



Model, analyze and design steel and concrete structures to multiple international design codes within an easy-to-use, customizable model-management interface. Ideal for both buildings and industrial applications.

Trusted by thousands of structural engineers worldwide for over 30 years, S-FRAME is the design and analysis software of choice for moment frames, braced frames, trusses, bridges, office and residential buildings, skyscrapers, fabric structures, cable structures and more. Easy enough for simple projects, powerful enough for the most complex.

S-FRAME Analysis licensing is available in three different editions: **Standard, Professional and Enterprise**

Combined Steel and Concrete Design Integration *New in R11*

- All editions of S-FRAME Analysis have the option to include fully integrated Steel and Concrete design capabilities (S-STEEL and ICD).*
- Integrated design and optimization for strength and serviceability with detailed reporting and quantity take-off with full round-tripping between analysis and design. Design all or selectively design subsets of the structure and load combinations.
- Supports composite beam design and design of tapered sections using AISC Design Guide 25.
- Integrated concrete design (ICD) of beams, columns (including composite columns), walls, floor slabs and foundations. *New in R11.1*
- Perform seismic concrete design for variable ductility requirements.

All Editions of S-FRAME Analysis Include

- Fast, 32 and 64 bit SPARSE solver with multi-core processing, capable of analyzing virtually unlimited-sized models.
- Advanced 3D panel meshing (with or without holes) to with triangular elements, quadrilateral elements or both.
- Meshing automatically detects non-coplanar panel intersections and ensures compatible connections along intersection lines. *New in R11.1*
- Analysis groups and design groups to simplify model management and design tasks.
- User defined coordinate systems: Cartesian, Cylindrical and Spherical, for building complex geometry and loading.
- Pier, Strip and Wall integration lines to easily extract forces for structural objects from finite elements.
- Open Structure Wind Load Generator in accordance with API Specification 4F:2008.
- Automatic one-way (short, long, or in any direction) or two-way area load distribution.
- Automatic area load distribution to meshed panels. *New in R11.2*
- Continuous Member tools for the assembly or disassembly of Physical Members from Analytical Members.
- Partial Releases for modeling semi rigid connections. *New in R11*
- Calculation of Pass Through Forces used in steel connection design. *New in R11.1*
- Beam, truss, linear spring and inactive elements. Beams support rigid offsets.
- Powerful load-combination methods with notional loads and active/non-active status.
- 3 and 4 node plate, membrane and shell elements. Rigid and flexible diaphragm modeling.

Newly Designed Bidirectional BIM links to Autodesk® Revit® and TEKLA® Structures *New in R11*

- Revit® 2014, 2015 and 2016 Beam, Column, Wall, Floor, Beam System, Truss, Loads and Load Cases/Combinations.
- TEKLA® 18.0, 18.1, 19.0 and 21.1 support for Beam, Column, Wall and Slab, Loads and Load Cases/Combinations.
- Round-Tripping support retains S-FRAME data not recognized by third-party software through multiple design cycles.

Newly Designed AutoCAD® DXF link *New in R11*

- Import DXF layers as members, shells or panels, pre-assign properties to layers, limit import by layer or individual entity.
- Automatic S-FRAME model group folder creation for imported layers, unit conversions and joint tolerance checks.
- 3D visualization window with fast rendering, toggle on/off layers, used to selectively import subsets of large models.

S-VIEW, a fully integrated Sharing, Validation and Visualization Tool. *New in R11*

- Powerful visualization tool for S-FRAME model viewing, sharing and validating in a collaborative environment.
- Export images and videos* to create high quality presentations. Facilitate collaboration with all input and results in one file.
- Animate results from dynamic and nonlinear analyses, including incomplete analysis. *New in R11.1*
- View supports and one- and two-noded springs and viscous dampers. *New in R11.1*

* S-STEEL, ICD and the video-export option in S-VIEW require additional licensing fees



Linear Static Analysis	✓	✓	✓
Fast, 32 and 64 bit SPARSE solver with multi-core processing, capable of analyzing virtually unlimited-sized models	✓	✓	✓
Support for Rigid Offsets	✓	✓	✓
Beam, Truss, Linear Spring and Inactive Elements	✓	✓	✓
Three and Four Node Plate, Membrane and Shell Elements	✓	✓	✓
Simple creation of panels (and holes) with automatic meshing and loading options	✓	✓	✓
Rigid and Flexible Diaphragm Modeling	✓	✓	✓
Powerful Load-combination Methods	✓	✓	✓
Direct Analysis Method (DM): AISC 360-10. Rigorous second-order analysis in a single run that accounts for both P- Δ and P- δ effects, notional loads, and τ_b with amplification factors reported. No need for multiple runs		✓	✓
P-Delta Buckling Analysis		✓	✓
Unstressed and P-Delta Stressed Vibration (eigenvalue) analysis		✓	✓
Mode shape/deflection animation		✓	✓
P-Delta (2-step) Analysis		✓	✓
One node and two node viscous dampers (dashpots) <i>New in R11.1</i>		✓	✓
Linear Time History Analysis:		✓	✓
Constant or variable time step integration with support for initial conditions and options to convert loads to mass		✓	✓
Single or Multi-support Base Motion Time History for seismic analysis		✓	✓
Support for cyclic/harmonic loading force or acceleration & time history functions <i>New in R11</i>		✓	✓
Automatic response charts and automatic response spectrum for any point within the structure.		✓	✓
Static load cases combined with dynamic load cases can be treated in one of two ways – solved and combined dynamically (pure dynamic analysis), or solved statically and combined arithmetically <i>New in R11.1</i>		✓	✓
Solve using standard forcing functions: Harmonic, Polynomial and Linear <i>New in R11</i>		✓	✓
Combine static and dynamic loads for constant and variable time step integration. <i>New in R11.1</i>		✓	✓
Moving load analysis:		✓	✓
Influence line diagrams.		✓	✓
User definable vehicle patterns with up to 1500 axle loads. Multiple loads on multiple lanes following any 3D path		✓	✓
Combine moving loads with static load cases or combinations		✓	✓
Response spectrum analysis:		✓	✓
Equivalent Static Force Procedure (ESFP), including P-Delta contributions, for NBCC 2005, NBCC2010		✓	✓
Equivalent Lateral Force Procedure (ELFP), including P-Delta contributions, for ASCE 7-05		✓	✓
Options to scale to code base shear (ESFP/ELF) and to convert loads to mass		✓	✓
Five different modal combination methods including CQC and SRSS		✓	✓
Generate and save response spectrum design curves at any joint from a time history analysis. Scale and reuse these curves in subsequent response spectrum analysis		✓	✓
Torsional sensitivity evaluation and accidental torsion calculations		✓	✓
Staged Construction analysis and design for steel and concrete structures <i>New in R11.1</i>			✓
Nonlinear Static, Moving Loads and Nonlinear Time History use a full Newton-Raphson iterative solver with incremental loading			✓
Nonlinear Time History uses direct integration and allows combination of dynamic and static load cases			✓
Nonlinear General Dynamic Analysis with user defined time dependent loads including impact loading			✓
Nonlinear Seismic Analysis: Stressed Vibration, Base Motion Time History, Multi-support Base Motion Time History			✓
Nonlinear Buckling Analysis. <i>New in R11</i>			✓
Nonlinear Quasi-static and Pushover analysis to aid performance based design. <i>New in R11</i>			✓
All analysis features from professional edition can be solved nonlinearly. This now includes: Nonlinear time history with standard forcing functions: Harmonic, Polynomial and Linear <i>New in R11.1</i> Combine static and dynamic loads for constant and variable time step integration <i>New in R11.1</i>			✓
Material nonlinearity through hysteretic modeling of link beams and base isolators using Kinematic Bilinear, Isotropic Bilinear, Symmetric Bilinear, Takeda Bilinear and Pivot Hysteresis Models, Modified Flag and Shape memory Alloy <i>New in R11.2</i>			✓
Convergence criteria based on Energy and out-of-balance force. <i>New in R11</i>			✓
Nonlinear ground springs supporting hook and gap characteristics and multi-linear stiffness			✓
True cable, tension or compression only elements and fabric elements			✓
Response spectrum curve generators for NBCC 2010, NBCC 2005, IBC 2006, and ASCE 7-05			✓
Nonlinear 2 node element with user specified Tension and Compression limits and with user specified Hook and/or Gap limits			✓
Sophisticated 3 and 4 node elements participate fully in P-Delta and non-linear analysis			✓