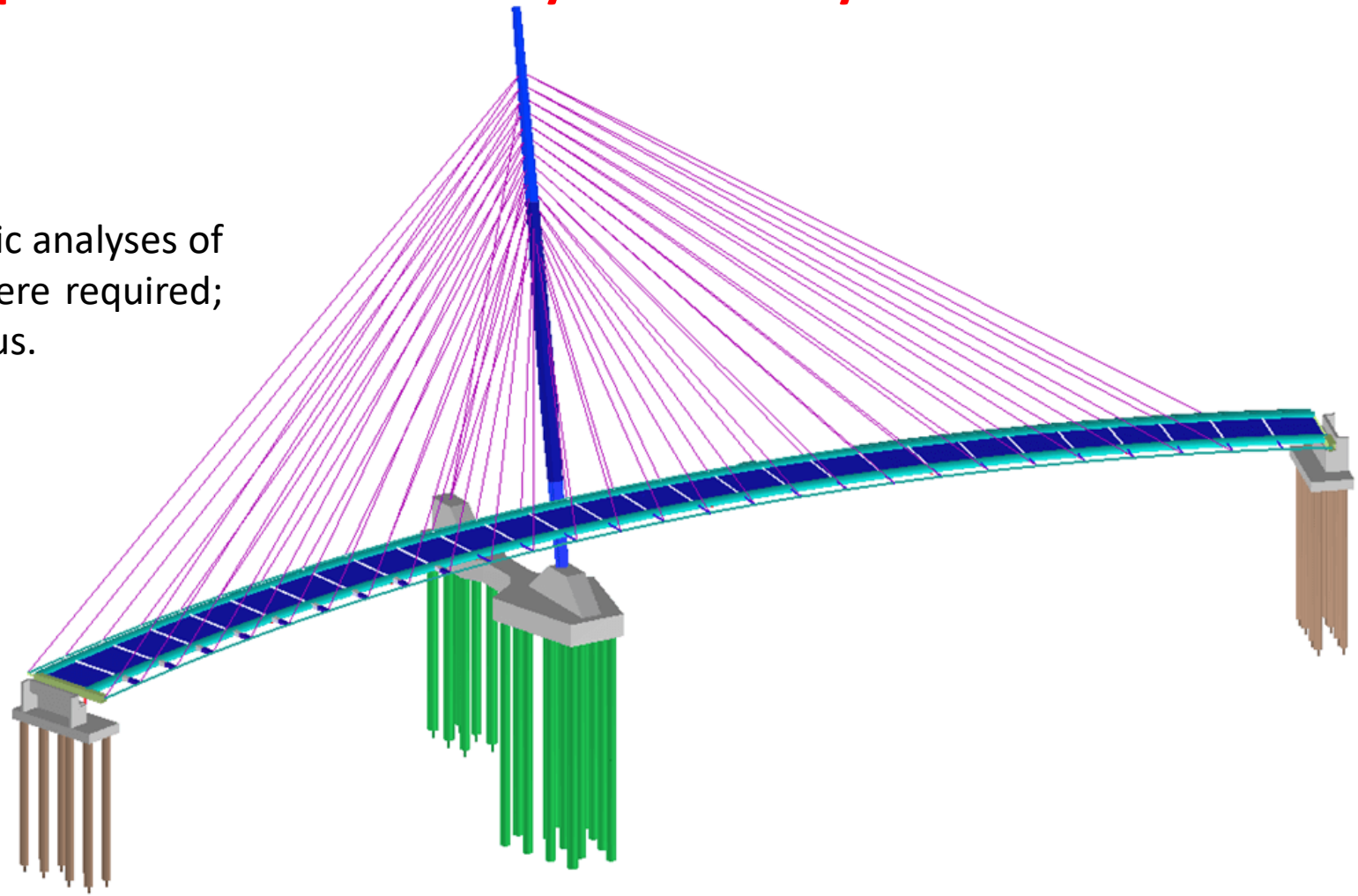
Selected references

Robinson Bridge: pedestrian and wind dynamic analyses

Year: *2019*

Client: *Speciálterv Építőmérnöki Kft.*

We carried out the pedestrian and wind dynamic analyses of the bridge. Due to its slenderness, dampers were required; their conceptual design was also developed by us.



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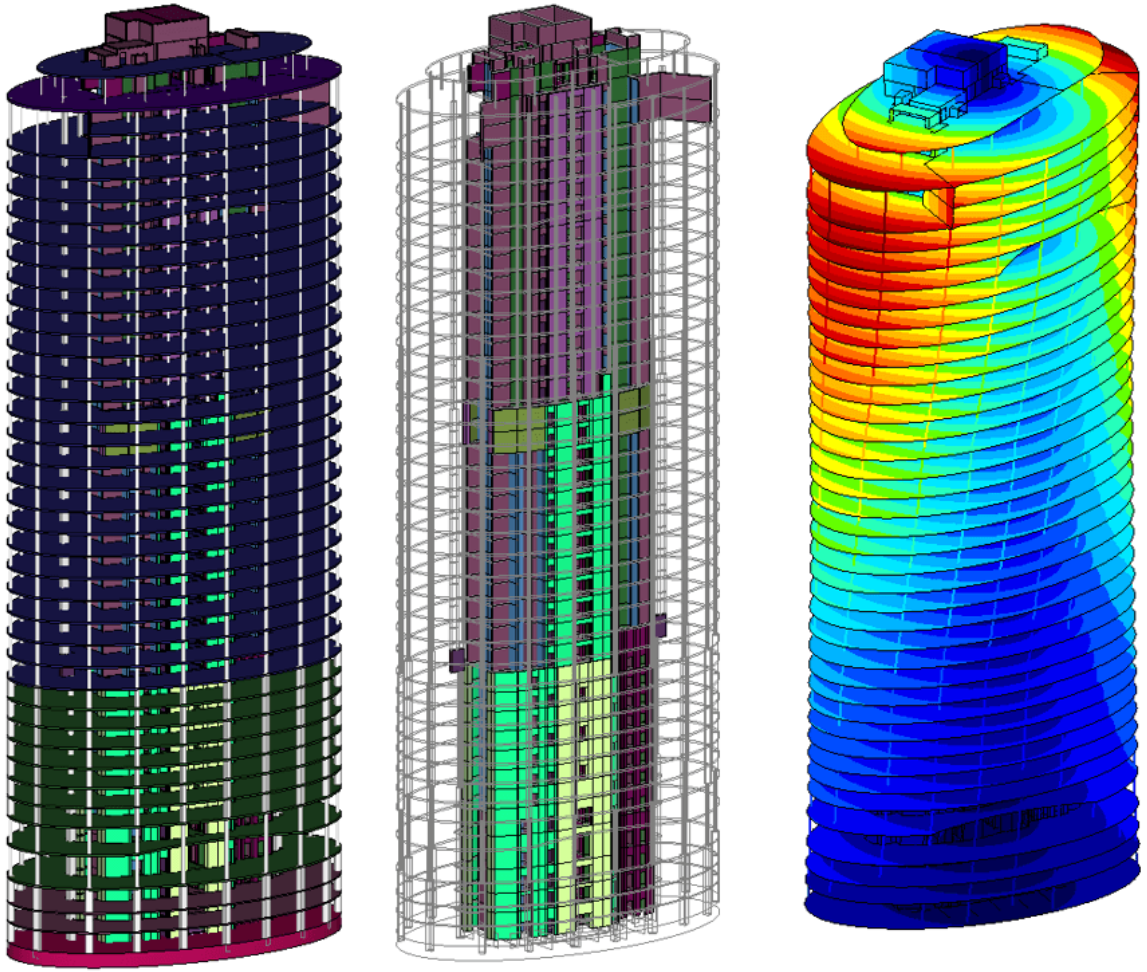
Selected references

Vienna high-rise (Weitblick): seismic assessment

Year: *2020*
Client: *GG Ingenieure GmbH*

Our task was to verify the core of the 120 m high-rise building in Vienna. The key challenges were wind loading and seismic design for DCM.



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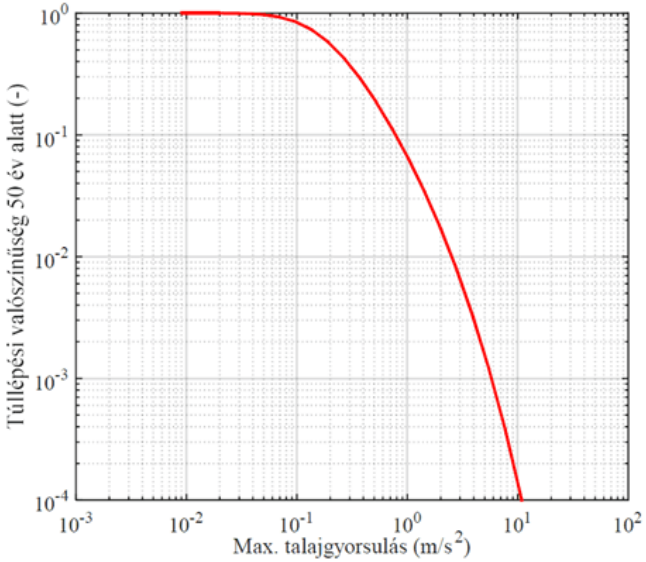
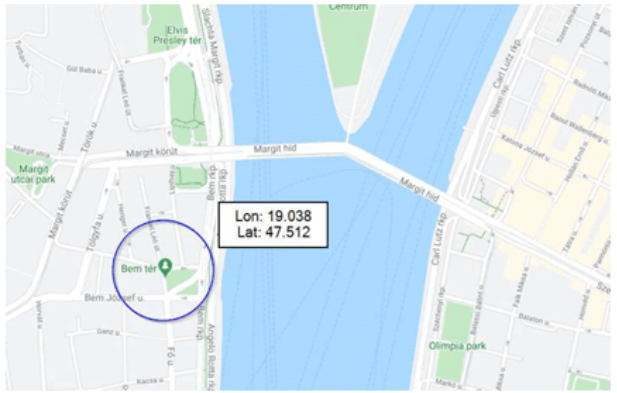
Selected references

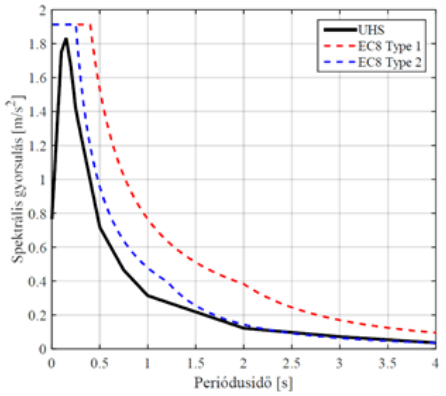
Bem Palace Hotel and Office Building: site-specific seismic load

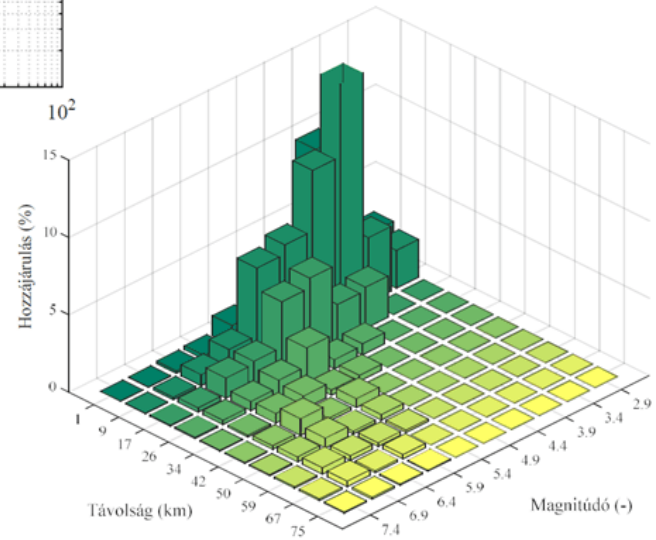
Year: *2021*
Client: *M.T.M. Kft.*

For the new office building at Bem Square in Budapest, we developed the site-specific seismic spectrum, enabling an economical structural design.







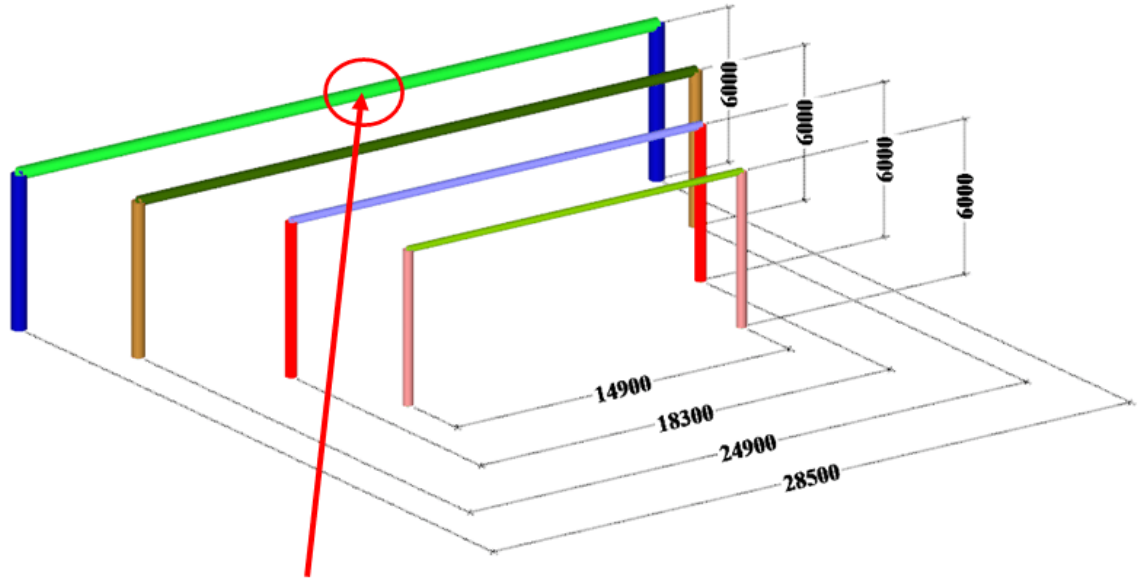


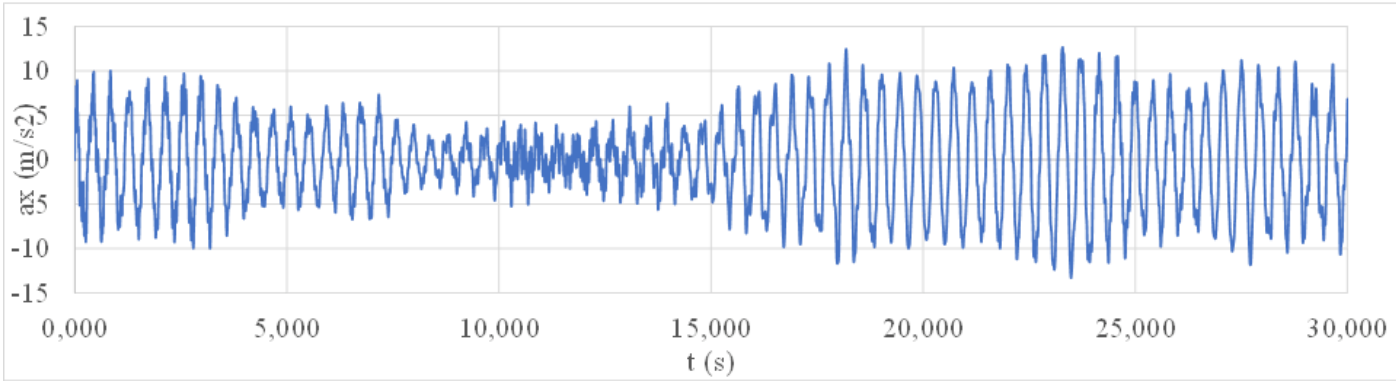
Selected references

Road monitoring gantries - Indonesia: wind dynamics / fatigue

Year: *2021*
Client: *UNIQUE-PLAN Kft.*

As part of the project, four road monitoring gantry frame types were optimised for fatigue due to wind gusts, galloping, vortex shedding and vehicle-induced vibrations.



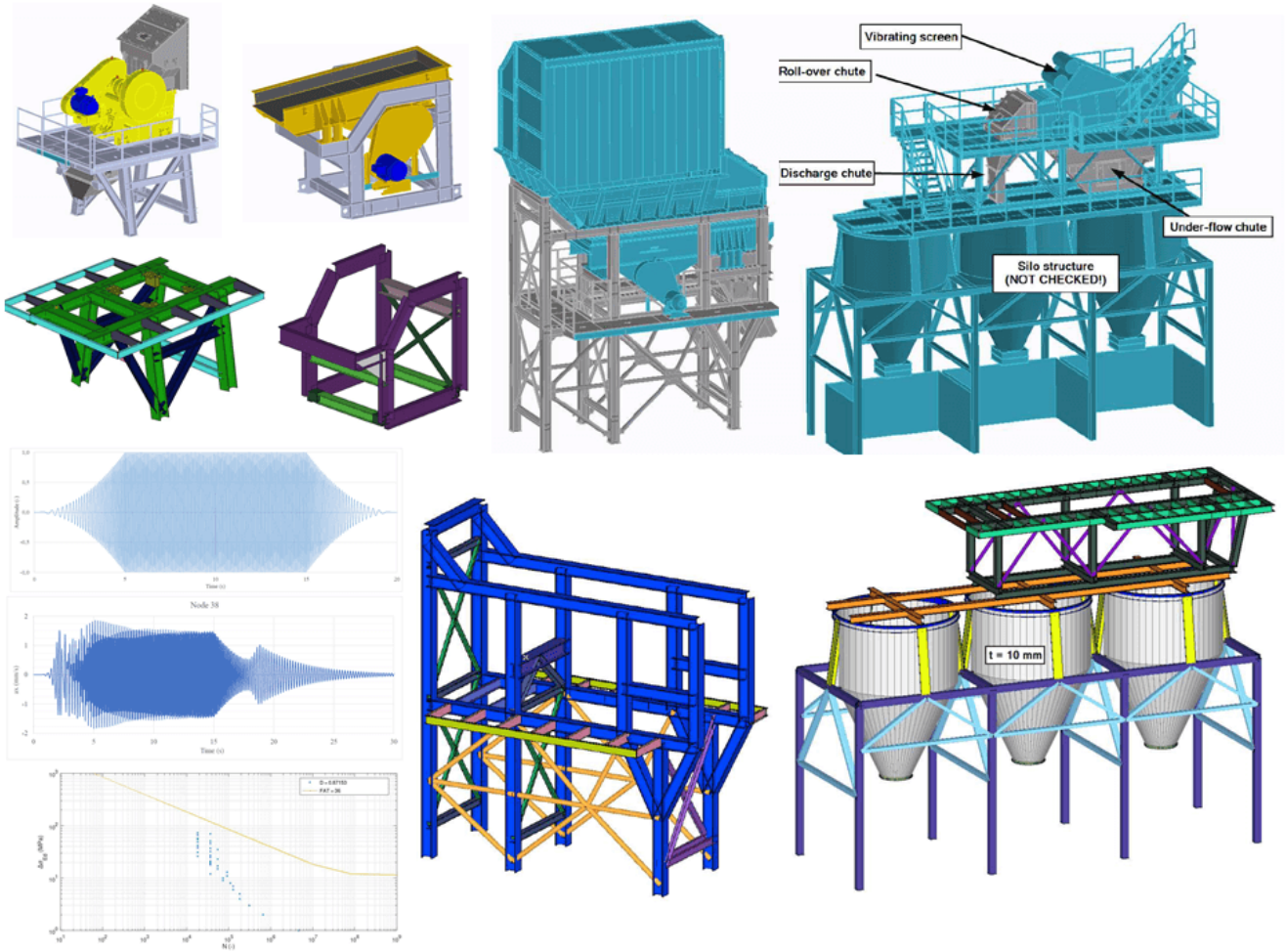


Selected references

Vargön machine frames: dynamics / fatigue

Year: *2021*
Client: *ERBG System Kft.*

For the Swedish Vargön new machine line, we prepared dynamic calculations and fatigue assessments. Accurate modelling of the excitation-force characteristics of the various machines (jaw crusher, vibrating feeders, screens) was an important part of the task. Some feeders can operate at several frequencies, making the detuning of the support structure a key challenge. One screen was placed on an existing silo structure, requiring a complex dynamic analysis of the complete system.

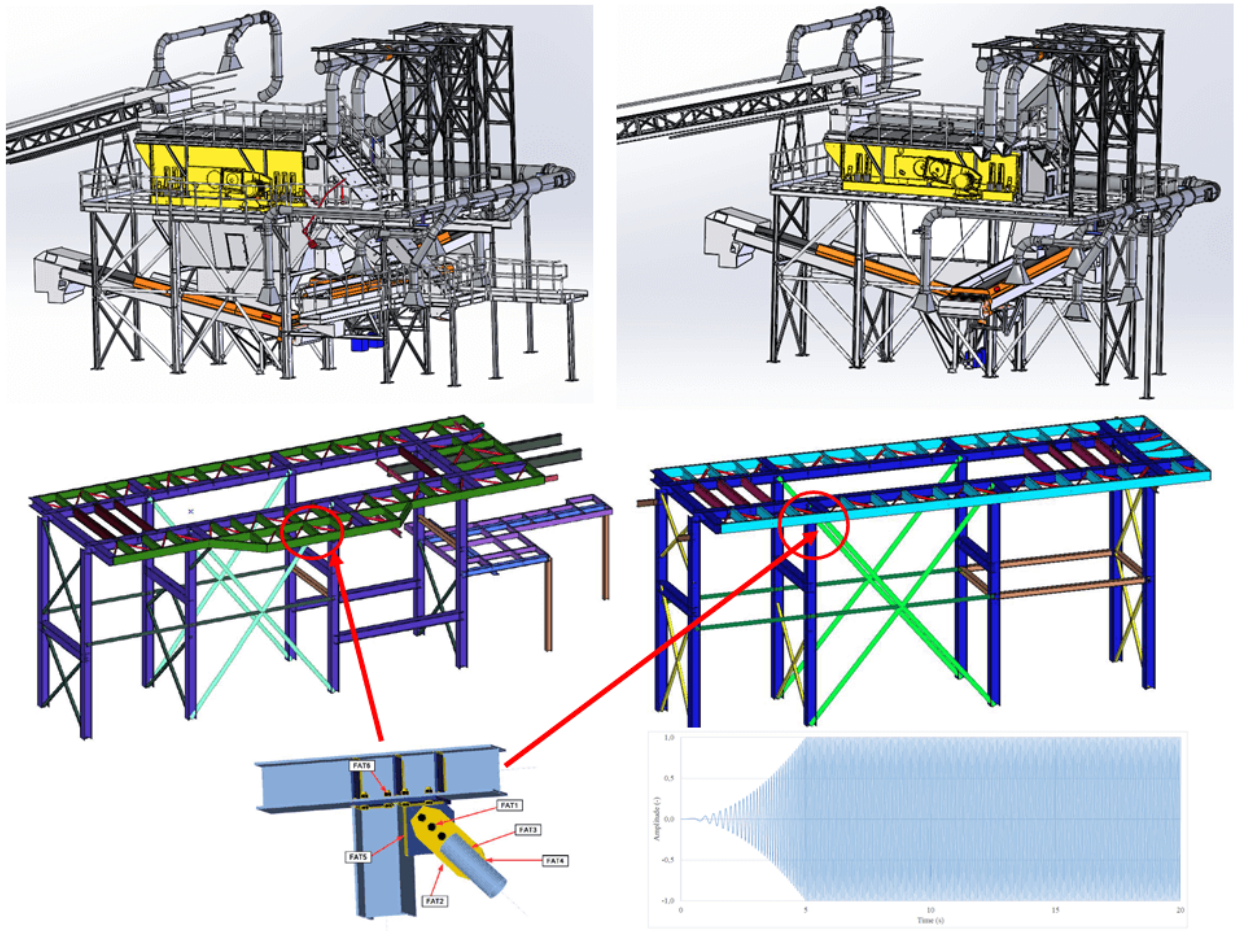


Selected references

Rönnskar machine frames: dynamics / fatigue

Year: *2022*
Client: *GépSystem Kft.*

For the Swedish Rönnskar screen support frames were assessed for fatigue using dynamic analyses. During acceleration and deceleration of the screens, the machine can resonate with the steel structure. This was investigated in detail to avoid excessive movements and fatigue cracking.

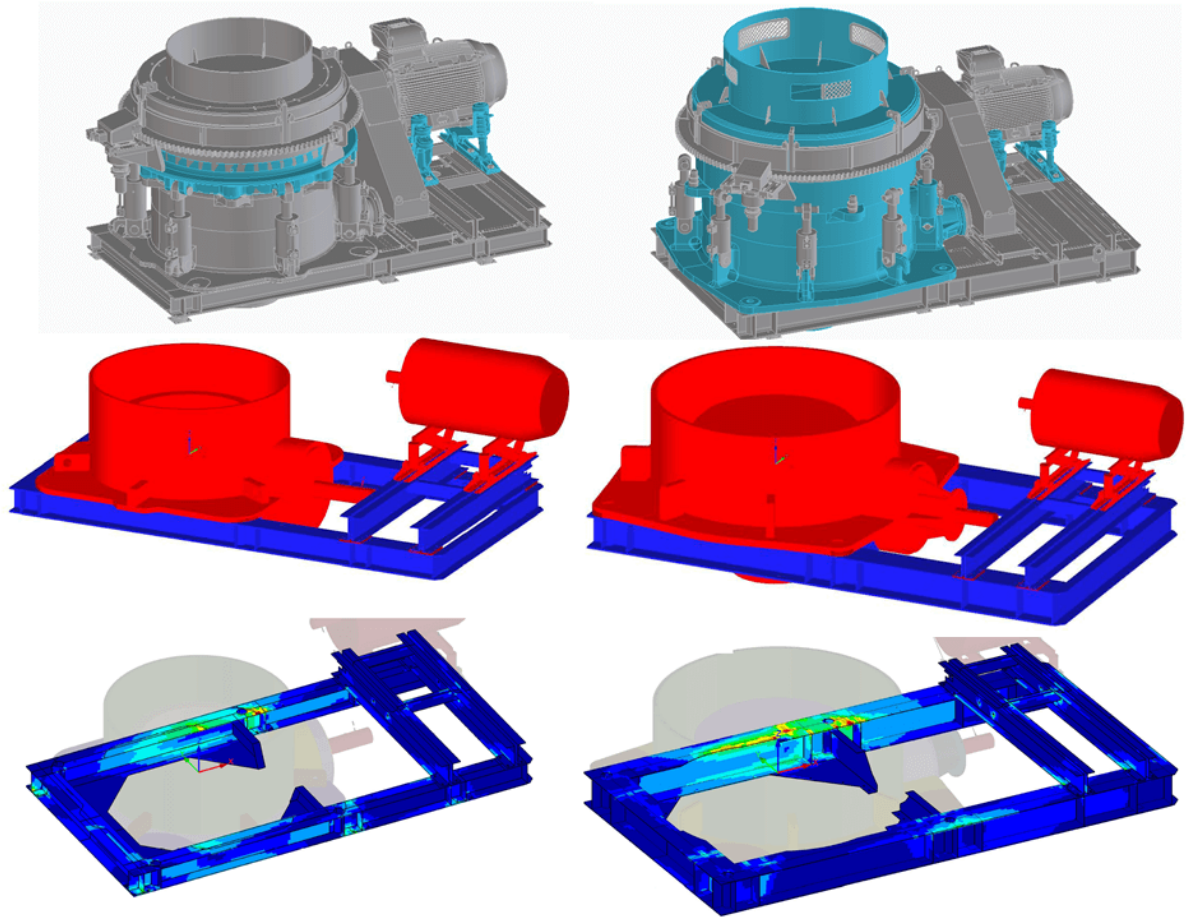


Selected references

Rönnskar base frames: dynamics / fatigue

Year: *2022*
Client: *GépSystem Kft.*

For the Swedish Rönnskar cone crushers, we assessed the isolator base frames for fatigue. For an accurate analysis of the frame, the machine was also included; the complete system was modelled with solid elements and contacts.



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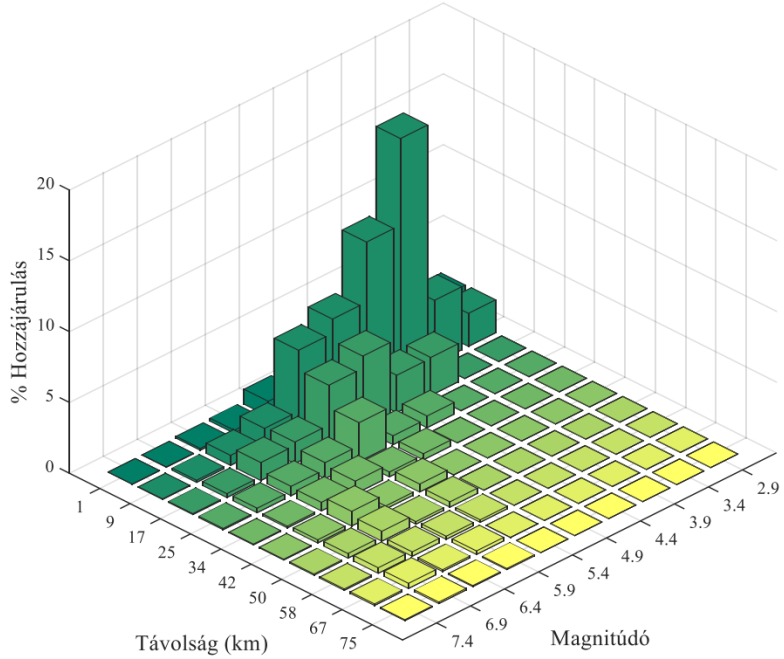
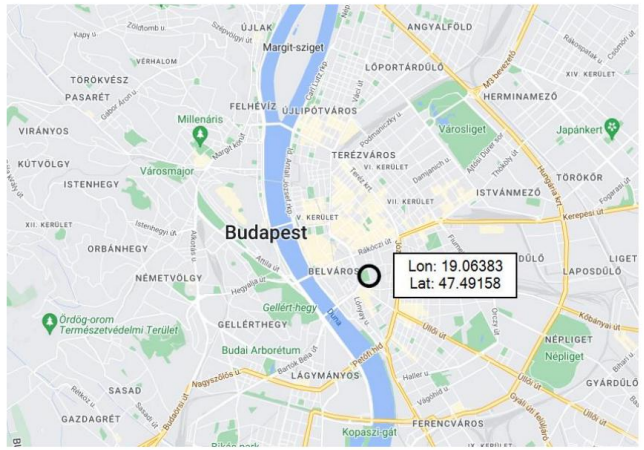
Selected references

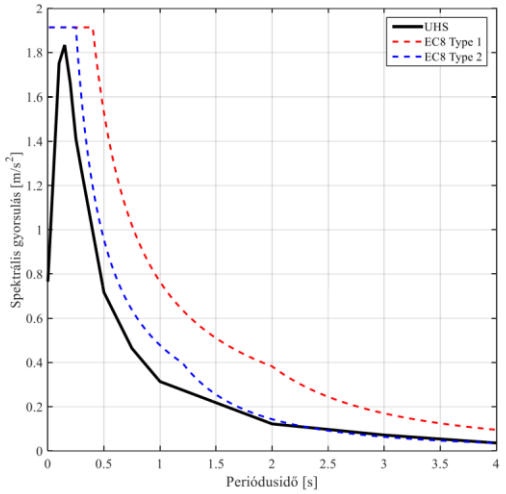
PPKE Campus: site-specific seismic load

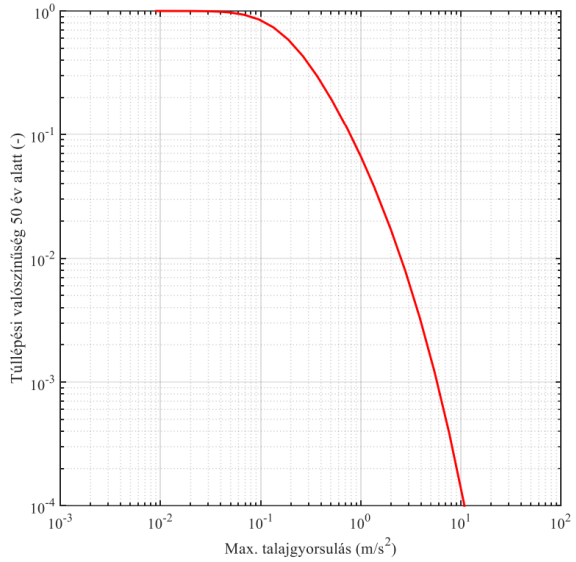
Year: *2022*
Client: *M.T.M. Kft.*

For the PPKE Campus site in Budapest, we developed the site-specific seismic spectrum, enabling an economical structural design.







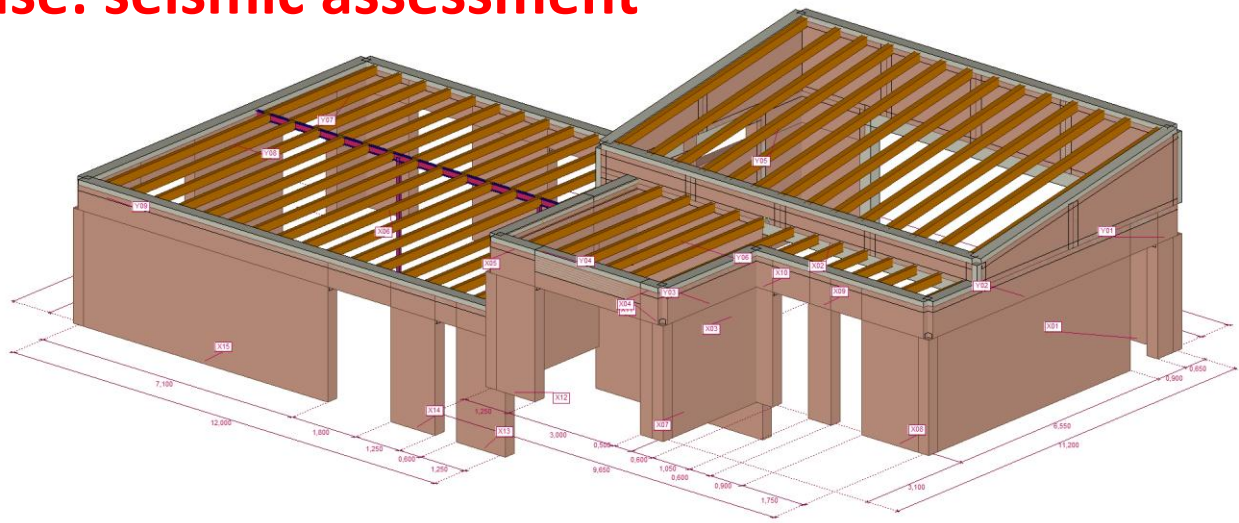


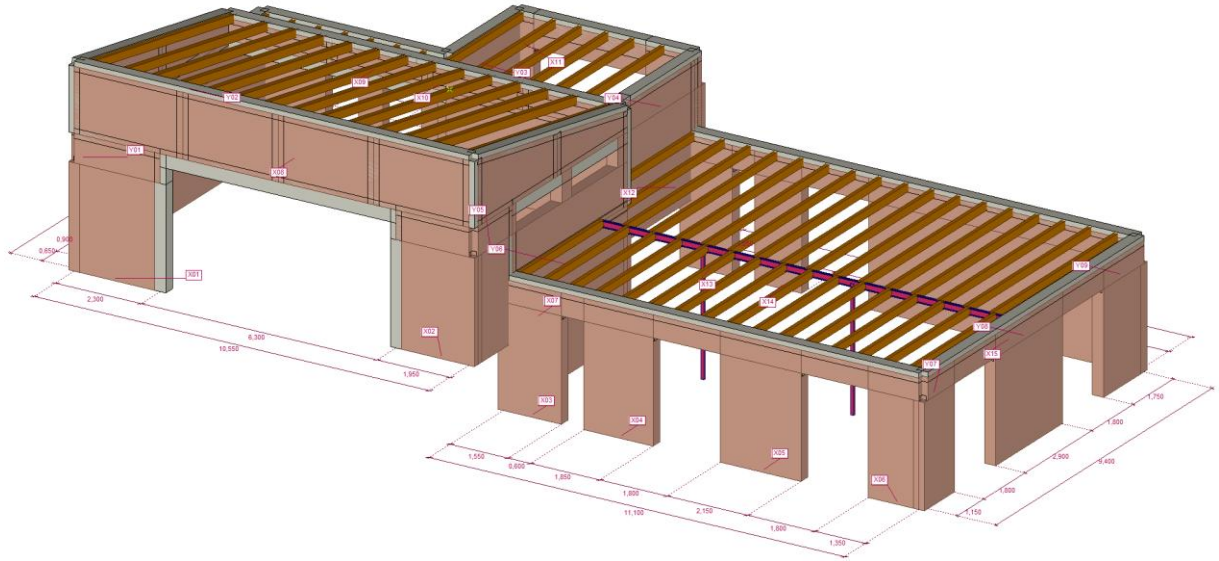
Selected references

Pákozd – single-family house: seismic assessment

Year: *2023*
Client: *STABIL VILÁG Kft.*

The load-bearing and bracing system is predominantly masonry, with reinforced-concrete columns and beams also contributing to the lateral-resisting system. The roof slab is a lightweight timber-beam structure. For seismic design, the masonry walls are low-dissipation elements (DCL) and fall into the code category of unreinforced masonry structures. Due to the structural layout and mixed materials, special modelling techniques were required to demonstrate compliance.





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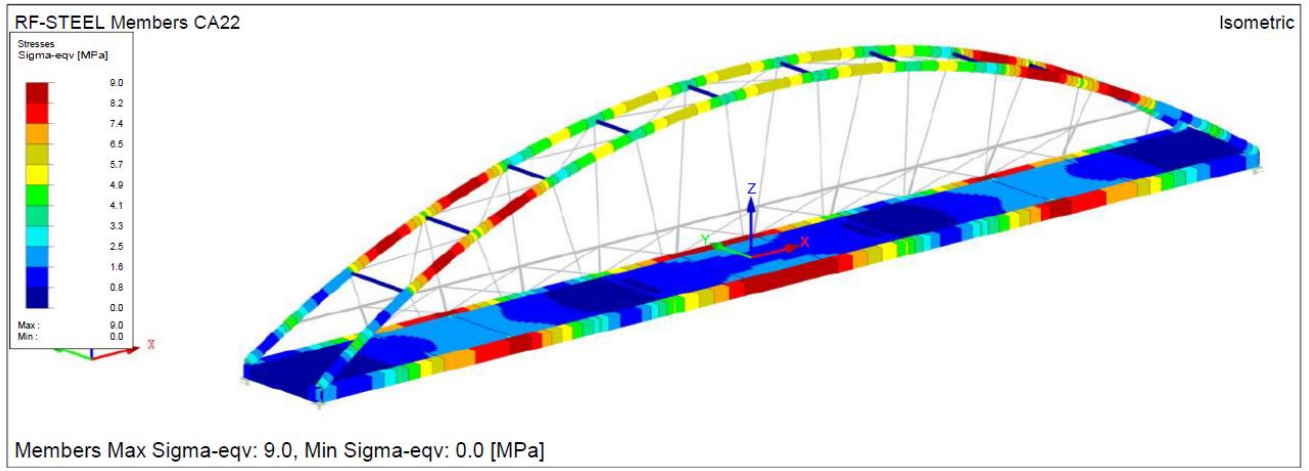
Selected references

Sió Canal bridge: pedestrian and wind dynamics

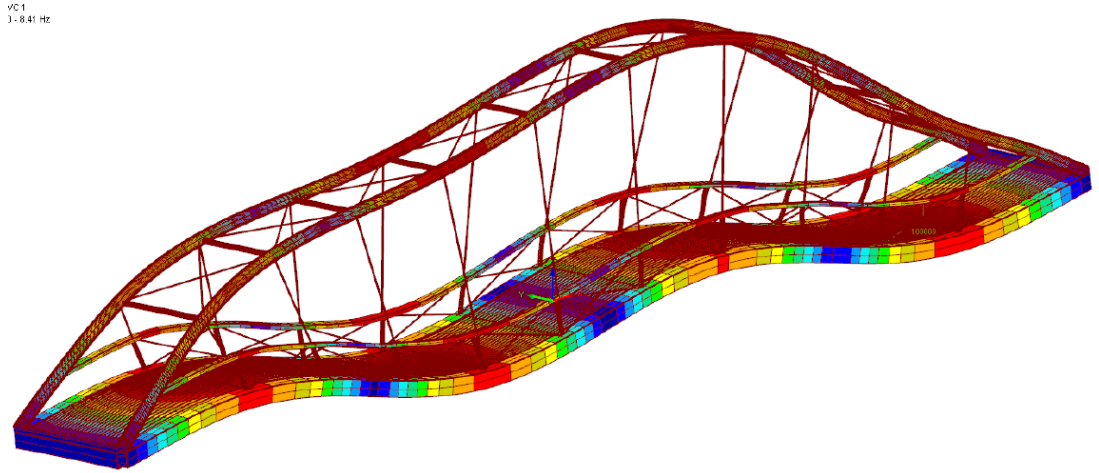
Year: *2023*
Client: *UNIQUE-PLAN Kft.*

The new pedestrian and cyclist bridge planned over the Sió Canal has an unconventional structural form. Due to its slender and relatively flexible behaviour, a more detailed assessment was required from both wind dynamic and pedestrian dynamic perspectives.

We carried out the pedestrian and wind dynamic analyses of the bridge. Based on the results, the structure was optimised and stiffened.



4.8. ábra: Feszültségamplitúdók az ívre számolt örvényleválásból – főtartók – alak 2.



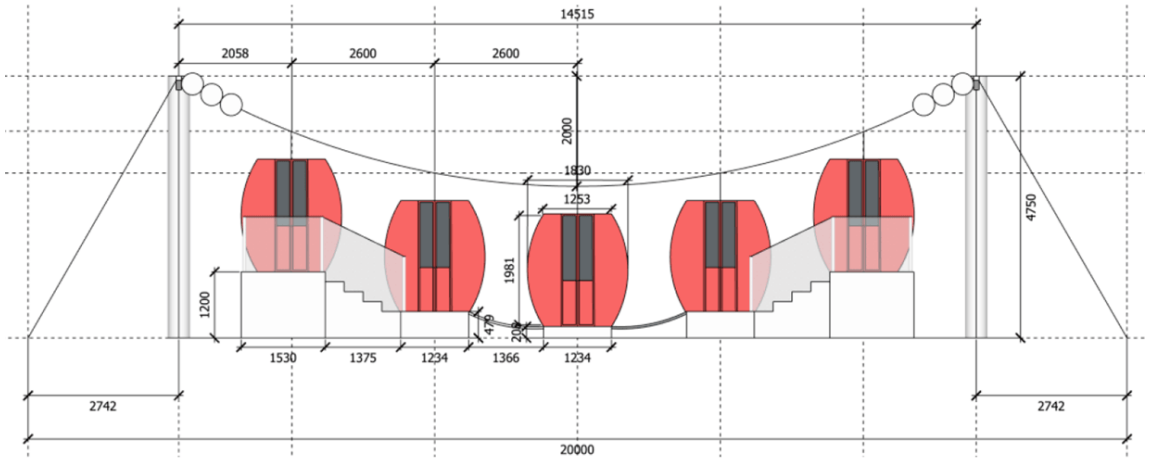
Selected references

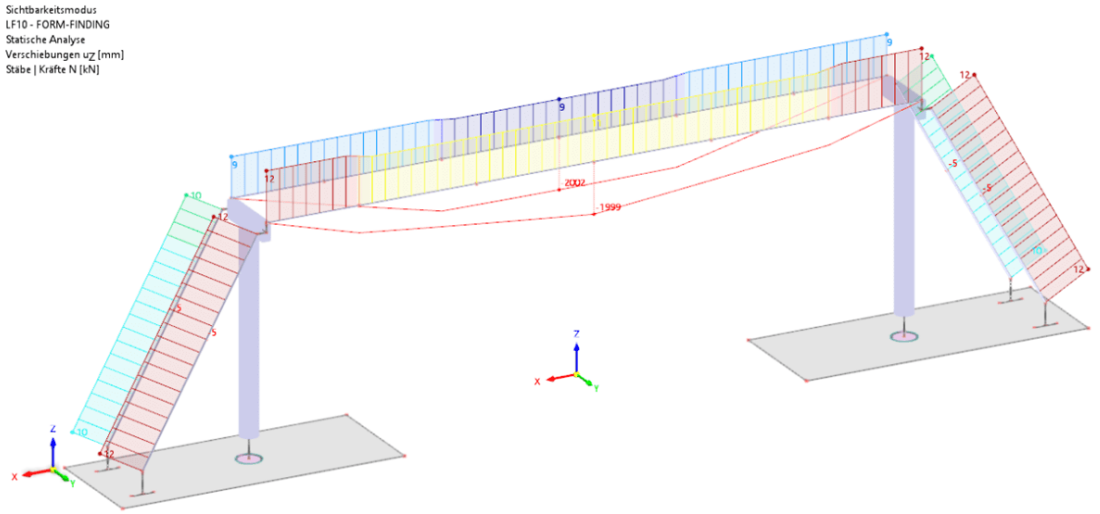
Playground - Zauchensee: structural design

Year: *2025*

Client: *Gschwandtl & Lindlbauer GmbH*

Conceptual and structural design of an outdoor installation consisting of five gondolas suspended from tensioned steel wire ropes. The scope included form-finding of the cable geometry, 3D FEM modelling, and assessment of snow, ice, wind and live loads. The calculations covered the steel structure, cables, foundation blocks and connection details.



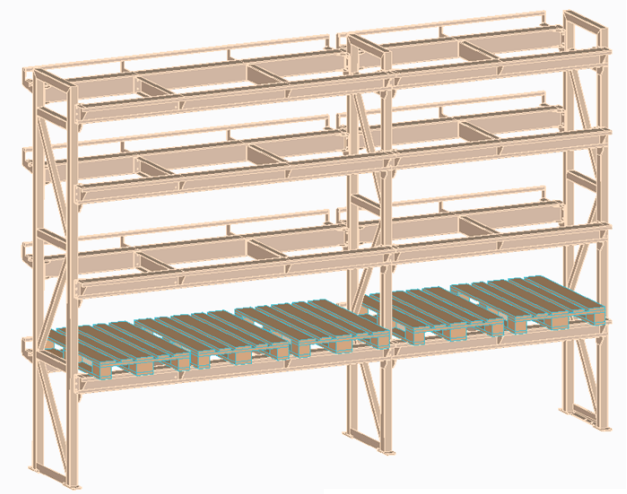


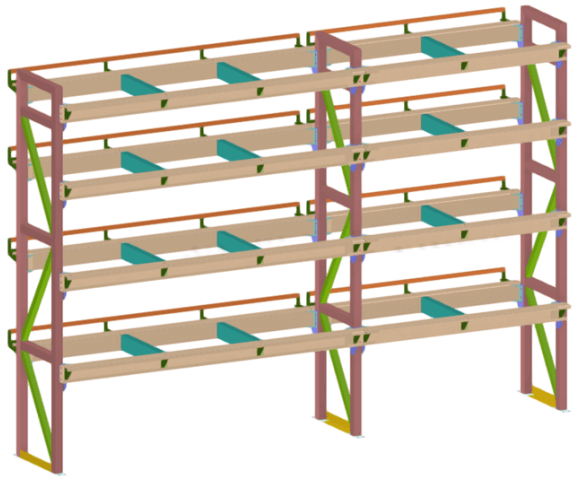
Selected references

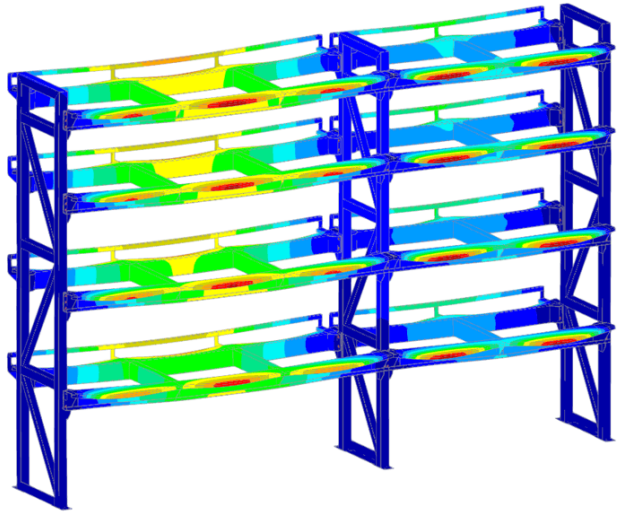
Pallet rack: structural design

Year: *2025*
Client: *ERBG System Kft.*

We performed the structural check and load-bearing verification of a two-bay, four-level assembled steel storage rack. The assessment covered live loads, horizontal actions from material handling, imperfections, impact and anti-slip loads. The structure was checked using a 3D FEM model in accordance with MSZ EN 15512 and Eurocode requirements.







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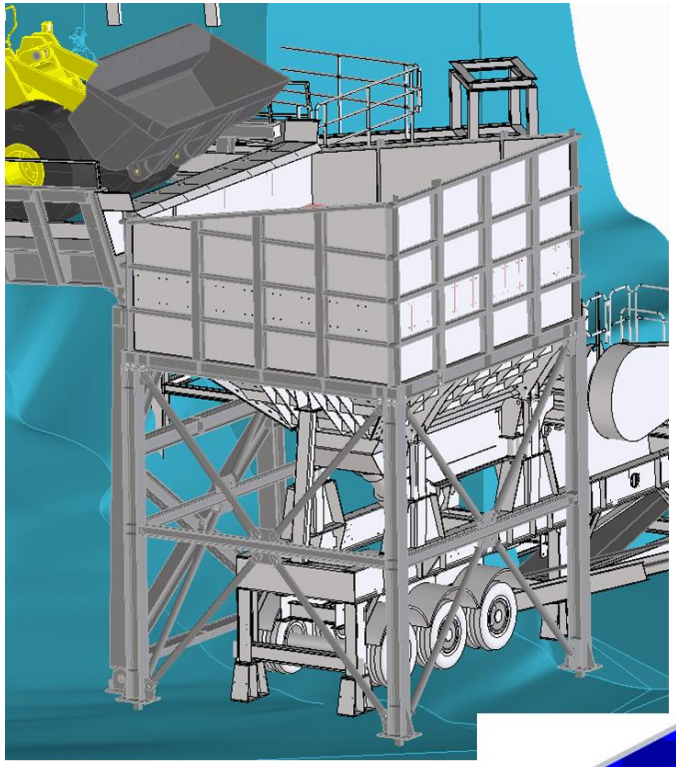
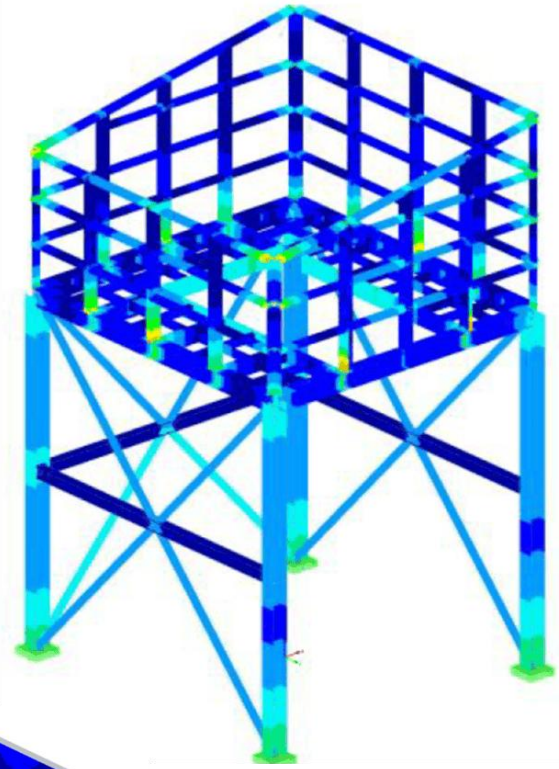
Selected references

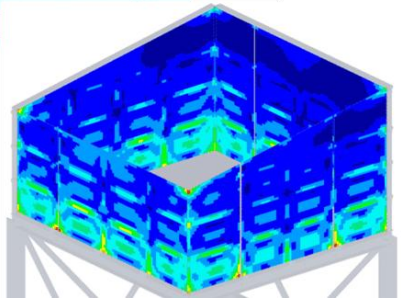
Bunker - Huneberg Diabaswerk: structural design

Year: *2026*
Client: *GÉPSYSTEM Kft.*

Structural design and 3D FEM-based verification of a free-standing steel industrial bunker. The design followed DIN EN 1991-4 and DIN EN 1993-4-1 for bunkers and silos. Key tasks included checking the local wall and bottom pressure of large stones up to 700 mm, as well as global load-bearing capacity, stability, connections and local plate stresses.





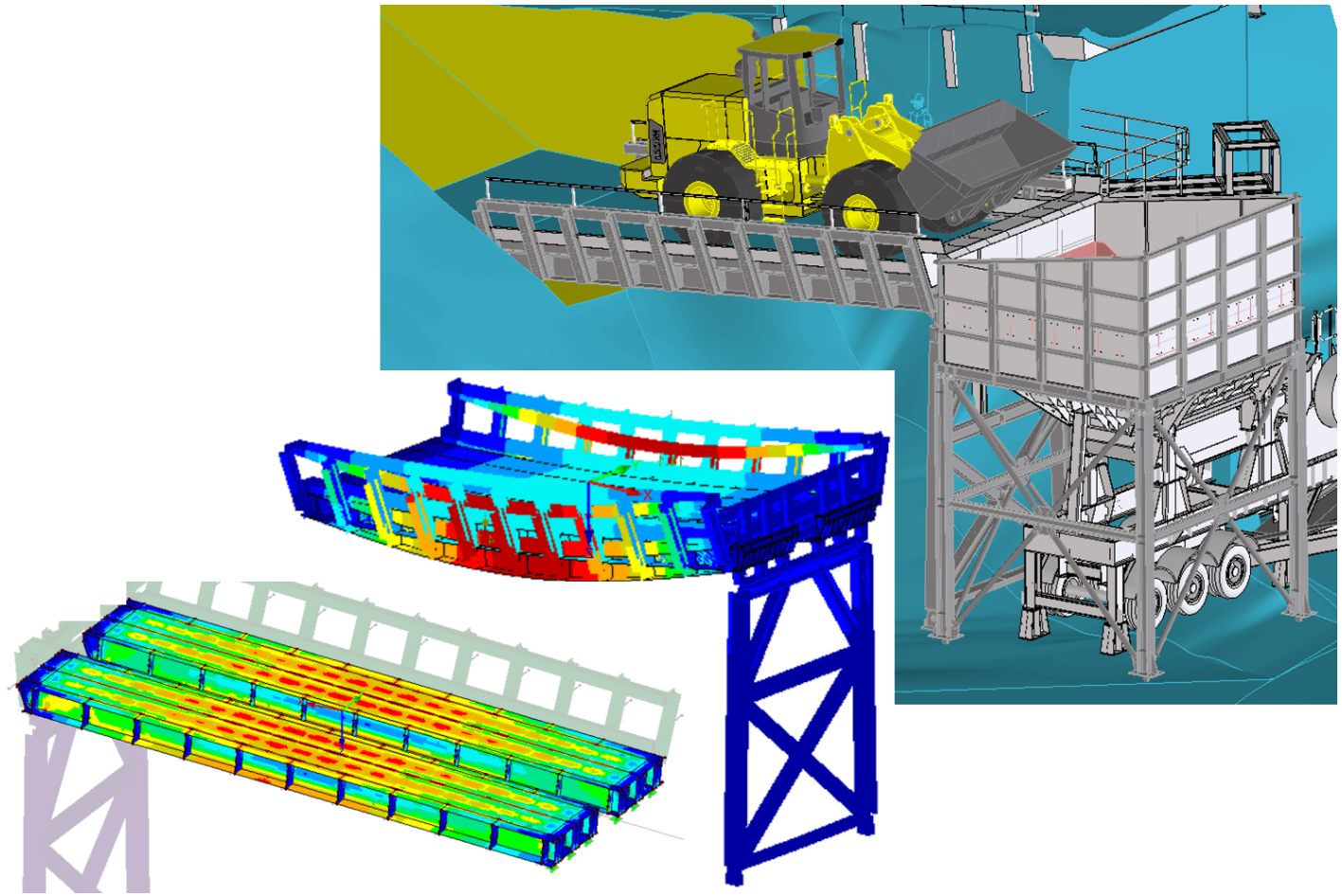


Selected references

Industrial bridge - Huneberg Diabaswerk: structural design

Year: *2026*
Client: *GÉPSYSTEM Kft.*

Structural design and 3D FEM-based verification of a steel industrial bridge with an approx. 10 m span for heavy-duty vehicle traffic. The structural concept aimed to minimise fatigue sensitivity: few welded details, double box main girders and predominantly bolted secondary connections. The assessment covered moving wheel loads from a 45-tonne wheel loader, braking and lateral forces, stability, connections and fatigue.



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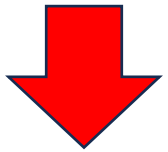
Contact

We hope this short company presentation has given you a clear impression of our work.

For seismic or dynamic analyses, or other specialised structural engineering tasks, please contact us.

CONTACT



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