

LUSAS 21.0 Error Fix and Modification Release Notes

This document lists modifications, other than the New Features in 21.0, that have been made since LUSAS 20.0-4c1 and is correct as of 19th Feb 2024.

Version 21.0-1c2 (r46268) built 29th Jan 2024

LUSAS Modeller 21.0-1 (r46268)

Modeller was built with all revisions to r46268 (28th Jan 2024). LNG was built to r4511 and MBW r505.

Errors fixed

The following critical, major, minor or speed issues are fixed:

Unreasonably time-consuming displaying the influence shape after setting a DMI assignment active (32916)
Unpredictable response from Print Results Wizards when displaying 'extreme envelope results' (32909)
Graph through 2D fails when corridor width exceeds the width of elements under the graph line (32901)
Duplicate load patterns incorrectly created by Vehicle/Rail Load optimiser for multiple influences (32850)
Print Results Wizard with enveloped smart combinations can lead to spurious display of a single value (32822)
Loading in prior loadcases is not tabulated when using 'Convert assigned loading to mass' in an eigenvalue solution after a nonlinear control (32819)
Vehicle load optimiser: CS458 SV-TT has incorrect side exclusion widths (32816)
Modifying mesh can lead to an incomplete mesh and the model cannot be solved without a full remesh (32802)
Arbitrary section property calculator does not compute section properties for an ellipse imported from CAD (32791)
Object IDs in meshing warning/error messages do not correspond to final mesh numbering (32790)
VLO envelope results not loaded up if a combination is set active rather than the TLO envelope itself (32769)
'Attempted an unsupported operation' message needlessly generated when nonlinear Lead Rubber Bearing material is assigned to a line with an end joint (32764)
Modeller closes unexpectedly after renumbering loadcases (32737)
Modeller closes unexpectedly when deleting an analysis that contains branches with results open (32731)
Not possible to assign support attributes while an RLO loadcase is set active (32684)
Multiple Varying Section geometric attribute 'fails to discretise sections' (32670)
Print Results Wizard 'examine calculations' may give results for the wrong beam/shell slice resultant when there are averaging discontinuities present (32658)
Unexpected value for shaft friction for user defined p-y curve (t-z) material (32648)
VLO does not create the onerous effects table even though patterns are created (32617)

Diagram of slip for TRI5 interface elements fails to display (32607)
RC slab design: GB 50010 crack width calculation incorrectly uses distance to centroid of bar instead of cover (32598)
RC slab design: GB50010 & JTG3362 calculations use area of reinforcement in one face not both for slabs in overall tension (32597)
RC slab design: GB 50010 value of v_i for HPB300 calculated incorrectly in SLS check (32553)
Opening a model which contains many inspection locations is unexpectedly time-consuming (32538)
Defining local coordinates - option 'Cartesian' is not shown when selecting two points (32535)
Modeller closes unexpectedly when modifying geometry with results open (32529)
Custom menus may fail to load under certain circumstances (32494)
Print Results Wizard 'examine calculations' always gives results for the first listed result when using 'Feature/Loadcase' ordering with smart combinations (32485)
Cannot use Composite lay-up material and single-assignment joints together (32464)
Nonlinear cable tuning analysis gives the error 'Only purely elastic materials can be assigned to cables' for beams with end joints are in use, despite only linear elastic materials being in use (32410)
Rail Load Optimisation: load patterns but no envelope created when the 'Create envelopes by design case' option is used (32406)
Stress contours for rectangular, circular, L, T or C-sections are incorrect if the section is rotated and viewed with certain graphics settings by a user other than the one that installed LUSAS (32401)
Direct Method Influences: Switching load location from 'grid' to 'use nodes in search area' leads to a warning which incorrectly prevents the option from being used (32399)
Search area topology is created for some open grillage bays but not others (32398)
Rail Load Optimisation: some possible load locations are omitted when the longitudinal increment specified is larger than lines which make up the path (32389)
RC slab designer: reinforcement attribute cannot be created in the Chinese version (31971)
Error tabulating loading in load curves for rate of heat inflow/unit volume when using temperature dependency in coupled analysis (31850)
Error when creating slice resultant if a load combination is set active (31813)
Some analyses with bridge deck (grillage) geometric assignments will not solve when the assignments are to multiple analyses (31778)
Rail Load Optimisation: vehicle pattern is not created in a model with a track which has a very large plan radius (31722)
Vehicle Load Optimisation: BD37/01 load patterns can't be created because the carriageway width exceeds the limit in clause 3.2.9.3.1 but the error isn't clear (31381)
Graphs cannot always be created in models which have multiple analyses of different types, e.g. eigenvalue and nonlinear (31326)
Vehicle Load optimisation: using Slice Resultant influence surfaces can cause Modeller to close unexpectedly (31294)
Modeller closes unexpectedly when opening results which are on a network drive with certain proxy settings (31229)
LNG system - using the 'update mesh divisions' function is more time-consuming than expected (30675)
LNG system - crosswise piles not modelled if only one row is specified (30667)
Direct method influence grid option 'Based on nodes in search area' cannot be solved in a beam model with joint elements (30017)

Vehicle Load Optimisation: file loading errors when influence attributes contain special characters e.g. comma (27138)
Vehicle Load Optimisation: EN1991 with Danish National Annex gives error for particular carriageway widths (25895)
Updating a results file from a previous version of LUSAS can sometimes take longer than solving the job again (21718)
Deformed mesh is incorrectly displayed for an IMD Loadcase (and other results) if Loading excitation is set for the Frequency domain, and where Phase results are specified (11152)

A number of fixes for cosmetic issues, documentation issues, installation issues, and development requests are also provided. Users with a reference number provided by LUSAS Customer Support may identify these from the following list:

32931, 32923, 32912, 32843, 32839, 32838, 32831, 32823, 32820, 32815, 32813, 32805, 32797, 32779, 32774, 32772, 32751, 32733, 32721, 32716, 32714, 32696, 32686, 32683, 32682, 32669, 32661, 32656, 32651, 32649, 32618, 32615, 32608, 32600, 32595, 32584, 32583, 32582, 32570, 32568, 32561, 32554, 32537, 32536, 32532, 32528, 32524, 32516, 32513, 32488, 32480, 32477, 32452, 32447, 32423, 32422, 32405, 32394, 32387, 32379, 32346, 32343, 32331, 32297, 32270, 32223, 32197, 32044, 32024, 31989, 31949, 31939, 31878, 31641, 31606, 31567, 31331, 31040, 31023, 30977, 30921, 30605, 30588, 28898, 28048, 27112, 27106, 26283, 26046, 25299, 24228, 22018, 18285, 17372, 10383

LUSAS Solver 21.0-1 (r7789)

Errors fixed

The following critical, major, minor or speed issues are fixed:

Unexpected behaviour when both GNL and damping are considered in transient dynamic analysis (32806)
Beam deformations in eigenvalue branch incorrectly includes deformations from deactivated mesh in prior nonlinear stages (32663)
Results from analyses with lift-off supports unexpectedly appear in two locations in the Treeview when Solver system variable MSRHS set to default 0 (32444)
Eigenvalue controls added to a loadcase after loadcase 1 in a linear analysis will not solve, and the error message does not explain why (32366)
Results of some loadcases in an analysis with lift-off supports cannot be displayed (31082)
Stress extrapolation for 8-noded shell element omits the element centre gauss point (29137)
Nonlinear results appear in the wrong place in the Analysis Treeview (27883)
Warping beams (BMI21W, BMI31W) St Venant's torsion result (Msv) are reported incorrectly (27791)
Direct Method Influence analysis with over 160,000 load locations fails with database errors (24411)

A number of fixes for cosmetic issues and development requests are also provided. Users with a reference number provided by LUSAS Customer Support may identify these from the following list:

32430, 30566, 3157, 131

Version 21.0-0c3 (r45249) Built 29th Oct 2023

LUSAS Modeller 21.0-0 (r44691)

Modeller was built with all revisions to r44691 (19th Sep 2023) plus r45125-45127, r45162, r45209 and is referred to as r44691. LNG was built to r4116 and MBW r470.

Known new issues

These notable issues are known to be present in V21.0-0c3 and not present in v20.0-4c1

Custom menus may fail to load under certain circumstances (32494)

Workaround: Press F5 on encountering an error opening such a menu.

Stress contours for rectangular, circular, L, T or C-sections are incorrect if the section is rotated and viewed with certain graphics settings by a user other than the one that installed LUSAS (32401)

Workaround: Set disablefleshingshaders = True in the registry for the current user, or switch to either of the OpenGL 3.3 options in the LUSAS Configuration Settings (Graphics)

Errors fixed

The following critical, major, minor or speed issues are fixed:

Incorrect depth used by RC slab designer when checking multiple thicknesses and using Clark-Nielsen approach (32365)
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Modeller closes unexpectedly for a specific sequence of switching on the deformed mesh layer and setting active solved loadcases (32357)
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Modeller closes unexpectedly after de-assigning mesh attributes, if 'Graph through 2d' utilities have been created (32311)
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IMDPlus Moving Load/Mass graphing fails in European locales (32280)

IMDPlus sprung mass analyses do not work in European locales (32265)
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MIDAS import not working for a particular material (32251)
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PRW - Total Contributions gives the message 'An error occurred. No results can be shown' (32240)
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Rubber material incompatible with Plane strain rubber element type (QPN4L elements) (32211)

Error when attempting to run an analysis which includes a nonlinear cable tuning loadcase 'Cannot classify material assignments to line' (32199)
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Internal beam displacements are not shown when a transformation is applied (32160)
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Rail Load Optimiser may fail to place load on a track due to a conflict of track directions (32145)

Discrete multi-node patch does not work with 'include full load' outside search area in a particular model (32060)
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Orthotropic properties fail to be tabulated when used with axisymmetric shell or membrane elements (32052)
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Nonlinear and transient controls: a negative change in load factor for automatic incrementation is disallowed (32046)

Model closes unexpectedly when creating a Print Results Wizard utility for averaged results with a complicated nested combination/envelope, and setting the extent to a group (32045)

Errors in some results exported to Excel for use in the Steel/composite designer (PontiEC4) (32030)

Scripts of three worked examples cannot be used in the Chinese version (31974)
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RC slab designer - reinforcement attribute cannot be created for worked example 'Simple Building Slab Design' in the Chinese version (31971)
Opening a read-only model from an earlier version of Modeller gives a 'can't save' error (31941)
Modeller is very slow performing certain operations in a model with over 10,000 basic combinations (31860)
Error tabulating loading in load curves for rate of heat inflow/unit volume when using temperature dependency in coupled analysis (31850)
LNG - When a 2D beam stick model is generated, the material joint attribute 'Pile' should have damping defined (31843)
LNG - Beam stick model generated is incomplete when using the foundation option for raft with pedestals (31840)
RC slab designer creates the added reports based on the currently active loadset rather than selected loadset (31812)
RC slab designer rendered report for specified location is treated as a summary report (31807)
Setting beam/shell slice resultants active for a smart combination causes Modeller to close unexpectedly on some hardware (31744)
Draw time (e.g. after changing selection) for fleshing is disproportionately time-consuming for a model with tapering sections (31740)
Vehicle load optimisation results are incorrect for CS 454 in a model where the kerbs are drawn 15m above the loadable deck area (31738)
RC slab designer - setting a smart combination active results in an 'Incomplete command /set results/error' message (31731)
Temperature profile loading gives a 'failed to integrate' message under a certain set of conditions (31730)
Draw time for fleshing is disproportionately time-consuming for a model with 121,000 elements because of checks on element orientations (31719)
RC slab designer - using JTG3362 bending and in-plane option leads to 'Object reference not set to an instance of an object' message (31716)
Vehicle load optimiser returns the loading pattern of the first influence surface considered for a beam/slice resultant when the 'Most onerous' option is selected (rather than the most onerous) (31710)
RC slab designer - JTG3362-2018 reinforcing bar shape factor C1 set incorrectly for Grade HPB300 steel (31709)
Load variation containing IF statement fails to tabulate in V20 while it was working in V19 (31703)
Using interface elements with single feature assignment can fail with 'IS8 element has an invalid orientation - error writing element topology' message (31687)
Compound section does not save mirror settings when the attribute is re-opened for editing (31682)
Import of SAP2000 (*.s2k) file indicates completion is reached but no model data is created due to use of comma decimals (31674)
P-y curve one-click report does not work in 2D model - 2D Joint (JNT3).xml was 'not found' (31523)
Modeller closes unexpectedly after creating Steel Frame Design Report for a selected line and a combination (31519)
Tendon loading assignments are lost when drag-moving them from one loadcase to another, ('Invalid assignments ranks' error) (31513)
Unable to read an lvb file that was exported from a model containing an IMD loadcase (31458)
LPI function nextGridWindowID not working as expected (31441)

<p>Joints with single feature assignment - material from the base analysis cannot be overwritten in new analysis (31399)</p>
<p>No results, or Modeller closes unexpectedly, when changing active loadset while displaying results that are not compatible with the primary entity of a smart combination (31387)</p>
<p>Deformed mesh visualisation appears incorrect when only part of a model is visible (31380)</p>
<p>Constraint 'Straight Line' does not work correctly (31283)</p>
<p>Add option to set tensile strength factor for uncracked section check (31272)</p>
<p>Model closes unexpectedly when sweeping a surface and requesting the highest order of geometry created to be 'lines' (31163)</p>
<p>Print Results Wizard excludes some elements that have been deactivated in loadcases that are included in a combination / envelope (31101)</p>
<p>Vehicle load optimiser halts with 'ERROR: Cannot place vehicle at specified position' while using CS458 (31058)</p>
<p>Steel frame designer halts with message 'A Design Attribute for AASHTO 8th must be assigned to members to be designed' in error (31057)</p>
<p>'Examine Calculations' dialog is blank when accessed via Print Results Wizard (PRW) if the elements in the PRW extent (group) have been set invisible (31039)</p>
<p>RC frame design - torsion link spacing may be incorrect when using 'fit to lines' (31011)</p>
<p>Traffic load optimiser - deactivation warning dialog shows many times when once would be enough (30839)</p>
<p>Constraints assigned using 'specified loadcases' persist after the required final loadcase (30742)</p>
<p>Switching loadcases while viewing contours of pressure cause Modeller to close unexpectedly (30738)</p>
<p>Modeller text output window is disabled after using the LNG system to 'create 3D shell model' (30702)</p>
<p>Turning the mesh layer on or off while displaying a contour of SE is disproportionately time-consuming (30516)</p>
<p>Turning the deformed mesh layer on or off while displaying a contour of SE is disproportionately time-consuming (30505)</p>
<p>Loading results only for a model which contains point mass elements fails with 'Visual Fortran run-time error' messages (30371)</p>
<p>Selecting a subset of loadcases to solve from within a linear branch stops the whole branch from being solved (29879)</p>
<p>Running a script where Python type information does not mirror the Modeller type library leads Modeller to close unexpectedly (29836)</p>
<p>Mesh renumbering takes as long as remeshing (29489)</p>
<p>Modeller closes unexpectedly if changing loadsets while also showing contours of Wood Armer derived components (29484)</p>
<p>RC slab designer - Switching between contour components is disproportionately time-consuming (29172)</p>
<p>Attribute evaluation is disproportionately time-consuming - add a button for lockAttributeEvaluation() (28992)</p>
<p>Storing and using results cache can be slower than recalculating, when viewing a small portion of the model (28356)</p>
<p>Graph wizard - selecting beam stress components leads to an error (28350)</p>
<p>Warping beam end conditions are being tabulated the wrong way around (28244)</p>

Modeller issues a 'Fatal database error in routine reslod' when the solution was terminated with a valid error from Solver (28116)
Contours of stress for beam elements are disproportionately time-consuming to display, especially for a combination (28078)
Contours which are unexpectedly transparent may be produced when using NVIDIA Quadro T2000 graphics card (27943)
Results for IMD load cases that are based on large numbers of eigenvalues are disproportionately time-consuming to display (27826)
RC frame designer - Danish National Annex effective concrete area in tension used for crack width calcs incorrectly follows the general EN1992-1-1 clause (27703)
Meshing - checking element faces is disproportionately time-consuming (26153)
Using a template at Modeller start-up is disproportionately time-consuming and the treeview updates repeatedly (26129)
Report generator - smart combinations and envelopes cannot be added to report when using 'specified loadcases' (25646)
Deleting a 'graph through 2D' from the Utilities tree can be time-consuming (24916)
Slicing set up in Danish (comma decimal) errors when opened in UK (period decimal) (22904)
Slidelines that do not include a 'change' in their definition should be able to be assigned to any selected analysis (20922)
IMD Plus moving load analysis gives needless warning 'No node neighbourhoods were found' when using library vehicles (20384)
Results from direct method influence analyses should be cached and reused to reduce elapsed time on display (14386)
Displaying results from an IMD loadcase with CQC combination seems disproportionately time-consuming (2520)

A number of fixes for cosmetic issues, documentation issues, installation issues, and development requests are also provided. Users with a reference number provided by LUSAS Customer Support may identify these from the following list:

32374, 32307, 32262, 32241, 32239, 32216, 32192, 32182, 32174, 32146, 32116, 32102, 32101, 32096, 32070, 32064, 32013, 32010, 31998, 31989, 31980, 31979, 31949, 31929, 31906, 31900, 31893, 31883, 31882, 31880, 31878, 31871, 31834, 31811, 31798, 31793, 31746, 31733, 31688, 31686, 31684, 31672, 31671, 31652, 31648, 31645, 31636, 31631, 31626, 31623, 31620, 31585, 31580, 31564, 31560, 31557, 31554, 31545, 31538, 31536, 31535, 31532, 31480, 31479, 31471, 31465, 31444, 31440, 31431, 31420, 31394, 31378, 31374, 31357, 31355, 31350, 31317, 31311, 31306, 31270, 31260, 31245, 31236, 31217, 31195, 31191, 31174, 31173, 31162, 31124, 31115, 31069, 31007, 31002, 30991, 30981, 30966, 30959, 30944, 30911, 30895, 30875, 30856, 30852, 30847, 30843, 30820, 30788, 30711, 30696, 30688, 30684, 30680, 30679, 30674, 30665, 30663, 30661, 30643, 30642, 30611, 30603, 30602, 30556, 30551, 30547, 30513, 30501, 30425, 30312, 30245, 30223, 30092, 29899, 29863, 29626, 29613, 29600, 29585, 29543, 29375, 29337, 29222, 28889, 28697, 28419, 28021, 27785, 27724, 27719, 27709, 27477, 26826, 26798, 26625, 26442, 26439, 26431, 26412, 26380, 25644, 24804, 24763, 24162, 23547, 22695, 21951, 20923, 20495, 18274, 18193, 18191, 17741, 17382, 16930, 15537, 13999, 13991, 12642, 11729, 11642, 11639, 10296, 10274, 9739, 9691, 8010, 6059, 2378, 2206, 1821

LUSAS Solver 21.0-0 (r7674)

Errors fixed

The following critical, major or minor issues are fixed:

Analysis of a model containing piecewise linear elastic (axial dependent) joint materials cannot be completed successfully in 20.0-4 while it can in 20.0-2 (32037)
Hygro-thermal analysis fails to converge with default Solver when mesh refinement is increased (32034)
Incorrect internal deformations shown for BMI31 elements when co-rotational formulation is invoked (31899)
System error generated by use of 2D Kirchhoff thin beam (BM3) elements together with plane strain two phase (TPN6P) elements (31720)
Results from nonlinear transient analysis loaded incorrectly due to solution failure in the first time step (31120)
Nonlinear cable tuning loadcase may fail to solve, spuriously dependent upon the transient settings of the preceding time step (29230)
Duncan-Chang material - Solver fails with a system error if no stress is applied in the first increment (28191)
Irregular pore pressure variation in a specific model (27538)
Change VFLO reaction output to FLOW RATE for transient analysis (26910)
Model including creep concrete material (along with Mohr-Coulomb and activation/deactivation) fails to converge (24992)
Acute angles between adjacent element faces of a thermal surface(s) defined in a thermal gap causes an error (13378)

A number of fixes for cosmetic or speed issues and development requests are also provided. Users with a reference number provided by LUSAS Customer Support may identify these from the following list:

26239, 21612, 20007