SIMULIA

3DEXPERIENCE

fe-safe 2026
WHAT'S NEW?

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fe-safe 2026 GA

GA.1 Support for 2026 Abaqus ODB files

See the SIMULIA Installation Guide from the Program Directory for further details on configuring ODB interfaces from previous versions.

GA.2 DTMF

An improvement has been made to the creep calculation, whereby the instantaneous value of temperature-dependent material property σ_{cy} (cyclic yield stress) is used when integrating over a cycle, rather than its average value over the cycle.

In the allDTMFparameters table, a new column has been added for the cycle opening strain ε_{op} when crack closure is enabled. When that option is disabled, irrelevant columns have been omitted.

GA.3 BS 7608 Standard for Weld Fatigue Life Tutorial

A new tutorial (116) has been added to the main fe-safe tutorial suite.

fe-safe 2026 FD01 (FP.2604)

FD01.1 Enhancements to ASAM MDF data file handling

Added support for Deflate and Transpose-Deflate compressed data blocks, plus Data List blocks for both compressed and uncompressed files.

FD01.2 Random vibration and Sine Sweep workflow enhancements

Improved consistency between frequency domain and time domain algorithms, including handling of compressive mean stress in Morrow and User Defined MSCs, application of constant and variable amplitude endurance limits, and removal of static failure damage limits.

Added support for multi-block sequential single channel PSD analysis.

FD01.3 Random Vibration and Sine Sweep Tutorial enhancements

Tutorial 114 – previously PSD Fatigue Analysis – has been renamed and enhanced to reflect progress in the fe-safe random vibration capabilities.

FD01.4 Verity Module in fe-safe Tutorial Updates

The models used for Tutorials A and F have been aligned with those used in the BS 7608 tutorial.

fe-safe 2026 FD04 (FP.2634)

FD04.1 New Tutorial for Damage Thermo-Mechanical Fatigue

A new tutorial (117) has been added to the main fe-safe tutorial suite

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fe-safe 2025 GA

GA.1 Support for 2025 Abaqus ODB files

GA.2 Legacy Feature Deprecation

The following legacy features have been removed.

Legacy settings in macros:

- [use legacy planes]
- [old stress based BM material approximation]
- [disable failed directional cosine to XYZ] or keyword DISABLEDCXYZ

FEA Fatigue >> Analysis Options >> Legacy settings:

- Run legacy TCD method. Used to perform TCD analysis using a slower and more restricted method.
- Allow quadratic interpolation in TCD. Used to disallow quadratic interpolation for second order elements in TCD analysis.
- Use legacy spot weld stresses. Used to analyse spot welds without a critical plane analysis. Macro setting: [use legacy spot weld stresses]
- Pre-apply equivalent structural stress function to the full history. Reverts to old behaviour rather than the current behaviour which is to compute equivalent structural stress on the extracted structural stress cycles. Macro setting: [legacy equivalent structural stress]
- Use legacy Verity LU decomposition for weld structural stress. Macro setting: [use verity LU decomposition]

FEA Fatigue >> ABAQUS ODB Interface Options:

- Allow ODB files with multiple parts and instances. Used to disable ODB instance support. Macro setting: [enable instance support]

FEA Fatigue >> Analysis Options >> General:

- Use trigonometric look-up tables
- Disable failed directional cosines to XYZ

Define a fatigue loading without using a LDF file:

- Macro Keywords: LOADINGTYPE, SEQFILE, SPECTRUM, transitions, NumSigs, sigNum*, sigName*, dssNum*
- Macro settings [loading mode], [loading (legacy)]

fe-safe 2025 FD01 (FP.2505)

FD01.1 Improvements to FOS method

The FOS method has been improved to take account of variation of the critical plane with the FOS scale.

A full plane search will be undertaken to confirm that the convergence on design life is still within tolerance, and if the full plane search finds different critical plane, the iterative process will continue on the new set of critical planes.

The bracketing method has been simplified to replace the coarse and fine bands with a single search band, and a new design life tolerance parameter has been introduced.

FOS analysis can now be activated for individual analysis groups rather than at a global analysis level.

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fe-safe 2025 FD03 (FP.2523)

FD03.1 BS 7608 Welds

Support to the British Standards Institution (BSI) BS 7608 has been added.

It is now possible to assess the fatigue life of welded components according to BS 7608:2014+A1:2015, with support for both local nominal stress and the hotspot methods.

BS 7608 is a widely used standard for designing steel welds with respect to fatigue life.

The weld methodology can be selected from the FEA Fatigue >> Analysis Options... >> Algorithms >> Weld Methods menu. BS 7608 is provided in addition to other existing methodologies. The local nominal and the hot spot (Surface Stress Extrapolation or Through Thickness Stress Linearisation) calculation methods can be selected from the same menu.

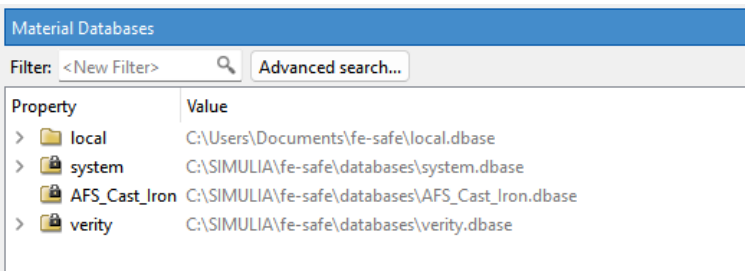
The weld analysis setup is completed by defining weld lines from weld fillet elements in the Weld Preparation >> Define and Analyse Weld Geometry... menu. Upon saving and analysing the weld definition, the corresponding weld groups will be created and displayed on the Fatigue from FEA >> Analysis Settings panel. Further group-specific BS 7608 parameters, such as stress modification factors, can be specified by double-clicking the group's Algorithm column.

A new material database, derived from the standard and containing materials from 13 different weld classes, is provided. Any user-defined material can be used provided that the elastic modulus, constant amplitude endurance limit (CAEL), and SN curve are specified.

A detailed per-item report can be requested from Exports... >> Log for Items.

FD03.2 Material Database

The system material database has been expanded with new materials and extensive material search capabilities have been integrated into fe-safe, this is accessible from the **Advanced search..** button on the **Material Databases** dialog.



The advanced search allows one or more filter criteria based on any of the material parameters defined in the selected material databases, previews of the matching materials is available before being applied to the material tree.

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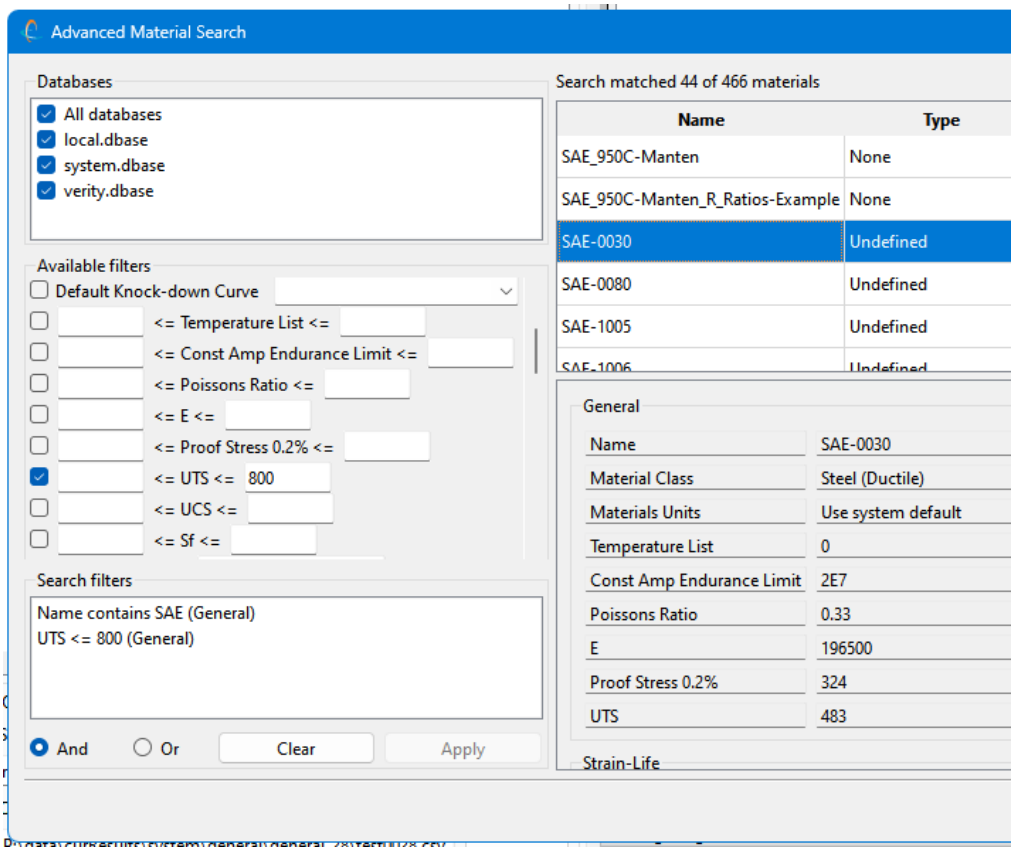

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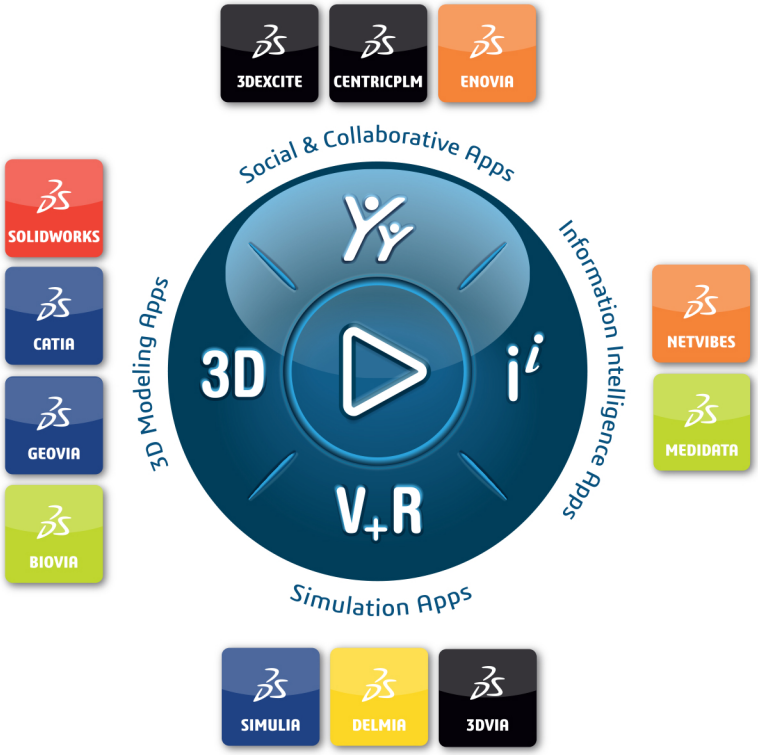

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