Changes to FRANC3D from Version 9.2.1 to 9.2.2

Oct 15, 2026

1) Add preference setting to color the flaw surface.
2) Add Transparent option to the display options.
3) The submodel tool now looks for a brick face that is half exposed (or half covered by a single tet-element triangle face).
4) Allow ANSYS CP data to be transferred from the uncracked to the cracked mesh, with an option to delete and recreate CP data.
5) Edit the ANSYS APDL POST1 commands to check for a valid last substep in the results.
6) Fix issues with non-manifold (branching) crack insertion and meshing.
7) Fix table display of crack area and max(Kmax) in the fatigue life dialog when setting the starting crack growth step greater than zero.
8) Fix bugs in user-mesh void insertion and crack insertion refinement levels.

Changes to FRANC3D from Version 9.2.0 to 9.2.1

Sept 14, 2026

1) Fix GUI display issue for Fatigue crack front plots along a path for transient load events with missing substep SIFS.
2) Fix GUI display issue when setting the edge kink angle.
3) Fix GUI display issue for blunt brick crack front elements.
4) Clear display items in Fatigue dialog when reading a *.fcg* file.
5) Fix camera reset in Fatigue dialog.
6) Fix GUI display of NASGRO label and equation.
7) Separate crack surfaces and sets when there are multiple cracks.
8) Fix issue in ANSYS parsing for table data.
9) Add ANSYS preference to turn on the Extra load step file check box.
10) Set FE units for quasi-static growth if no units have been specified.

Changes to FRANC3D from Version 9.1.0 to 9.2.0

Aug 9, 2026

1) Revised surface/set selection dialogs for FE import, crack face traction surface treatment, symmetry cracks and edit retained nodes.
2) Removed analysis code panel from static and automatic growth wizards; the analysis code is automatically set based on the input FE model.
3) Revised the Advanced menu and dialogs for writing/viewing/merging .fcg files.
4) Added option in Edit Crack dialog to highlight faces with null area.
5) Improved error handling when using NASGRO growth models, with error messages displayed.
6) Bug fix for ANSYS tables with data not separated by white space.

Changes to FRANC3D from Version 9.0.1 to 9.1.0

July 5, 2026

1) Revised Fatigue dialog allows user to choose plot axes and includes MAX(KMax).
2) Bug fix for NASGRO model closure term.
3) Revised View (Show) Boundary Condition dialog.
4) Revised tables allow easier formatting, copy and paste.
5) Revised user-mesh cracks; front node set is no longer needed.
6) Revised FE checks during import.
7) Bug fix in boundary condition mapping of nodal forces.
8) Revised ABAQUS *freq import/export.
9) Allow user to specify the file name in StartRecording().
10) Bug fix when saving camera views.

Changes to FRANC3D from Version 9.0.0 to 9.0.1

May 22, 2026

1) Update internal node set names for ABAQUS force and displacement.
2) Fix initial strain rotation for SIFs with initial stress/strain (affects first value for crack front).
3) Bug fix for SIFs for initial stress (strain) plus temperature.
4) Fix table display for very large values on Windows.
5) Restore cursor shape after box-zoom.
6) Don’t clear legend for CFT contour display when using box-zoom or ruler.
7) Fixed the box-zoom and ruler in the fatigue life dialog.
8) Redesign the Read Crack Growth dialog layout.
9) Fix path display in the fatigue dialog.
10) Fix bug in Flaw insertion dialog, in particular for symmetry cracks.
11) Update menu item on/off checks for voids and notches.
12) Draw dashed curves in the XY plots for data that is identical.
13) Add the WriteGrowthPathData command to the Python module.
14) Update the table that displays floating point data.
15) Update spectrum display dialog to speed up drawing.

Changes to FRANC3D from Version 8.8.1 to 9.0.0

Apr 29, 2026

1) Update to RLM version 18 and update FRANC3D license to 9.0.
2) Add check for boundary sliver-cracks and internal sliver-voids in the input FE mesh.
3) Edit ANSYS TB reader to account for temperature dependent plasticity.
4) Fix NSUBS output for ANSYS.

5) Fix ABAQUS section/material condensing.
6) Fix NASTRAN force output for large values.
7) Limit force output for ANSYS and ABAQUS to values greater than e-15 for the first load step.
8) Fix ANSYS CMBLOCK read.
9) Add support for ABAQUS cyclic mode and dsload real/imaginary.
10) Fix file path issue when running stressDtpFile.py when using ABAQUS .odb files.
11) Updates and bug fixes to crack insertion and remeshing.
12) Updates to plots and tables; a table preview button is added to help with file writing/export.
13) Crack area added to fatigue dialog so one can plot area vs cycles.
14) Bug fix for transient event temperatures when missing substeps.
15) Bug fix for SIFs that include initial strain.
16) WriteEPJ command replaced with WriteJInt.
17) Add "wait_for_license" to Python module call PyF3D.F3Dapp() to allow the Python module to silently wait for a license.
18) Revise the crack grow+merge command to remove the lists of point coordinates.
19) Revise the edge kink angle processing to speed up drawing of the FE model.
20) Add flow ratio parameters for Newman closure model.
21) Add part-circle library flaw shape.
22) Add template display option to turn on/off the outer boundary of the template.
23) Add default crack camera positions for multiple cracks.
24) Fix the temperature settings for hold-time events.
25) Add path plot options for crack front fatigue data.
26) Make FE unit settings read only except for the initial import and from the Edit menu.
27) Updates to Edit Crack dialog.
28) Removed unused volume mesh parameters from the Preferences advanced meshing tab.
29) Add starting front option for fatigue.
30) Revised fatigue growth model dialogs to allow for Capped/Extrapolate settings.

Changes to FRANC3D from Version 8.8.0 to 8.8.1

Feb 10, 2026

1) Update documentation to Version 8.8 and update links in Help menu.
2) Add format string for ANSYS initial strain files and fix hard-coded filename.
3) Update Chinese GUI translations.

Changes to FRANC3D from Version 8.7.4 to 8.8.0

Feb 3, 2026

1) Add support for ANSYS initial strain.
2) Fix NX NASTRAN contact and add extra connections.
3) Fix ANSYS BF and BFE Block read.
4) Bug fixes and enhancements to crack insertion and meshing.

5) Bug fix for 1D polynomial crack face traction.
6) Bug fixes in fatigue dialog panels.
7) Advanced Options button added to Fatigue dialog to set the starting crack step and to limit the cycle counting to a portion of the crack front.
8) Fix COD display from the Advanced menu.
9) Updates for single crystal crack growth.
10) Add non-proportional kink angle option; allow user to choose ΔK or K_{max}.
11) Revised crack / flaw / void parametric flaw definitions.
12) License is released when the model is closed; a license request is issued if the user opens or imports a model.

Changes to FRANC3D from Version 8.7.3 to 8.7.4

Sept 29, 2025

1) Store correct temperature in SIF history for load steps after load step 1. The computed SIFs use the correct temperature, but the temperature values that were stored for load step 2 and higher were the temperatures for load step 1. This could affect fatigue life computations for temperature dependent crack growth rate models. This affects versions 8.70 thru 8.7.3.
2) Add support for bctset* and bcadd* keywords for NX NASTRAN.
3) Write all_template_elem cmblock in ANSYS .cdb file.

Changes to FRANC3D from Version 8.7.2 to 8.7.3

Sept 16, 2025

1) Fix J's for all Rings for ABAQUS analyses with elasto-plastic material.
2) Fix constant temperature setting for load events in the fatigue dialog.

Changes to FRANC3D from Version 8.7.1 to 8.7.2

Sept 9, 2025

1) Bug fix in NASTRAN control set output for template and local model sets.
2) Add support for NASTRAN CYCADD.
3) Bug fix in crack insertion/meshing library.
4) Disable Path option in FatigueLife dialog if there is only one crack growth step.
5) Additional checks during front fitting if user discards all front points.
6) Reset camera position correctly in flaw insertion dialog during Back update.
7) Turn off SIF thermal term if there are no temperatures in the model/results.
8) Switch Kth and R labels to match data when writing crack growth data .txt files.

Changes to FRANC3D from Version 8.7.0 to 8.7.1

Aug 25, 2025

1) Add support for ELEMENT keyword for ABAQUS pre-tension.
2) Fix NASTRAN control set output.
3) Update NASTRAN SPC processing to collect into sets.
4) Read NASTRAN control sets, specifically element sets to use during sub-modeling.
5) Add NASTRAN .dat file extension for NASTRAN user-mesh cracks.
6) Add FBLOCK support to ANSYS reader.
7) Disable CrackStep list for J's For All Rings display; J's for all Rings only computed/displayed for the current crack front.

Changes to FRANC3D from Version 8.6.2 to 8.7.0

Jul 28, 2025

1) Modifications to differentiate cracks, notches and voids. GUI redesigned for templates at crack and notch fronts. Cracks without templates are no longer supported.
2) Modifications for crack front element types (wedge, collapsed brick and blunt brick); all-tet element template option supported.
3) J-integral for notch fronts added.
4) ComputeSif command modified to remove the elasto-plastic J computations, and a new ComputeJRings command added.
5) Symmetry option added for ABAQUS and ANSYS contour integral output for symmetry cracks.
6) SIF Display -> Advanced Parameter dialog simplified; CFT and CFC options are automatically set.
7) Bug fix for ANSYS extra contact connection and minor updates to ANSYS contact dialog.
8) Update for ABAQUS pre-tension data and bug fix during first pass search for ABAQUS node and element sets.
9) Differentiate modal-dynamic from modal-step for ABAQUS analyses.
10) Process ANSYS sfcontrol table data for LOCAL+GLOBAL analyses.
11) ANSYS dblock support added.
12) NASTRAN updates for forces and moments.
13) Preference setting for MSC versus NX NASTRAN output.
14) Fix SIERRA Exodus I/O issues and use Exodus element map.
15) Fix Windows GUI issue for 2D-radial residual stress distribution.
16) Make sure the modal Mode I SIF is positive for a single phase-angle.
17) Updates and bug fixes for crack insertion and meshing.
18) Bug fix for retained sets/surfaces when importing already-divided models.
19) Add option to read XML file in SetGrowthParams command.
20) Add capped versus extrapolate option for temperature and R-ratio interpolation in the subcritical crack growth dialogs.
21) Add total passes versus crack step (or path) plot to the fatigue lifing dialog.
22) Add x,y,z range values for the Submodeler command.
23) Add dialog to display / list load steps and boundary conditions after importing FE model.

24) Remove the temperature multiplier and offset from the subcritical crack growth load schedule.
25) Add Growth Rate File option.
26) glbestvisual setting added to the resource SETTINGS.

Changes to FRANC3D from Version 8.6.1 to 8.6.2

Jan 29, 2025

1) Updates for non-manifold (branching) cracks.
2) Checks for “different density only” or for “missing E or Nu” added to FE import dialogs.
3) Fix bug in ANSYS reader for material data modified for crack face tractions.
4) Add options to include (or ignore) crack front nodes and node normals for ABAQUS crack face contact.
5) Process real, imaginary and load case options for ABAQUS cload and dload data.
6) Process ANSYS sfcontrol table data.
7) Read stress and strain from Exodus files.
8) Bug fixes for crack insertion and meshing.
9) Add substep dropdown for SIFs For All Fronts dialog.
10) Add multi-spectra dynamic pairing, Growth Rate File menu option and load factor table dialog.

Changes to FRANC3D from Version 8.6.0 to 8.6.1

Dec 19, 2024

1) More updates for thick (finite volume flaws) cracks, including J-integral computations.
2) Updates to the ABAQUS writeDtpFile.py for steady state dynamics, frequency and modal dynamics load steps.
3) Bug fix for NASTRAN SPCD’s.
4) Update to FE input checks for disconnected quad faces.
5) Bug fix in fatigue cycle integrations when turning off hold-time in the GUI.
6) Add local vector to Anchor Node in the crack insertion Define Coord Sys dialog.
7) Add Preference setting to save .crk files for each crack growth step.
8) Bug fixes in the Submodel extraction dialog, and a BackUpdate routine added to clear prior selections of element groups and/or materials.
9) Update user-defined crack boundary dialog.

Changes to FRANC3D from Version 8.5.2 to 8.6.0

Nov 7, 2024

1) Modifications to the CRACKFACENODES data block in the .fdb file.
   Version 8.6 files cannot be read into older versions of Franc3d;
   version 8.6 will read old .fdb files, however.
2) Updates to support thick crack (void) nodes and element faces.

3) Update support for Ansys omega table boundary condition data.
4) Update for Ansys SFE format, Sload, and large Ansys node and element IDs.
5) Update Nastran output for forces converted from Ansys or Abaqus.
6) Check for null force and material data for Abaqus export.
7) Add Nastran geomcheck setting to both the Preference dialog and the command language (session log).
8) Updates for Sierra node and surface sets.
9) Bug fixes in crack insertion and meshing library.
10) Edit SIF history path constraint default values.
11) Update the path plane dialog for SIF history.
12) Fix the View Response dialog.
13) Fix fatigue life dialog camera position settings and add Export callback for the case where a .fcg is read into the fatigue dialog.
14) Bug fix in fatigue module when interpolating Paris and Bilinear Paris model n (or m) values for the case of a user-fixed R ratio not equal to 0.0, and the Paris model has temperature dependence but no R dependence.
15) Additional bug fixes in fatigue module for cases where part of the crack front has delta K values below threshold.

Changes to FRANC3D from Version 8.5.1 to 8.5.2

Sept 3, 2024

1) Add extra check for element types when merging cracked-local and global FE data.
2) Add HILL and CREEP material data for ANSYS import.
3) Make sure ANSYS cmblock data is written in ascending order.
4) Fix ANSYS pressure mapping when importing a complete model with extra load step files.
5) Fix NASTRAN reference temperature import/output.
6) Add option to output NASTRAN “local-model” or “template-only” results to .pch file.
7) Fix file path for FE embedded input during import.
8) Updates and fixes for crack insertion/meshing.
9) Set dynamic pairing HCF event to MAX as default substep.
10) Bug fix in load schedule dialog when switching substeps in the GUI.
11) Bug fix in grow/merge display update.
12) Bug fix for partial crack front growth.
13) Add smoothing and coarsening to merge-and-grow to improve the crack geometry.

Changes to FRANC3D from Version 8.5.0 to 8.5.1

Jul 26, 2024

1) Condense ABAQUS solid sections when there are only solid sections with the same material and coordinate system.

2) Send all info, warning and error messages to a f3d_warn_err.txt file when running from the GUI; the preference setting for this is in the General2 tab.
3) Fix issues with template settings when inserting multiple thick cracks (voids).
4) Add template preference settings to the Meshing tab in Preferences.
5) Fix GUI display issues for SIF table and library flaw bounding edges.
6) Make sure SIF midside-correction flag is set when turning on/off the Include crack pressure option in the SIF advanced dialog.
7) Sierra section and set/surface bug fixes.
8) Bug fixes for crack insertion and meshing.

Changes to FRANC3D from Version 8.4.5 to 8.5.0

Jun 18, 2024

1) Add support for OpenGL 4.5; this can be set in the Preference dialog.
   If there are display issues while using OpenGL 4.5, switch back to 1.1;
   see Section 2.2 of the Reference.
2) Using RLM 16, which requires a new license file.
3) Using Python 3.12 for the PyF3D module.
4) Revised crack insertion remeshing.
5) Revised edit crack geometry dialog.
6) Revised pseudo-ellipse (both surface and interior) flaw library geometry creation.
7) Revised NASGRO XML reader with support for mixed units.
8) Add 1D polynomial CFT distribution.

Changes to FRANC3D from Version 8.4.4 to 8.4.5

May 14, 2024

1) Bug fix for kinked template geometry.
2) Bug fix in Select Surface dialog when reading retained nodes file.
3) Check for .dtp file when using .odb for CFTs.
4) Add more error checking for Nastran and Sierra analyses.
5) Add support for Sierra thermal log strain.

Changes to FRANC3D from Version 8.4.3 to 8.4.4

Apr 29, 2024

1) Fix ANSYS and ABAQUS CTE settings for restarts for CFT load steps.
2) Update ABAQUS Python scripts for ABAQUS 2024 and Python3.
3) Add an option to the Preference dialog tab for ABAQUS to choose 2024 version.
4) Fix an import/export issue when importing as ANSYS and exporting as ABAQUS.
5) SIERRA updates for multiple CFT time steps and multiple substep SIFs.

6) Bug fix when adding pyramid elements during remeshing.
7) Fix ‘total passes’ display in the fatigue life dialog for combined time+cycle crack growth.
8) Fix temperature display in fatigue growth rate plots for temperature independent models.
9) Update NASGRO xml file import.

Changes to FRANC3D from Version 8.4.2 to 8.4.3

Mar 6, 2024

1) Fix ANSYS local CSYS ID when requesting contour integrals.
2) Update importing of ABAQUS contour integral data.
3) Modify ANSYS and ABAQUS contact surface naming and update fretting module.
4) Update surface treatment crack face traction dialog for table data and Back updating.
5) Fix Back updating for FEM input wizard.
6) Add option to output all nodal SIFs to a file from the SIF Path dialog.
7) Added cohesive elements for SIERRA.

Changes to FRANC3D from Version 8.4.1 to 8.4.2

Feb 12, 2024

1) Modify processing of ANSYS contact surfaces.
2) Split ANSYS surf154 surfaces and regenerate to allow for surface mass.
3) Add ANSYS TB,FRIC to material list.
4) Add MECH_1 and MECH_2 license strings for ANSYS.
5) Fix command language for ANSYS command parameters that are set in preferences.
6) Allow user to specify path and file name for ABAQUS template material.
7) Edit ABAQUS WriteDtpFile.py to collect LE strain if present.
8) Check for ABAQUS nmap keyword.
9) Bug fix when checking input FE mesh for doubled nodes.
10) Bug fix in Fatigue Lifing dialog when reading .fcg files without a model present.
11) Bug fix when displaying VCCT computed SIFs.
12) Fix DARWIN .kva file output.

Changes to FRANC3D from Version 8.4.0 to 8.4.1

Jan 9, 2024

1) Update documentation to version 8.4.
2) Add ANSYS MFOR contour integral option.
3) Bug fix in crack insertion/meshing library.

Changes to FRANC3D from Version 8.3.7 to 8.4.0

Dec 20, 2023

1) Revised search/range tree.
2) Fix equation/character GUI display.
3) Fix Nastran .pch file reader for large line numbers.
4) Fix quotes for Abaqus, Ansys and Nastran commands in Windows.
5) Fix Ansys PRCINT command placement in .cdb file.
6) Collect Ansys license string from command line for reuse in the GUI.
7) Revise volume meshing code; old volume meshing is available via Preferences.
8) Revised crack growth data stored in .fdb file.
9) Collect fitting parameters from .fdb file for restart and add moving poly range value.
10) Modify/fix midside-to-quarter and quarter-to-midside node position code.
11) Make blunt brick option available for Ansys and Sierra.
12) Fix issues with thick cracks (voids) with and without templates.
13) Fix flaw-from-file with changes to template settings.
14) Fix compution of DC SIFs at midside node locations.
15) Fix DC SIF computation for cracks without templates.
16) Add Advanced button for DC SIFs to choose midside- or corner-nodes.
17) Add to the Advanced menu to read analysis code contour integral data, with a dialog to plot the CI data.
18) Fix GUI recenter red-box display.
19) Update CrackView program for export of display to file(s).

Changes to FRANC3D from Version 8.3.6 to 8.3.7

Oct 20, 2023

1) Bug fix when mapping from source boundary conditions.
2) Check for missing ANSYS BF at mid-side nodes when importing FE model.
3) Check for RATE TB data in ANSYS FE models.
4) SIERRA updates for orthotropic models.
5) Add rotations for thermal strains.
6) Edit ABAQUS *.rpt* reader for temperature.
7) Set unique temperature ID for NASTRAN CFTs with temperature.
8) Fix NASTRAN exponential output of 0.0 values.
9) Fix bug in rainflow counting for simplified dadN pairing.
10) Fix bug in anchor node for flaw from file.
11) Try to retrieve RLM license automatically if it timed-out.
12) Edits to partial extension front fitting.
13) Prevent NAN in crack surface geometry.
14) Fix issue when restarting from a *.fdb* file without retained_nodes.

Changes to FRANC3D from Version 8.3.5 to 8.3.6

Sept 25, 2023

1) Update to thick crack (void) templates and some bug fixes for crack insertion/meshing.
2) Check for older ANSYS table data format.
3) Fix partial extension curve-fit extrapolation.
4) Update merging front intersections and extension.
5) Bug fixes for SIF path and session log after front merge.
6) Bug fixes when computing SIFs if a crack front exits the model and a second crack is added.

Changes to FRANC3D from Version 8.3.4 to 8.3.5

Aug 14, 2023

1) Bug fix when mapping boundary conditions *etc*; specifically, look for a single stray node with ID of 0 from a collapsed ANSYS element and an isolated midside node with constraint.
2) Updates for ANSYS table data and skip writing CMBLOCK for a single node with ID of 0.
3) Updates for NASTRAN dynamic / modal analyses; specifically, look for rload and tload data.
4) Fixes and updates to crack insertion and meshing, and preliminary addition of new volume meshing code.
5) Bug fix for crack merge/growth.

Changes to FRANC3D from Version 8.3.3 to 8.3.4

Jul 21, 2023

1) Fix model display update bug in GUI during playback of commands.
2) Fix bug in GUI for symmetry crack insertion when using the Back button.
3) Add check for both E and Nu values for any material used in volume elements.
4) Fix bug in surface mapping for some ABAQUS models.
5) Updates for NASTRAN, specifically for DLOAD* and other “large” field format data, and fixed pload on pyramid element faces.
6) Surface meshing improvements.
7) Update for SIERRA to read all time step results.

Changes to FRANC3D from Version 8.3.2 to 8.3.3

Jun 24, 2023

1) Fix bugs in GUI for Edge Wizard when using ruler and recenter.
2) Fix bug in GUI for time dependent growth model when using the Back button.
3) Fix the image capture on Windows to get the current displayed image in the GUI.
4) Check file extension case in GUI when saving files.

Changes to FRANC3D from Version 8.3.1 to 8.3.2

Jun 21, 2023

1) Fix bugs in GUI for Read Crack Growth and Grow/Merge Crack Growth.

Changes to FRANC3D from Version 8.3 to 8.3.1

Jun 19, 2023

1) Fix an issue when mapping pressure boundary conditions for some ABAQUS models with complex surfaces.
2) Check for collapse elements and missing nodes when extracting and interpolating stress for crack face tractions.
3) Adjust tolerance when mapping retained nodes after crack insertion and remeshing.
4) Modify ANSYS modal load step processing to pass through more ANSYS commands or data.
5) Update crack insertion and meshing for a symmetry-crack front that splits into two fronts when it breaks through a surface.
6) Fix bug in PyF3D module when using GetCrackData().
7) Save model data before attempting crack growth and recover the saved data if the crack growth fails; the user does not have to reread the .fdb and related files to retry growth.
8) Fix GUI display issues with zoom box and cutting plane dialog.
9) Make parameterized ring crack use general triangulation to improve the crack geometry.
10) Fix command language I/O for cracks without a template mesh.

Changes to FRANC3D from Version 8.2.4 to 8.3

May 8, 2023

1) Incorporate more C++ 11/14/17 standards.
2) Add support for modal crack face traction (CFT); using .dtp files for stress and temperature.
3) Add Python script for Nastran analysis.
4) Additional support for NX Nastran data.
5) Additional support for Abaqus shell and beam sections
6) Bug fixes in crack insertion and meshing library.
7) More checks for consistent crack types in multiple crack dialog.
8) Upgrade to RLM 15.1 with checks for timed-out license.
9) Additional crack growth rate models.
10) Add label for “passes” through load schedule in fatigue dialog.
11) Add electrostatic energy release rate.

Changes to FRANC3D from Version 8.2.3 to 8.2.4

Mar 17, 2023

1) Bug fixes in crack insertion and meshing library.
2) Update for NX Nastran cyclic symmetry and dload.

3) Update for Abaqus composites and amplitude.
4) Bug fixes in dynamic rainflow pairing.
5) Update to make partial extension fit tolerance consistent between GUI and -batch.
6) Update for crack surface geometry boundary smoothing.
7) Add anchor_normal keyword to InsertParamFlaw command to turn on/off the automatic surface normal rotation.
8) Bug fix for user-mesh symmetry crack with reversed surface normals.
9) Bug fix for elasto-plastic J computation for symmetry cracks.

Changes to FRANC3D from Version 8.2.2 to 8.2.3

Feb 5, 2023

1) Bug fixes in crack insertion and meshing library.
2) Updates for Nastran SOL 401 and ANSYS super elements.
3) Check for existing .dtp file and move to .old prior to ANSYS / ABAQUS analysis.
4) Update crack surface coarsening/smoothing for partial growth.

Changes to FRANC3D from Version 8.2.1 to 8.2.2

Jan 11, 2023

1) Check to see if ANSYS material has plastic properties when condensing.
2) Store the crack "anchor" node to ensure the crack remains exactly at the initial node location during crack growth.
3) Make sure flaw insertion error messages are output or displayed.
4) Save the SIMPLIFIED or TOTAL "dyn_pairing_hcf_lcf" setting to the session log file.
5) Modifications to partial growth fitting and extrapolation to improve robustness.
6) Bug fix in command language when checking for non-default local crack axes.
7) Fix some issues for 1D, 2D and surface treatment CFT when finding nearest orthogonal distance to portions of a larger surface.

Changes to FRANC3D from Version 8.2.0 to 8.2.1

Dec 11, 2022

1) Add support for NX Nastran contact and extra connections.
2) Bug fixes in crack insertion and meshing library.
3) Bug fixes in rainflow pairing.
4) Modifications to partial front extension for closed-loop ring crack fronts.
5) Bug fixes for command driven multiple crack insertion and flaw insertion into a model with an existing flaw.

Changes to FRANC3D from Version 8.1.6 to 8.2.0

Nov 1, 2022

1) Add language dictionary to support additional languages for the GUI.
2) Fix some node/element set naming issues.
3) Update symmetry crack insertion capabilities.
4) Add Fronts checkbox under Display in the GUI to display crack fronts; specifically for symmetry crack fronts but works for all cracks.
5) Fix fretting module contact surface selection in the GUI.
6) Add additional checks when inserting a crack into an already cracked model.
7) Allow user to plot SIF history and compute fatigue cycles for a crack where the front exits the model.
8) Update the Help menu to include all documentation.

Changes to FRANC3D from Version 8.1.5 to 8.1.6

Sept 9, 2022

1) Update ABAQUS blunted brick element output.
2) Add some support for ABAQUS composite lamina.
3) Improve symmetry crack insertion/meshing.
4) Update automated crack growth/fit checks, specifically for split fronts and partial growth.
5) Add to Edit Crack dialog to display adjacent crack facets with differing normal directions.
6) Modify dynamic rainflow pairing when all values are below threshold.
7) Bug fix in multiple crack insertion dialog for curved ellipse cracks.
8) Fix point-in-region search for models with multiple regions.
9) Only show .cdb files when importing ANSYS already-divided models.
10) Add the Edit Retained Nodes menu option to the Advanced menu.
11) Fix kink angle computation for resonance blossom event.

Changes to FRANC3D from Version 8.1.4 to 8.1.5

Aug 2, 2022

1) Bug fix when splitting models into local and global with “native” nodes.
2) Add velocity to list of processed boundary conditions.
3) Check for ABAQUS frequency, modal, and explicit solver settings.
4) Fix some ABAQUS *output data/options.
5) Fix bug when ABAQUS comment line (starts with **) ends in a comma.
6) Add support for ABAQUS *deformation plasticity in material data.
7) Updates to NASTRAN reader for SOL 103, 401, 402.
8) Check imported model for auto_cut_surf and global_connect_surf when doing import & divide.
9) Fix location of ANSYS “finish” command before and after solve command.
10) Turn on ALL_FRAMES if ABAQUS frequency load step detected.

11) Check .fdb file for SUBMODEL_NODE_MAP and display a warning if not present.
12) Additional bug fixes for crack insertion and meshing.
13) Make cycle counting and growth prediction consistent for the case where the growth exceeds the user-defined growth in less than one cycle.
14) Add “capped” option to turn off extrapolation of R and temperature dependent growth rate data.
15) Add support for inserting multiple symmetry cracks.
16) Bug fix when growing a crack front that splits and part of the split front does not grow.
17) Store temperature for all NASTRAN substeps for a transient load step.

Changes to FRANC3D from Version 8.1.3 to 8.1.4

June 22, 2022

1) Add support for ANSYS CP data applied to a single surface.
2) Bug fix for reading generated ABAQUS elset and nset data.
3) Retain original ABAQUS elset name for gravity (and similar) boundary conditions.
4) Additional bug fixes for crack insertion and meshing.
5) Add support for merging the ends of a single crack front that wraps around a void.
6) Add check for duplicate points and edge overlaps in EditCrack dialog.
7) Sort retained node list in .fdb and _RETAINED.txt file.
8) Update Python interface for single crystal crack growth.
9) Bug fix for ellipsoid void insertion; retrieve correct third dimension from the GUI.
10) Bug fix in flaw insertion wizard when using the Back button.
11) Add SetFemUnits and SetDisplayUnits for batch command language.
12) Bug fix for Kc when there is no R dependence in the crack growth rate.
13) Bug fix displaying crack growth rate model data in GUI for multiple R and temperatures.
14) Check for negative Kmax when predicting growth for a spectrum with a negative range.

Changes to FRANC3D from Version 8.1.2 to 8.1.3

May 29, 2022

1) Fix ABAQUS *include.
2) Reduce phase angles to 2 values.
3) Additional crack insertion and meshing bug fixes.
4) Bug fix for spectrum loading cycle counting.
5) Bug fixes for crack grow&merge and ability to skip growth of fronts that are not merging.
6) Bug fix in crack growth rate model interpolations when there is no R dependence.
7) Add support for multiple crack growth rate models.

Changes to FRANC3D from Version 8.1.1 to 8.1.2

May 16, 2022

1) Fix ABAQUS *boundary, submodel output and allow *submodel, type=nodes.
2) Crack insertion and meshing bug fixes.
3) Allow for multiple template radii during crack insertion using library flaws.
4) Bug fixes in rainflow and cycle counting.
5) Skip internal single element sets in the Submodel dialog.
6) Additional checks on user-defined crack boundary points.
7) Bug fix in resolved SIF output to file.
8) Modifications for crack growth rate model interpolation and plotting.
9) Fix Nasgro3 units displayed in the dialog.
10) Add button to EditCrackGeom dialog to replace the current crack.

Changes to FRANC3D from Version 8.1.0 to 8.1.1

Apr 25, 2022

1) Fix ABAQUS shell/solid coupling and shell *Surface.
2) Process ABAQUS *Distributing Coupling.
3) Add additional ABAQUS element type strings, including C3D10I.
4) Allow ANSYS .db and WB .dat file conversion during model import using the GUI; an ANSYS executable/license is required.
5) Fix Nastran crack face traction load ID.
6) Bug fix in the import GUI when using the Back buttons and switching FE models.
7) The list of analysis file extensions that are deleted has been added to the FRANC3D resource file. The list of extensions is recorded to the session log file also and is used during playback.
8) Bug fixes in the crack insertion and meshing library.
9) A bug in the dynamic rain flow pairing routine was fixed.
10) A bug in the transient load schedule load multiplier was fixed.
11) Updates made to the crack growth rate model plots.
12) An update to the single crystal module allows plots of resolved Kmax along a path.

Changes to FRANC3D from Version 8.0.3 to 8.1

Apr 5, 2022

1) Process ABAQUS *Amplitude from .inp file rather than passing it through, for amplitude data defined in tabular form and using total time. This Amplitude can be applied to crack face tractions (CFTs). The ABAQUS total time is written to the .dtp file, and the time and amplitude values are accessed when computing SIFs based on the M-integral.
2) Nodal force mapping is revised to improve the transfer/mapping. In cases where the mesh facets/nodes are retained, a one-to-one transfer of forces is performed. If the surface is remeshed, the forces are mapped to the new mesh. Note that the force mapping can lead to some differences in results depending on the original and remeshed surface.

3) NASTRAN Pload4 and Force boundary condition updates have been made to fix several issues. Note the Pload4 with specified directions are only supported if the Pload4 is attached to the global model portion.
4) ABAQUS gravity loading for .inp files with unspecified element sets (or IDs) is fixed.
5) Differentiate ABAQUS and FRANC3D non-linear contour integrals and allow the user to choose the ABAQUS integral type: K, J, C or T.
6) The crack insertion and meshing library has been revised. Surface meshing and the associated parameters have been modified. These changes mean that Ver 8.0.3 will not read a Ver 8.1.fdb file (unless the MESH_PARAMS data block is removed or edited). The revised library has preliminary support for non-manifold (branched) cracks. It also now allows crack insertion into a single mesh facet along with other improvements to the template.
7) The old crack insertion and meshing library is no longer an option, so the "new library" option has been turned off in the preferences and crack insertion dialogs.
8) The advanced meshing tab in the preferences dialog displays the new meshing parameters. The franc3d.rc or franc3d.ini file will be updated with the new parameters; old parameters that are no longer used will be ignored.
9) The ellipsoid void sizing is fixed.
10) There are additional checks and automated adjustments to crack front fitting and growth for fronts that are approaching a surface or that have split after reaching a surface. An additional parameter "check_fit" was added to the GrowCrack command to turn the automated checks on/off. By default, the checks are off if using the GUI.
11) Add resolved SIF in the maximum shear direction for single crystals.
12) There are several edits to the dynamic rainflow counting, including the option to choose da/dN instead of ΔK as the pairing metric.
13) Fixed the table display for SIFs and T-stress, specifically for cases where there are no results for a load substep.
14) Turn off the initial crack length option in SIF history dialog if the start step is not zero.
15) The documentation has been updated to reflect the Ver 8.1 changes.

Changes to FRANC3D from Version 8.0.2 to 8.0.3

Feb 7, 2022

1) Updates for handling poor aspect-ratio Bezier surface patches; fixes some crack insertion/meshing issues.
2) Allow for crack insertion into a single mesh facet.
3) Add support for ANSYS /nolist command in .cdb file.
4) Fix issue with ABAQUS *boundary submodel data.
5) Throw/catch pyramid error when using ABAQUS volume meshing.
6) Updates to partial crack front propagation; smooth the geometry boundary near the crack front.
7) Fix spectrum dialog issues when editing in GUI.
8) Check file path for local and global model portions from the SubModel command; this fixes the errant ANSYS /cwd output to the LOCAL and GLOBAL .cdb files.
9) Fix resonance blossom integrations when Kmax < 0.

10) Add the Check-Input-Mesh flag to command language, for batch and Python processing.
11) Turn off default translation of user-mesh-void in GUI.
12) Disable initial crack length if start step > 0 for SIF history and fatigue cycles along a path.

Changes to FRANC3D from Version 8.0.1 to 8.0.2

Jan 4, 2022

1) Fix surface pressure mapping adjacent to crack mouth edges.
2) Fix constraint mapping at a corner of two lines/edges.
3) Use the generate keyword for node and element sets in ABAQUS .inp file.
4) Process ABAQUS *system keyword for mesh-only reader to support user-mesh cracks.
5) Process additional ABAQUS commands that include surface or set names to make sure the name is “flattened” for part/instance.
6) Add user-mesh voids.
7) Prevent user from selecting void type and symmetry crack options in flaw wizard.
8) Prevent user from adding symmetry and non-symmetry cracks together.
9) Output additional error messages when reading crack growth settings.
10) Fix EP J display settings in GUI.
11) Bug fix for total passes when dK is below threshold.
12) Bug fix when reading older version .crk file format.