



**AXISVM**

**AN INSPIRING PARTNER  
IN DESIGN**



**KNOWLEDGE**



**EFFICIENCY**



**SUPPORT**



AXISVM

## THE STRUCTURAL ANALYSIS & DESIGN SOFTWARE

**500.000+**  
PROJECTS

**9.000+**  
USERS

IN  
**45**  
COUNTRIES

IN  
**14**  
LANGUAGES

**30+**  
YEARS OF KNOWLEDGE

*FOR* **ENGINEERS**  
*BY* **ENGINEERS**

SINCE 1991

AXISVM is widely used in the *design of buildings, industrial facilities, and geotechnical structures.*

Its powerful finite element solver and user-friendly modeling tools make it a reliable choice for engineers tackling projects ranging from bridges and composite structures to machinery and vehicles.

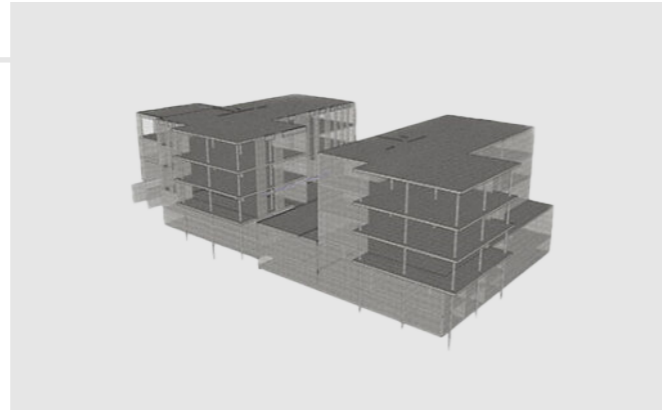
Beyond the core configurations, a wide range of optional design modules support the analysis and verification of *reinforced concrete, steel, timber, and masonry structures.*

Thanks to its advanced element types and analysis options, AXISVM is also well-suited for innovative, non-standard designs — *helping engineers bring bold architectural visions to life.*

## REINFORCED CONCRETE STRUCTURES

Related modules provide an efficient solution to the design of columns, beams, wall, slab, shell, and footing systems. Modelling of post-tensioned beams and slabs is also possible.

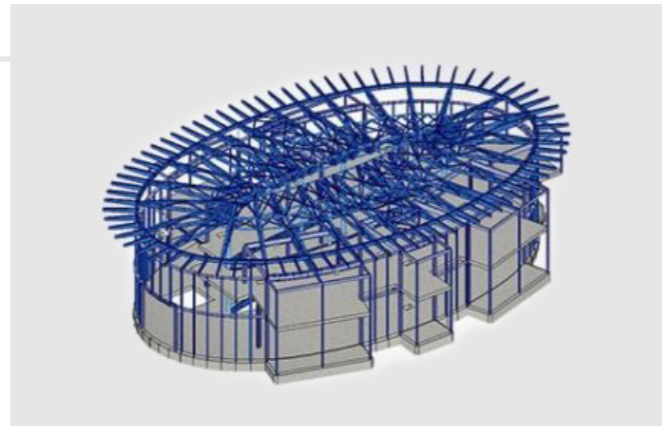
Considering actual reinforcements in the analysis, the nonlinear displacement of the structure can be evaluated more accurately.



## STEEL STRUCTURES

The module group developed for steel structures enables the design and verification of steel members, including the design of the most common welded and bolted joints.

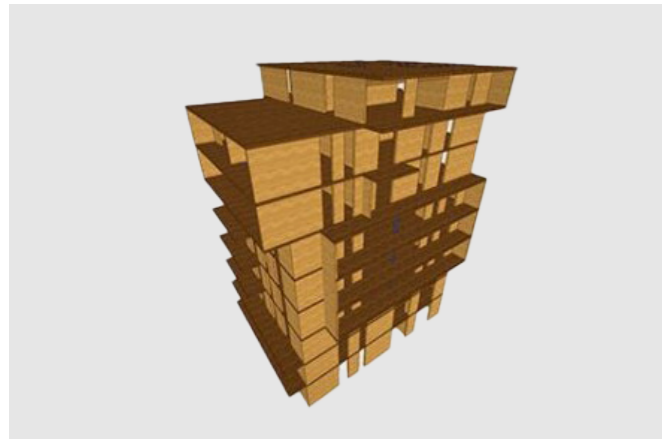
An integrated optimization tool supports the development of more economical designs and also allows for the consideration of fire load cases.



## TIMBER STRUCTURES

Timber modules enable the analysis of simple and complex space frame structures, cross-sections can be optimised according to various criteria, and the reliability of these structure under fire can be ensured.

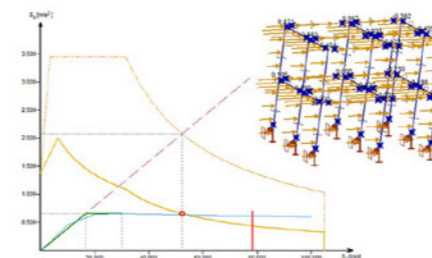
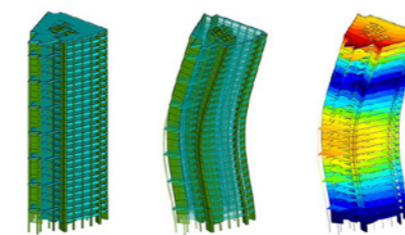
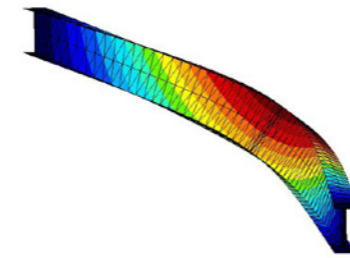
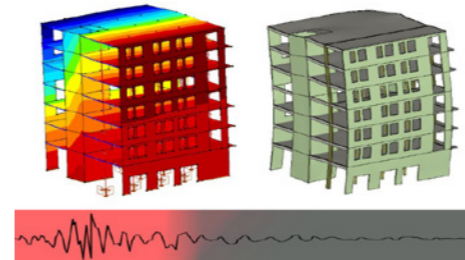
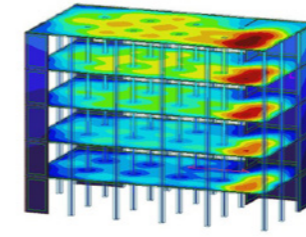
A dedicated module allows for the design and verification of CLT (cross-laminated timber) panels, including walls, slabs, and other surface elements.



## MASONRY STRUCTURES

This module allows for the comprehensive design of unreinforced masonry walls subjected to mainly vertical loads and shear forces. Walls can be analysed either as a single wall or as a complex multi-storey wall segment.

The wall-slab connection, which can have a significant influence on load capacity, can be considered.



## STATIC ANALYSIS

Statical problems can be solved using linear or non-linear analysis. In the latter case, non-linear/plastic material behaviour and contact elements, as well as geometrical non-linearity (large displacements), can be considered.

## DYNAMIC ANALYSIS

The dynamic analysis module can generally be used for tasks that require time integration, such as machine foundation design. The software determines the displacements and stresses resulting from the specified dynamic loads in each time step. Similarly to static analysis, the software is able to take into account material and geometrical nonlinearity.

## BUCKLING ANALYSIS

AXISVM's buckling analysis determines critical loads and buckling shapes essential for verifying structural stability. Equivalent geometric imperfections may be defined by combining and scaling buckling shapes. These imperfections can be used in geometrically non-linear static or dynamic analyses in order to model second-order effects.

## VIBRATION ANALYSIS

First and second-order vibration analyses are available in order to determine natural frequencies and mode shapes. For seismic analysis, modal mass factors and moments of inertia can also be calculated.

## SEISMIC ANALYSIS

The earthquake resistance of structures can be verified with modal response spectrum (SE1 MODULE), pushover (SE2 MODULE), and time-history analyses (DYN MODULE). Seismic analysis and design of dissipative structures is supported, and the effect of seismic isolators and dampers on the structural response can be considered.

# EUROCODE

## AND NATIONAL STANDARDS

AXISVM ensures that structures made from all major materials—reinforced concrete, steel, timber, and masonry—are designed in full compliance with Eurocode and its national annexes, including Swiss (SIA) and Italian (NTC) standards.

This comprehensive coverage guarantees reliable, code-compliant results across diverse projects, from everyday buildings to complex large-scale structures.

For even greater adaptability, users can define their own global design parameters to apply additional national standards beyond those built into the software.

EUROCODES BUILDING THE FUTURE		
EN 1990-1998		
NATIONAL ADAPTATIONS		
	Austria	ÖNORM EN
	Czech Republic	ČSN EN
	Finland	SFS EN
	Greece	ELOT EN
	Latvia	LVS EN
	Poland	PN EN
	Belgium	NBN EN
	Germany	DIN EN
	Hungary	MSZ EN
	United Kingdom	BS EN
	Netherlands	NEN EN
	Spain	UNE EN
	Slovakia	STN EN
	Portugal	NP EN
	Romania	SR EN
	Norway	NS EN
NATIONAL STANDARDS		
	Italy	NTC
	Switzerland	SIA

# MODULAR DESIGN

## TO MEET YOUR SPECIFIC NEEDS

AXISVM is available in predefined configurations, each tailored with different finite element types and analysis capabilities to suit a wide range of engineering needs.

The modular structure of the software ensures that every base package can be expanded effortlessly with specialized design and interface modules—making it easy to connect with other CAD systems and adapt to the unique requirements of any project.

# REINFORCED CONCRETE DESIGN

AXISVM has numerous design modules available for the design of reinforced concrete structures covering foundations, walls, cores, slabs, columns, and beams, including punching analysis and modeling of post-tensioned beams and floors.

**RC1 MODULE:** Design of plates, shells, and slab-on-grade foundation

**RC2 MODULE:** Design of columns and beams

**RC3 MODULE:** Punching and shear design of slabs

**RC4 MODULE:** Design of pad and strip foundations

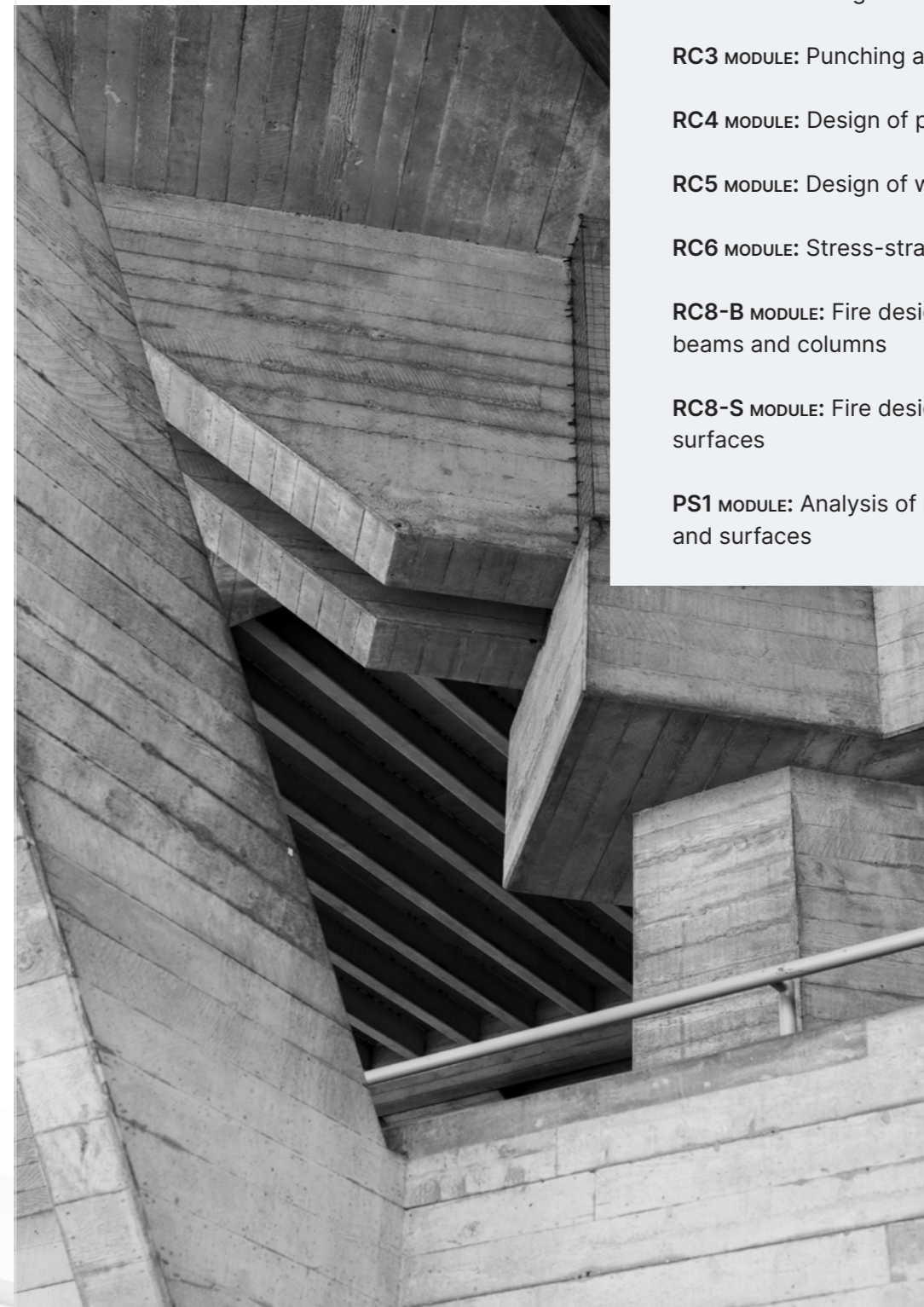
**RC5 MODULE:** Design of walls and cores

**RC6 MODULE:** Stress-strain analysis for section

**RC8-B MODULE:** Fire design of reinforced concrete beams and columns

**RC8-S MODULE:** Fire design of reinforced concrete surfaces

**PS1 MODULE:** Analysis of post-tensioned beams and surfaces





## STEEL STRUCTURE DESIGN

AXISVM provides a complete solution for the analysis and design of steel and other metal structures, including strength and stability verifications, design of welded and bolted connections and fire design.

Critical load multipliers and buckling shapes can be obtained from a buckling analysis for frame, truss, and shell structures. AXISVM also supports finding the optimal design solutions.

**SD1 MODULE:** Design of steel members

**SD8 MODULE:** Fire design of steel members

**SD9 MODULE:** Cross-section optimization for steel members

**SC1 MODULE:** Design and verification of steel connections

**7DOF MODULE:** Beam elements with 7 degrees of freedom

## TIMBER STRUCTURE DESIGN

With the help of our Timber Design (TD) modules, simple and complex space frame structures can be analysed, cross-sections can be optimised according to various criteria, and the reliability of these structure under fire can be ensured.

**TD1 MODULE:** Design of timber elements

**TD8 MODULE:** Fire design of timber elements

**TD9 MODULE:** Cross-section optimization for timber elements

**CLT MODULE:** Modeling of CLT (XLAM) panels + databases



# MASONRY STRUCTURE DESIGN

The Masonry Design (MD1) module in AXISVM enables accurate design and verification of unreinforced masonry walls, for both single- and multi-storey buildings.

Walls are modeled using virtual strip elements with customizable width and placement. The module automatically detects key wall parameters—such as material, thickness, and openings—directly from the geometry. Wall-slab connections can also be considered for realistic load-bearing analysis.

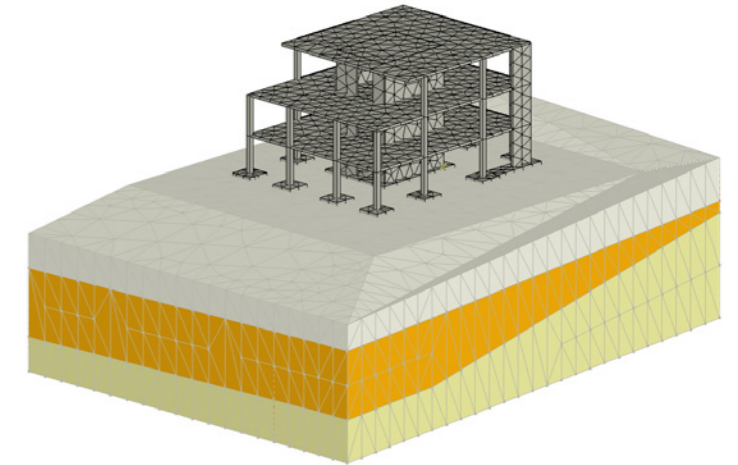
It supports vertical and shear load calculations and delivers detailed results, including internal forces, utilization charts, and full design reports—based on Eurocode and Swiss SIA standards.



# SOIL MODULE

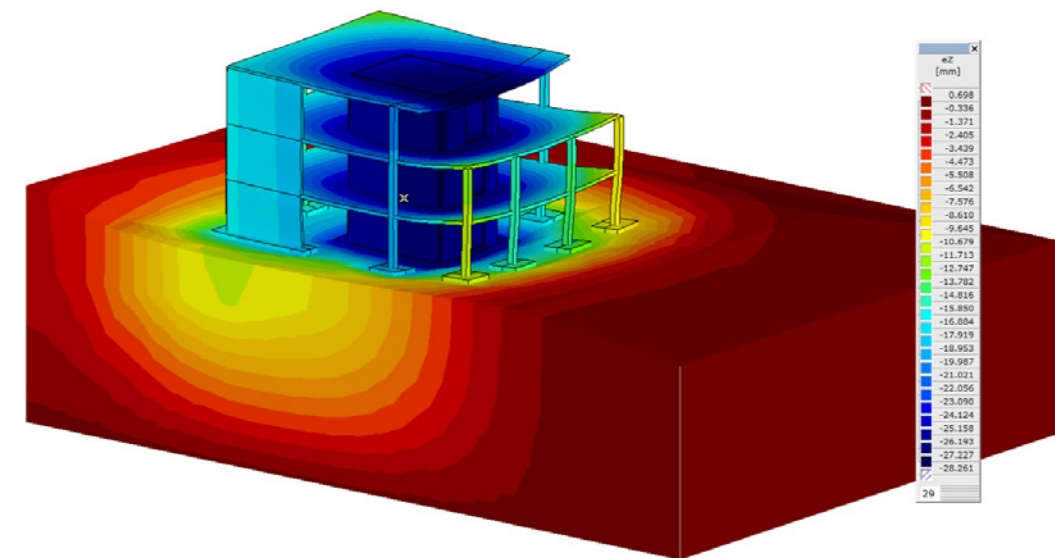
## SOIL-STRUCTURE INTERACTION MADE ACCURATE

AXISVM enables detailed modeling of soil-structure interaction through a direct approach—where the structure and soil are analyzed together as a unified system. This allows for more precise calculation of internal forces caused by differential settlements and stress distribution in the soil beneath and around the structure.



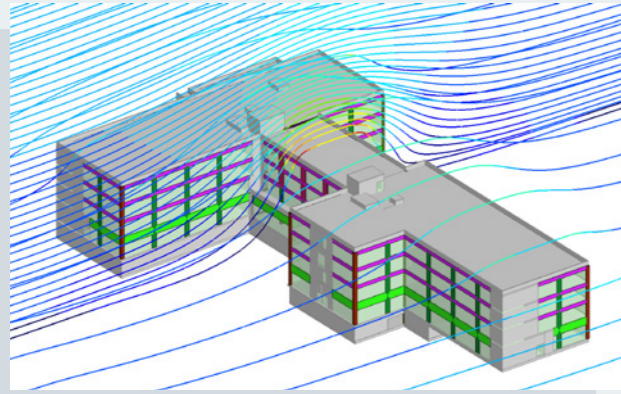
The software can generate a spatial soil model from borehole data, with layered soil profiles. It also offers the option to estimate the stiffnesses of nodal, line and surface supports based on interpolated soil properties.

With AXISVM, the initial state of the soil can be considered, allowing engineers to account for the pre-stressed condition of the ground—resulting in more realistic and reliable analysis.



# WIND MODULE

## PRECISION WIND LOAD SIMULATION



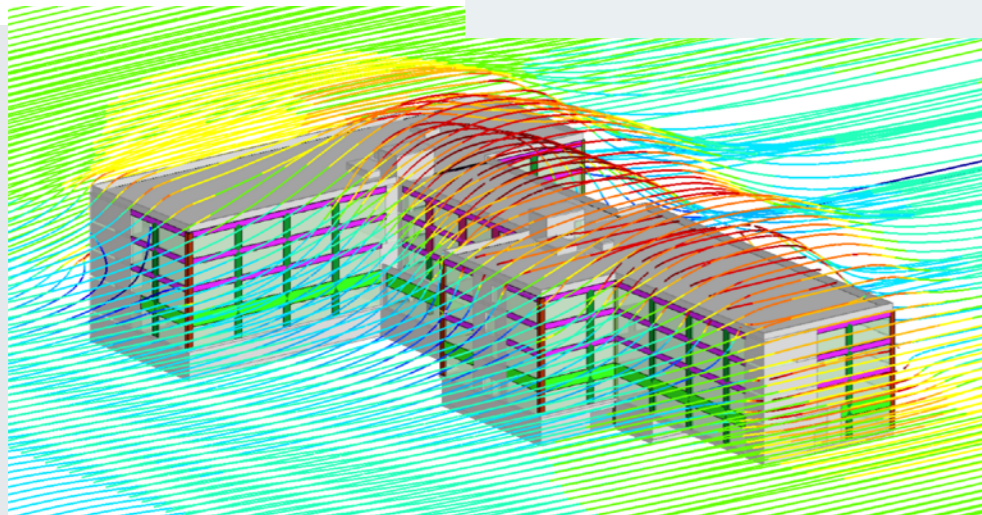
When standard methods fall short—such as with irregular or uniquely shaped structures—the AXISVM WIND module offers a professional solution for determining wind loads. It uses CFD or wind tunnel simulation data to map detailed pressure fields directly onto the structure, generating separate load cases for each wind direction.

Engineers can visualize flow lines, velocities, pressures, and wind loads through color diagrams, cross-sections, and animations.

The module also supports:

- ▶ Surrounding terrain and adjacent structures
- ▶ Multiple wind directions
- ▶ Accurate pressure field evaluation

Ideal for complex geometries, AXISVM WIND MODULE ensures reliable and realistic wind load analysis.



# CONSTRUCTION STAGES MODULE

## ANALYSIS FOR REALISTIC STRUCTURAL BEHAVIOUR

In many projects, the structural system and loading conditions change significantly during construction.

AXISVM's Construction Stages module allows engineers to model these transitions accurately—helping prevent errors and misjudgments that could arise from assuming final-state behavior throughout the design process.

Unlike conventional models that consider all structural elements and loads in a single analysis step, AXISVM enables stage-by-stage analysis.

This approach accounts for the timing of construction loads, temporary supports, and the sequence of structural element activation or removal—delivering more realistic internal forces and stress distributions.

In addition to modeling complex construction workflows, the module also supports:

- ▶ Demolition and reinforcement phases
- ▶ Assessment of damaged or corroded structures
- ▶ Evaluation of structural retrofits and replacements
- ▶ Progressive collapse and robustness analysis
- ▶ Bridge launching simulations

With AXISVM, construction stage modeling becomes an integral part of **accurate and reliable** structural design.

Download the FREE ebook:

[axisvm.eu/construction-stages-ebook](https://axisvm.eu/construction-stages-ebook)



# ADDITIONAL DESIGN MODULES



## SWG MODULE

This module provides the ability to automatically generate the snow and wind loads on structures according to the design standard.

The critical load combination result can be efficiently applied to a significant number of possible load combinations



## IMP MODULE

This module enables strength and stability verification using GMNIA by incorporating geometric imperfections based on buckling shapes.

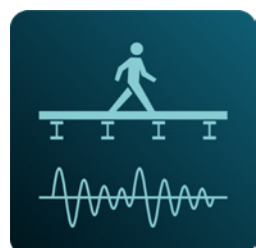
This advanced method is ideal for complex structural details where simplified approaches fall short.



## DYN MODULE

The program can perform dynamic analyses, in which the displacements and internal forces of the structure are determined for each time step, corresponding to the defined dynamic loads.

The analysis can be carried out by considering linear or nonlinear material behaviour. Geometric nonlinearity can also be considered.



## FFA MODULE

Footfall analysis aims to evaluate accelerations from human-induced vibrations that may reduce comfort, disturb sensitive instruments, or compromise the building's serviceability

# BIM COLLABORATION








## TIME SAVINGS FOR ALL INDUSTRIAL DESIGNERS

Building Information Modeling (BIM) streamlines the entire design and construction process by enabling the creation of 3D models in software such as Revit®, ARCHICAD®, Allplan®, or Tekla Structures®.

BIM ensures better coordination, faster modifications, and improved efficiency across disciplines.

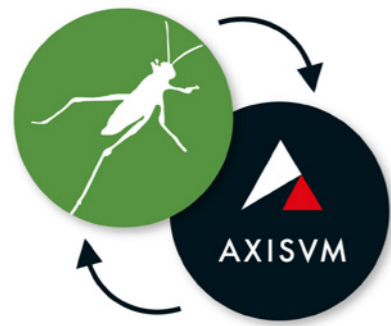
AXISVM supports both Open and Closed BIM workflows. It enables the import of object data from architectural models and the export of structural analysis models—ensuring smooth collaboration between architects and structural engineers.

With the free AXISVM API, users can develop custom tools or use ready-made solutions like the Revit and Tekla modules, as well as Grasshopper and Dynamo add-ons.

 <b>Revit</b>	Bidirectional connection to Revit
 <b>Tekla</b>	Bidirectional connection to Tekla Structures
 <b>Archicad</b>	Excel based bidirectional data connection
 <b>ALLPLAN</b> <small>A NEMETSCHKE COMPANY</small>	Allplan export data connection
 <b>IFC</b>	Export-import of IFC file
 <b>grasshopper</b>	Grasshopper and Dynamo add-ons for a flexible parametric design
 <b>Dynamo</b>	
Custom applications development available using the AXISVM API.	

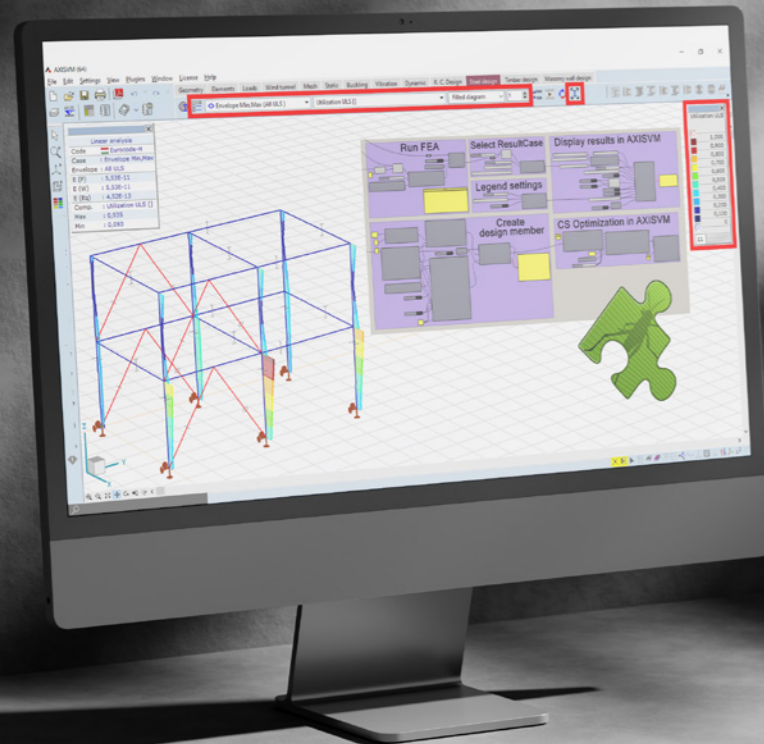
# PARAMETRIC DESIGN MEETS STRUCTURAL ANALYSIS

The **GrasshopperToAXISVM add-on** enables two-way communication between AXISVM and Rhino/Grasshopper, enabling engineers to build and analyze complex parametric structural models with ease and precision.



- ▶ Send and receive geometry, loads, supports, and results between AXISVM and Grasshopper in real time.
- ▶ Create structural elements using a wide range of components – including nodes, line and surface elements, cross-sections, supports, load panels, and domains.
- ▶ Group elements into custom parts for better model organization and parameter control.
- ▶ AXISVM opens automatically during export/import and reflects changes instantly as Grasshopper parameters are modified.

**AXISVM** opens automatically during export/import and reflects changes instantly as Grasshopper parameters are modified.



# EXPERT SUPPORT

FOR OUTSTANDING USER EXPERIENCE

At AXISVM, we're committed to providing high-quality, engineering-level support to help you make the most of the software.

Our team—made up of experienced structural engineers—is here to assist with modeling questions, technical issues, or feature-related inquiries.

In addition to direct assistance, AXISVM users benefit from:

- ▶ A growing online knowledge base with answers to frequently asked questions
- ▶ Comprehensive training materials that guide through using AXISVM's intuitive interface
- ▶ Step-by-step manuals and tutorial videos for hands-on practice
- ▶ Detailed instructions for creating models, editing geometry, defining elements, applying loads, generating meshes, and evaluating results

Whether our users are just getting started or working on advanced projects, our resources are designed to help them work efficiently and confidently.





**"HELPING ENGINEERS BRING BOLD ARCHITECTURAL VISIONS TO LIFE"**



Freiburg, GERMANY  
structural design by Poetzsch Bauingenieure GmbH



Laax, SWITZERLAND  
structural design by ipz ingenieure + planer ag



Hilversum, NETHERLANDS  
structural design by Adviesbureau van de Laar



Brno, CZECH REPUBLIC  
design by Michna&Perhác and Parametr Studio



Martigny, SWITZERLAND  
structural design by ARX (Pini Group) SA Sion



London, UNITED KINGDOM  
structural design by Barrett Mahony Consulting Engineers

# interCAD

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