

### Version 18.0

Build	Module	Description	ID
04.10.18	Calculation	In the case of boundary joints with spring constants at simultaneously elastically supported nodes the support forces are determined correctly now, so that no disequilibrium occurs in the calculation.	12945
04.10.18	Design	A message concerning a negative gross area of the total cross-section is no longer issued in the design of upstand beams.	12887
04.10.18	Design	The design moments at the downstand beam are no longer significantly smaller than in Version 17.0. The error when integrating the slab moments no longer occurs.	12852
04.10.18	Design control	Is a transformation matrix set in the design control for the display of the reinforcement results in the CAD output, then it is also applied for the selected members.	12864
04.10.18	Evaluation	The name of the reinforcement direction was changed from x_as/y_as to as1/as2.	12944
04.10.18	Evaluation	Points parallel to the beam axis are no longer generated during the integration of the internal slab forces.	12875
04.10.18	Generation	Intermediate nodes, respectively support nodes are generated again at circular fixed lines, respectively, supported lines.	12948
04.10.18	Input	Integration problems when areas with iso-parametric and grid integration coincide have been solved.	12977
09.08.18	Evaluation	The sums of the exterior loads are displayed with the unit (kN or kNm) in the text frame.	12748
09.08.18	Calculation	An error message about missing material, respectively, cross-section values was issued when loading systems with several construction states, although the elements in the relevant construction state were not active.	12712
09.08.18	Design	The required web reinforcement is established from the appropriate edges (6-7 and 8-9) in the biaxial design of T-beams.	12735
09.08.18	Design control	The biaxial reinforced concrete design provides results again, even if neither concrete compressive stresses, respectively, tensile steel stresses nor a minimum reinforcement were selected for the SLS.	12730
09.08.18	Evaluation	The transfer of the required reinforcement to ZEICON again uses the former initiates x/y for the reinforcement directions.	12850
09.08.18	Evaluation	The punching analysis can be started without an existing Toolbox license again.	12718
09.08.18	Input	The program no longer terminates, if the order of the prestressing is to be generated via "Prestressing > Prestressing procedure > Default".	12747
09.08.18	Input	For surfaces, the requirement class in <i>lateral direction</i> could not be specified in the system input. In the analysis control, however, this was possible correctly.	12714
09.08.18	Input	The program terminated in the list output of the element attributes and topologies for <i>selected</i> beams or areas.	12707
09.08.18	NAZWEI	For biaxial bending only the user-defined minimum reinforcement ratios in the bottom reinforcement layer are recorded in the NAZWEI control file (line: BEWL) and no longer the required reinforcement from a previously carried out bearing capacity analysis.	12739
12.06.18	Design	The <b>biaxial bending design</b> is carried out for all 6 possible combinations. Analyses in the SLS and FLS are not carried out at the same time.	9209
12.06.18	Design	The original beam design with an integration of the slab stress resultants is used again for the design of upstand and downstand beams in the ultimate limit state.	12635
12.06.18	Evaluation	When displaying the calculation and design results of beams, the unit in the text frame was wrongly issued as per meter.	12634
12.06.18	Input	After TRIMAS was opened directly from ZEICON, the subsystems arising from ZEICON layers are allocated with different default colors again.	12645
12.06.18	Input	The termination when displaying "curved" elements has been resolved.	12613

Build	Module	Description	ID
12.06.18	Input	If a beam consists of multiple lines in different subsystems, the visibility of the local beam system was adjusted.	12447
12.06.18	Input	<b>Concrete in condition II for spatial truss calculations</b> The as-value per m was not displayed relative to the length of the hoops when specifying a linear reinforcement in a circular cross-section. However, the amount of reinforcement was calculated correctly.	12234
12.06.18	Input	The load case attribute "Earth pressure from live load" was superpositioned with the finishing load instead of the live loads.	12225
07.05.18	Calculation	The stabilizing factor in the DSG approach for the lateral shear behavior has been reduced to 10 % for quadratic elements. Improved results of the deformations can hereby be realized, especially for curved structures and wide elements. However, there is also a small influence for plane structures, so that also support reactions are influenced by the slightly modified deformation behavior and the adjusted distribution of the lateral shear stresses.	7187
07.05.18	Design	The no longer valid name "Vwd" for the design value of the bearable shear force limited by the bearing capacity of the shear force reinforcement has been replaced with the current names "VRd,s" (DIN EN 1992-1-1), respectively, "VRd,sy" (DIN 1045-1).	11954
07.05.18	Design	<b>Design of haunched areas</b> Due to many varying design cross-sections the program terminated.	10734
07.05.18	Design control	The reinforced concrete design in the permanent / transient situation and in the accidental situation can now be carried out in one calculation run. Both design situations are being considered when generating the maximum reinforcement state.	11478
07.05.18	Design control	The setting <b>Calculation in the cracked state</b> can be checked and set for beams in the analysis control.	7989
07.05.18	Evaluation	The analysis of the concrete <b>compressive stresses for shell structures</b> is carried out for $\sigma_{ic} < 0.60 \cdot f_{ck}$ or $\sigma_{ic} < 0.45 \cdot f_{ck}$ depending on the design situation. The utilizations are displayed separately for each direction $x / y$ and per side <i>top / bottom</i> in the evaluation. Additionally, the most unfavorable value (maximum utilization) can be displayed.	12155
07.05.18	Evaluation	The visibility of the element areas can also be selected for the original load cases in the evaluation of stress resultants of areas.	11935
07.05.18	Evaluation	When switching to the beam or shear design in the evaluation of the beam results, the visibility of the polylines was enabled every time.	11681
07.05.18	Evaluation	The output list can be generated in the evaluation via <i>File -&gt; List output</i> (just like the printer button in the toolbar).	10991
07.05.18	General	The visibility settings of the subsystems can optionally be maintained when switching the construction state. Alternatively are all subsystems of the construction state made visible when switching the construction state.	10989
07.05.18	Input	For <b>load macros</b> , the <b>wheel loads</b> defined via point loads can be <b>automatically generated as distributed load</b> with a load distribution up to the neutral axis of the slab. The dimension of the <i>contact area</i> is defined at the load macro, the <i>spreading depth</i> as distance of the tope edge of the deck up to the neutral axis of the bearing deck slab is specified at the positioned load macro. The load distribution is assumed with 45°.	12213
07.05.18	Input	There is now a message after successfully copying load macros in new load cases.	12212
07.05.18	Input	The element mesh is updated right after opening the project in the input.	12031
07.05.18	Input	When deleting a user-defined load macro, the associated *.plm files in the project are also deleted.	11778
07.05.18	Input	The default for losses from creep, shrinkage and relaxation for prestressed slabs are $KS,t1 = 0.10$ and $KS,tn = 0.15$ .	11700
07.05.18	Input	The specified text offset is now also used for the display of line numbers and the bedding text of beams.	11631

Build	Module	Description	ID
07.05.18	Input	In the shear design of a prestressed girder the specified value of $c_{v,l}$ was not transferred to NaZwei.	11485
07.05.18	Interface	The interface to import CAD files has been renewed and extended for *.dwg files. With this, plane as well as spatial structures can be imported in both formats at the state of AutoCAD 2018.	11317
07.05.18	Interface	The output of the lines and points as well as the formatting are preallocated for 2D-DXF, when exporting a structure via the <i>DXF interface</i> .	7380
07.05.18	Prestressing	When generating a beam, a polyline is automatically generated with the same name than the beam.	5093
07.05.18	Analyses	In order to calculate the <b>deflections in the cracked state</b> effective stiffnesses are being determined, which result from the moment effects and the curvatures due to creep and shrinkage. The proportion from shrinkage has been corrected.	12510
07.05.18	Calculation	If a load case was calculated materially non-linear and was linear again in later calculations, then the addition <i>Condition II calculation</i> is no longer displayed in the text frame of the result evaluation.	12239
07.05.18	Calculation	The shell modelling for curved structures has been revised fundamentally. Especially the calculation of the normal force distribution for bending and membrane stress conditions has been corrected.	9847
07.05.18	Design	The <b>design of circular and circular ring cross-sections</b> is automatically carried out biaxial and is also documented like that.	12309
07.05.18	Design control	<b>Fatigue analysis for bending at the beam</b> The damage equivalent coefficients $\phi_{fat}$ have to be specified by the user. The pre-allocation in the input fields is 1,2 (surfaces with little roughness) for all materials.	11849
07.05.18	Evaluation	Only the numerical values of the active load case are still displayed in the graphic of the bedding resultant.	12454
07.05.18	Evaluation	The display of the elastic bedding of finite elements is also possible in the evaluation again.	12051
07.05.18	Evaluation	The corresponding max. / min. support forces are issued in the evaluation of superpositioned support forces in the text frame. In the case, that uplifting support forces exist, the correct value for min.Fsz is now determined.	11805
07.05.18	General	Are there more than 150 plots in a project, the program terminated when displaying the plots.	11587
07.05.18	Input	A load macro, which was not generated along a curved beam axis, but eccentrically along a polyline, is now aligned with the local beam system in the graphic display. So far, a wrong position for the load macro could be displayed in the representation relative to the local system of the polyline and a varying alignment of the local line system.	12418
07.05.18	Input	Is a system displayed with the element layout <i>section</i> in the default view <i>plan view (XY plane, F5)</i> , then the cross-section is no longer rotated 90° for vertical beams (columns).	12233
07.05.18	Input	In contrast to road and pedestrian bridges, temperature and wind do not exclude each other in the basic combination gr11 for railway bridges.	12050
07.05.18	Input	Deleting a subsystem deletes the therein contained data again.	11884
07.05.18	Input	Is the visibility of the current subsystem disabled, then this is pointed out when leaving the dialog for the selection of the current subsystem. The visibility of the current subsystem is only enabled on demand.	11772
07.05.18	Input	The point and line supports of the original line are also copied when copying lines in the "Also copy supports" mode.	11691
07.05.18	Input	The assignment of subsystems for elements has been enabled in the FE level.	11361
07.05.18	Output document	The specific parameters of a road bridge are now only issued, when the use as road bridge has been selected.	12455

### Version 17.0

Build	Module	Description	ID
01.02.18	General	Adjustments to the current program version.	12321
17.11.17	Design	The increased stirrup reinforcement from the fatigue analysis for shear force (calculated with NAZWEI) is now displayed in the graph of Asw in the evaluation of the shear design results.	10892
17.11.17	Design control	The result values "Design shear force VE <sub>d</sub> ", "bearable shear force VR <sub>d,ct</sub> and VR <sub>d,max</sub> " as well as the shear reinforcement part can be displayed again in the evaluation of the shear design results of the recalculation for bending and shear.	11623
17.11.17	Evaluation	In the list output of the design results of the folded plate design the header is now "Folded plate design according to DIN ..." In the case of a 3D system, also the height level of the element center (z) is issued besides x and y.	11879
17.11.17	Evaluation	There were areas in the display of the deformations as isolines, which were not assigned to a color. The deformations of the supported nodes (usually 0.0) are now considered in the generation of the area boundaries.	5018
17.11.17	Input	The center of a radial reinforcement is saved properly again and is thus available after re-opening the project.	12062
17.11.17	Input	Sometimes a part of the full circle was deleted when dividing the full circle (centered, by factor or by absolute value).	11771
19.10.17	Design control	Is the deformation calculation activated for a structural member, but the bending design is disabled, the cross-section reduction factor is not calculated for this structural member.	11804
19.10.17	NAZWEI	The limitation of the input lines, which could cause problems in the design of large slabs, has been increased to 300000.	11366
19.10.17	Design	For a biaxial shear force design, no uniaxial design for V <sub>y</sub> was carried out for individual analysis sections without a shear force V <sub>z</sub> .	11683
19.10.17	Design	<b>As-values from the bending design</b> For spatial structures the statically required reinforcement is now issued instead of the envelope of specified, minimum and required reinforcement.	11407
19.10.17	Design	<b>Minimum reinforcement of the initial cracking</b> When using the DIN for structural reinforced concrete members the restraint stress resultants can be applied, if these are smaller than the crack stress resultants.	11395
19.10.17	Evaluation	The evaluation of the decompression via "Edit -> Shell -> Decompression", respectively, the corresponding icon in the toolbar is possible again.	11703
19.10.17	Input	The program terminated when generating a load macro from a load case, if the load macro had more than 20 lines.	11582
19.10.17	Input	The entered load factor for load macros onto beams and for eccentric beam loads is now considered correctly.	11442
05.05.17	Design	The shell design provides feasible results again.	11352
02.05.17	Design	<b>Bending design for mainly tension</b> The design strategy for "mainly tension" has been improved, so that the results are significantly more efficient.	11253
02.05.17	Evaluation	Additionally, the area, respectively, the length of the element zone are displayed in the output and labeling of the bedding resultant.	10976
02.05.17	Design	The design for a large number of elements and a large number of reinforcement edges was limited due to a database error.	11267
02.05.17	Design	The uniaxial bending design of beams provides design results again.	11197
02.05.17	Design	The reinforcement values are now displayed correctly in the design of compact T-beams with NAZWEI.	10771
02.05.17	Evaluation	The correct reinforcement values are displayed again for the shell design.	11321

Build	Module	Description	ID
02.05.17	Evaluation	The range of the selected node groups is resumed again for the list output of support forces.	11318
02.05.17	Evaluation	The punching analysis can be started from TRIMAS again.	11206
02.05.17	Generation	The calculation core checks for the correct construction material in the element before the calculation.	11305
02.05.17	Input	The cross-section types 'Downstand beam' and 'Upstand beam' are no longer offered for beam structures (Filter: 2D/3D frame or girder grid).	11332
02.05.17	Input	The visibility of the subsystems remains unchanged, if the construction state selection is closed with "Cancel" or if the current construction state was not modified.	10990
02.05.17	Input	In the load cases to be deleted the loads are now removed at first, so that possibly remaining lines can be deleted by the user.	10735
02.05.17	Interface	The lines are marked as spatial poly line when exporting a structure as 3D-DXF and thus are no longer projected in the xy-plane when importing into a CAD program.	11310
02.05.17	Superposition	In the superposition template "Earthquake response spectrum", the modal stress resultants were only superimposed with a positive sign since V15.0 Build 05112015.	11171
14.03.17	Concrete in cracked state for the analysis of spatial frames	The creep and shrinkage is now considered as <b>pre-strains</b> (up to now as <i>pre-deformations</i> ) in the calculation process with the <b>consideration of the long-term behavior</b> . These pre-strains result from the calculation of the long-term load and are included in the design load cases. Applying <i>imperfections</i> from eigenmodes or deformation load cases can thus be made <i>in addition</i> .	10934
14.03.17	Concrete in cracked state for the analysis of spatial frames	The results for the load case of the creep inducing long-term loads do not only contain the parts for the creep deformations, but also the total deformations including creep and shrinkage.	8558
14.03.17	Design	<b>Fatigue analysis of the longitudinal reinforcement</b> With the additional input value dbr/dsl the reduction of the fatigue strength for bend longitudinal reinforcement at frame corners can be determined separately from the reduction factor of the stirrup reinforcement.	10093
14.03.17	Design control	In the reinforced concrete design with the design control, the dialog with warnings from the calculation or superposition can optionally be displayed not until the design is finished.	10262
14.03.17	Design control	Is membrane selected as design method of an area, then the settings for SLS, FLS, recalculation and the robustness reinforcement as well as the shear force design in the ULS are deactivated.	9853
14.03.17	Evaluation	The load positions are recorded with a higher accuracy in the <b>load transfer</b> . In systems with large coordinate specifications and inclined supports, this sometimes caused single loads outside of the structure for the load import.	10639
14.03.17	Evaluation	A user-defined basic reinforcement is now saved with the project and can thus be used with other structural members also.	10318
14.03.17	Evaluation	It is now possible to differentiate between line support and point support in the display of the support reactions at the node. The default setting is now "Support force distribution" and "Support forces - point support".	10203
14.03.17	Evaluation	The selection fields for element groups and load cases have been revised in the list output for a better readability.	9936
14.03.17	Evaluation	Now, the stress resultants of the selected single as well as result load cases can be issued for particular beams and accordingly areas in the result list.	6122
14.03.17	Input	In the output of the material parameter in the TRIMAS list (protocol), now also the prestressing steel materials from the definition of the prestressing are available.	10646
14.03.17	Input	The display area for the dimensions, the static values, the choice boxes and for the cross-section display has been enlarged in the cross-section dialogs.	10314
14.03.17	Input	When generating as well as when saving it is checked, whether a member with missing or inadmissible material input exists.	10248

Build	Module	Description	ID
14.03.17	Input	The output of the design parameter in the TRIMAS list (protocol) has been completely revised for the analyses in the ULS, SLS, FLS and the recalculation guideline and is now available for beams and slabs.	10118
14.03.17	Input	The former cross-section type <i>T-beam</i> is replaced by the <b>new cross-section types</b> <i>downstand beam</i> and <i>upstand beam</i> . In the design are generally the stress resultants with the slab stress resultants integrated over the effective slab width being considered. A "Design as compression member" is not possible for these cross-sections.	2829
14.03.17	Deformations in the cracked state	For beams, which are selected in the SLS for the calculation of the deformations in the cracked state, the design setting is removed when changing the material from concrete to steel or timber.	9857
14.03.17	Design control	The ductility of the reinforcing steel with the appropriate factor for the stabilizing effect is transferred correctly to the design.	10338
14.03.17	Evaluation	In the biaxial shear design the decisive minimum reinforcement can become greater than in the combination with the maximum design shear force depending on the size of the shear force components $V_y$ and $V_z$ . Prospective, the maximum of the design value is thus calculated separately from the maximum reinforcement, whereupon the values cannot be appropriate in the case of minimum reinforcement.	10614
14.03.17	Evaluation	Loads cannot be issued in the list output of the result evaluation. These can only be journalized in the input.	10201
14.03.17	Input	Not all affected area elements were found when generating with quadratic element approaches in the case of area loads with very small dimensions.	11005
14.03.17	Input	For the height notations in the cable drawing, the cross-section edge to be automatically dimensioned was not set for tendons, which refer to reference tendons.	10913
14.03.17	Input	When editing an <i>edge moment in local directions</i> at the FE element, the load values were assigned incorrectly to the input fields.	10310
14.03.17	Input	The display of line loads with edge moments was faulty, if also force values existed besides the moments.	10309



### Version 16.0

Build	Module	Description	ID
28.11.16	Evaluation	The basic combination (Lager/F(z)) is now preset as action effect in the superpositions for the punching analysis.	10088
14.10.16	General	The type of area display is now saved in the project. Furthermore, it can be saved user-defined and be reloaded.	9797
14.10.16	Superposition	In the printout of the load cases / factors, which have been considered in the superposition, also the corresponding stress resultants, respectively, deformations / support reactions are now being issued.	9075
14.10.16	Concrete in cracked state for the analysis of spatial frames	The calculation of a project with eccentrically defined cross-sections was terminated in exceptional cases during the calculation of the utilization.	10014
14.10.16	Deformations in the cracked state	The stiffness of the cross-section was not always determined correctly in the calculation without the stiffening contribution of the concrete for tension, which caused a termination due to divergence of the iterative calculation.	9692
14.10.16	Evaluation	The load increase factor beta is now set automatically according to standard for the punching analysis. Manually adjusted values are saved for repeated calculations.	10089
14.10.16	Evaluation	If no shear reinforcement was required in the visible subsystems in the beginning of the evaluation of the shear design, then asw was not offered in the selection of the result values when changing the visibility of the subsystems. The dialog for the selection of the result values no longer considers whether a subsystem is visible or not, i.e. asw is now always offered in the selection - even if no values can be displayed.	9937
14.10.16	Evaluation	Now, the area boundaries are determined correctly in the isoline display after changing the result value.	9897
14.10.16	Evaluation	The selection of the result value for the isoline display of the membrane reinforcement now offers asxt, asyt, asxb, asyb.	9884
14.10.16	Evaluation	Is "relative to local system" set as design direction and the system contains nine noded elements, then the program no longer terminates when displaying the reinforcement directions.	9826
14.10.16	Input	The system dimensions -> default dimensions as well as the "unit scale" can be displayed again without the system disappearing or that the program gets into an infinite loop.	9917
14.10.16	Input	The load case attribute "Crane runway load" has been added to the superposition.	9911
14.10.16	Input	Are the input settings closed from the diagram of the prestressing conditions, then the visibility settings are no longer lost.	9191
17.05.16	Input	The girder edges are now displayed according to the specified cross-section distribution in the cable layout of the prestressing. This enables displaying height offsets.	9792
17.05.16	Calculation	The calculation was terminated in the <i>compact version</i> , also if the admissible number of elements has not been exceeded.	9777
17.05.16	Generation	A local point load is always relative to the point local system, if such is defined at the point.	9650
17.05.16	Generation	Only the entries are being activated for the input of the temperature loads, which are enabled for the preset filter (system support).	5503
17.05.16	Input	Factors $\leq 0.0001$ for the adjustment of the material constants of $\alpha_t$ and $\gamma'$ were set to 1.0 when reading in the data again with an orthotropic material behavior.	9800
17.05.16	Input	In the plane prestressing the prestrain and the prestressing forces are reduced for the design by the overall loss from creep and shrinkage ( $\epsilon_{sh}$ ) from the superposition settings.	9796
17.05.16	Input	Is an area load with line support generated with the copy mode <i>Include support</i> , then a name is assigned to the hereby generated line support. With this, the support force distribution is displayed at the copied line support.	9704

Build	Module	Description	ID
17.05.16	Input	In the cable diagram of the prestressing, the eccentricities in the duct in the horizontal area of curved tendons is being displayed correctly.	9640
17.05.16	Input	The design parameter are now only issued for concrete structural members in the list output.	6123
17.05.16	NAZWEI	In the detailed output of the SLS result list, the tendon <i>number</i> of the appropriate tendon layer is now logged for prestressed areas.	9414
17.05.16	Output document	Now, also the area loads of load macros are issued in the protocol output of the loads.	9407
04.04.16	Design	The <b>design of girders</b> made of the timber materials <b>BauBuche GL70</b> (flat edge and on edge) as well as <b>Kerto-S</b> is now possible. For the deformation and internal force calculation of <i>slabs and shells</i> , the timber materials <b>BauBuche-S</b> and <b>Kerto-S</b> are available.	9684
04.04.16	Generation	When point and line loads are being generated incompletely, the corresponding warning message has been extended with the information about the subsystem of the object.	9750
04.04.16	Calculation	Point loads onto areas, which are not aligned parallel to the global XY-, XZ- or YZ-planes, were transformed several times onto the local system beginning with the 2nd construction state when generating the FE-system in the calculation of systems with multiple construction states.	9705
04.04.16	Design	<b>Minimum reinforcement of the crack width limitation</b> As long as the restraint stress resultants do not exceed the crack stress resultants, the restraint stress resultants can be used for the analysis of the initial cracking. The crack stress resultants are calculated with <i>fctm</i> (hitherto with <i>fct05</i> in bridge construction).	9744
04.04.16	Evaluation	The punching analysis can be started again.	9701
04.04.16	Evaluation	In the diagram evaluation for shear design results of beams, all result values can be selected again for the diagram display.	9470
04.04.16	Generation	If the calculation and the design material of concrete structural members differ, the design material was still adjusted to the structural member material after confirming the corresponding message with "No".	9751
04.04.16	Generation	The load values were sometimes multiplied repeatedly with the z0 ordinate when generating earth covering loads.	9714
04.04.16	Input	The program no longer terminates when measuring with the shortcut "Shift m".	9708
16.02.16	Calculation	The beam superposition after the stresses is no longer offered for structural steel and timber construction. Since the calculation of the maximum utilization is carried out in the course of the stress analysis, these superpositions are no longer needed.	8995
16.02.16	Concrete in cracked state for the analysis of spatial frames	The modulus of elasticity for the deformation calculation is reduced for limestone and sandstone aggregates and increased for basalt according to DIN EN 1992-1-1/NA 3.1.3 (2). However, the stress-strain-curve has negative stresses, maximum/minimum turning points and sharp bends in the area of the admissible concrete compressive strains for the reduced values of the modulus of elasticity for sandstone in the deformation analysis and for non-linear methods of the stress resultant calculation. In order to avoid numerical problems in the calculation of the stress resultant and the effective stiffnesses, the compressive strain <i>eps_c1</i> of the concrete is increased by 1,15 under maximum stress <i>f_cm</i> for these aggregates, as it was recommended by the <i>Arbeitsausschuss NA 005-07-01 AA Bemessung und Konstruktion</i> of the DIN standard committee for the construction industry.	9341
16.02.16	Design	The interface to DICAD with the reinforcement export for areas has been updated.	9464
16.02.16	Design control	In the shear design the angle is calculated by the program (default) for a strut inclination of $\Theta = 0.0^\circ$ . Since only the specified value is being used in a bridge recalculation according to the recalculation guideline (RCG) an angle $> 1.0^\circ$ has to be specified.	9261
16.02.16	Design control	The admissible stress range for the fatigue analysis depends on the used reinforcement steel, respectively, on the selected prestressing method. Thus, this value is no longer managed independently in the analysis control but is only displayed for verification purposes.	9072



Build	Module	Description	ID
16.02.16	Evaluation	A back-up of the cst-file is made when starting the evaluation, so that it can be used in the case of a program termination.	9590
16.02.16	Evaluation	It is now possible to display the utilization level in the ULS of reinforced beams for the recalculation graphically.	9401
16.02.16	Evaluation	The beam results are displayed in the beam axis, even for beams with an eccentric connection.	9225
16.02.16	Evaluation	The torsional bedding is offered both as leading and as depending result value for the elastically bedded beam with torsional bedding.	9068
16.02.16	Evaluation	Now, the evaluation of the decompression analysis can be opened via the menu / toolbar. The four superposition load cases can be selected in a dialog box and the tensile stresses may be qualified.	8729
16.02.16	General	Program modifications for the <b>compatibility with Windows 10</b> .	9538
16.02.16	General	The reinforcement is saved in the folder "fax", respectively, "sax" in files with the name of the structural member and the appropriate ending (*.fax or *.sax). Up to now, the results have been saved in continuously numbered files fax0001, fax0002, ... without reference to the structural member name.	8672
16.02.16	Generation	The HAUZU input contains as 10th parameter the cement type in the KRIS-line now.	9578
16.02.16	Generation	If the structural member parameter and the design parameter have different materials or cross-sections, then you will be asked whether the design data should be adjusted to the structural member properties when generating the FE data.	9184
16.02.16	Input	Can point or line loads not be generated completely, it is now possible to suppress the warning message after its first occurrence.	9050
16.02.16	Input	<b>Prestressing in spatial structures</b> The hitherto existing restriction of 2 tendons per direction has been revoked.	8652
16.02.16	Superposition	When editing the superposition load case with allocation of operators and factors to the load cases, the focus in the list now remains at the last edited load case.	9076
16.02.16	Design	The calculation of KLED for user-defined load case combinations (e.g. for non-linear calculations) is now carried out with all load cases included in the combination for the timber construction analysis. Thereby, a design is also possible without the assignment of a separate load case attribute.	9443
16.02.16	Design control	For a bridge recalculation according to the RCG, a bending and shear design is also carried out if no additional SLS analysis has been selected.	9146
16.02.16	Evaluation	The display of the element material is now solely available as text. The filling of the elements in the evaluation is omitted, so that the texts are always readable.	9493
16.02.16	Evaluation	Was a beam at first calculated as bending beam and afterwards as compression member with circumferential reinforcement, then only the result for the first edge could be displayed. Now, each edge can be displayed.	9182
16.02.16	General	The function <i>File -&gt; Settings -&gt; save (User)</i> now works in a way, that every newly established TRIMAS input position is opened with the saved settings (also the color schema).	9125
16.02.16	Generation	If local line supports with a sagging stiffness in z-direction and a rotation stiffness only about the x-axis intersect or meet each other, then sometimes the local node system at the intersection was not generated correctly. This caused an imbalance in the slab calculation.	9584
16.02.16	Generation	The display in the section is no longer displayed with additional lines for cross-sections made of multiple partial sections (e.g. bridge cross-sections with recesses).	9426
16.02.16	Generation	The text frame can be activated again via "File -> File info"	9387
16.02.16	Input	<b>Traffic loads on pedestrian bridges</b> The partial safety factor $\gamma_{m,sup}$ for uniformly distributed traffic loads ( $gr_1$ ) has been increased from 1,35 to 1,50.	9648

Build	Module	Description	ID
16.02.16	Input	Is the hardening parameter of the material set to <i>without hardening</i> , then it is assigned correctly when saving and reopening a project.	9343
16.02.16	Input	The specified prestressing steel class for the stress range was not saved in the dialog "Edit prestressing method".	9276
16.02.16	Input	When copying circular lines by <i>mirroring at the yz plane</i> , the rotational direction of the circular line was inverted after saving and reopening the project.	9156
16.02.16	Input	After changing the meshing properties of a grid meshed area via <i>Folded plate   Modify   Mesh attributes</i> the modified mesh is displayed immediately.	8954

### Version 15.0

Build	Module	Description	ID
15.12.15	Design	Utilizations were not calculated in the timber analyses, if there was only compression (e.g. in a truss member).	9442
15.12.15	Generation	The loads are applied with $\gamma=1,00$ in the accidental design situation.	9453
15.12.15	Input	From now on, accidental loads on and below the bridge are superimposed at the same time in the accidental combination for bridge construction.	9472
05.11.15	Input	The load to be copied can be selected again in "Load macro -> onto beam -> copy".	9365
05.11.15	Input	In the bridge construction superposition, a reduction of the concrete stiffness due to cracking is carried out not only in the basic combination but also in the accidental combinations.	9333
05.11.15	Superposition	Area live loads and axle loads are mutually exclusive in the superposition for pedestrian bridges now. The design is carried out for the more unfavorable value.	9232
15.09.15	Generation	Load macros with line loads were possibly destroyed when generating the FE data, the original line position is now preserved when switching back to the model layer.	9258
02.08.15	Design	The reinforced concrete design can now also be performed for structural members whose name contains a blank.	9164
02.08.15	Design control	The program terminated when selecting the entry "BZ0001" in the tree view, if no imperfection load case had been defined.	9124
02.08.15	Evaluation	The diagram output at the beam for $A_s$ (top/bottom) is working again.	9090
02.08.15	Evaluation	The results of an influence line calculation can be issued numerically again.	8834
02.08.15	Evaluation	The result grids now react to the visibility of the partial system, thus the grid areas of invisible partial systems are no longer considered when selecting.	8564
02.08.15	Generation	The algorithm for the selection of area loads has been revised, so that no areas of an invisible partial systems are being considered when selecting an area load in spatial structures.	9185
02.08.15	Input	The centroidal position of the newly generated cross-sections was not calculated correctly during the interpolation for haunched polygonal cross-sections (Reinforced concrete bridges).	8856
20.05.15	Calculation	The specific <i>selection</i> to use <i>effective cross-section values</i> for the calculation of concrete bridges is currently not available, since the calculation program for the cross-section values QUER already transfers the effective values or the values calculated at the total cross-section.	8907
20.05.15	Evaluation	Changing the orientation of the legend as well as other legend operations are OK again.	8984
20.05.15	Input	The protocol of the prestressing data is generated correctly again.	8971
22.04.15	Concrete in cracked state for the analysis of spatial frames	The stabilization area of the reinforcement in the global analysis method with calculation values according to DIN1045-1 is now represented correctly. This modification may cause the calculation of a higher limit load.	8970
22.04.15	Evaluation	The display of the result values for the edge and vertex longitudinal reinforcement from ZWAX was only possible, if a license for the recalculation guideline existed.	8935
22.04.15	Evaluation	Support force distributions in superposition load cases are being displayed again.	8890
22.04.15	Evaluation	Support forces in superposition load cases are being displayed again.	8888
22.04.15	Input	The subsystem can be specified independently of the current for the particular objects again.	8929
22.04.15	Input	The function "Folded plate -> change at the mesh -> update" considers the recesses correct again.	8887
22.04.15	Input	Names of point supports, which are assigned to an invisible partial system, are no longer displayed.	8845

Build	Module	Description	ID
16.03.15	Prestressing	<b>Complete prestressed concrete analyses for shell structures</b> Now, the complete prestressed concrete analyses can be carried out for post-tensioned shell structures. Here the position of the tendons is considered in the finite elements. The prestressing is thereby converted to a related width of 1 m.	8846
16.03.15	Design	<b>Terminated crack width limitation for shell structures</b> No convergence for the crack widths could be reached for shell structures mainly in tension.	8832
27.02.15	Analyses	Now, the correct load cases and load case attributes are being used in <b>bridge construction</b> for the superposition template " <b>Earthquake (Response spectrum)</b> ".	8715
27.02.15	Design	Exis.w,k, respectively the compression zone height XII, is now logged depending on the decisive stresses in the <b>detailed printout</b> for the <b>terminated cracking</b> .	8822
27.02.15	Design	The <b>analysis of the terminated cracking under CSN EN</b> standards is performed on the basis of the general EN 1992-1-1 again, whereupon the coefficient k3 for the calculation of the crack spacing sr,max is calculated according to a change (2015) in the national annex of the CSN EN.	8821
27.02.15	Evaluation	The evaluation of the shear bearing capacity results (within the scope of a recalculation) is now also possible for a "concrete bridge".	8566
27.02.15	Evaluation	The <b>stress analysis</b> steel is now also possible for <b>cold-rolled C-sections</b> . For the display of the stress distribution over the cross-section the file "pop_str.ini" has to be deleted in the project directory for existing projects, so that the new definition can be loaded from the installation directory.	8478
27.02.15	General	The <b>assignment of keys to navigate through the construction states</b> ("Shift +" and "Shift -") has also been activated for the evaluation.	8718
27.02.15	Input	The general load case attribute "Traffic" has been implemented again.	8311
27.02.15	Input	In the summary of the action types and in the assignment of the load case attributes to the load case, the name of the action type is amended by the name of the load case attribute, e.g. "Live load A (Living rooms)", for <i>live loads</i> .	8004
27.02.15	Output document	In the shear reinforcement output a "+" is printed after the element number, if the shear force fatigue analysis was decisive. Furthermore, only the As value is issued in this line, since only this is calculated in the respective analysis at the moment.	8633
27.02.15	Calculation	The calculation of the stiffness module Es has been corrected for a <b>soil model</b> with activated calculation with the method according to <i>OHDE</i> . This impacts the calculated settlements, which are now calculated more realistically.	8642
27.02.15	Calculation	For a <b>soil model</b> with several layers and activated calculation with a method according to <i>OHDE</i> or <i>HOOKE (depth-dependent)</i> , singularities could result during solving of the equations, since the specific soil parameters for these methods were not interpolated over the layers.	8561
27.02.15	Calculation	A complete list with the information of the calculation (File FE-Analysis.fpt), which can be displayed via "Result lists" in the navigator, is also generated after a calculation <i>in the analysis control</i> .	8064
27.02.15	Design	The lower bound of the strut inclination angle is now already checked at the time of the input for the admissible value according to the selected standard. An arbitrarily low value may be entered for recalculations. When entering 0.0, the value specified by the standard is being used for the shear force design.	8631
27.02.15	Design	<b>Design of prestressed areas</b> The termination during the calculation of the crack width limitation of shell structures has been fixed.	8544

Build	Module	Description	ID
27.02.15	Design	<b>Recalculation of shell structures</b> It could happen in the recalculation of shell structures, that no equilibrium is possible for the completed fracture pattern in the strain analysis. In this case, 99 is issued as utilization. The reported crack width had, however, a value where it was not necessarily obvious, that it is an irrelevant number. If the utilization is = 99 (no equilibrium possible), then the crack width is automatically set to 9.99. It is now obvious, that the crack width limitation analysis was not met in this element - no matter which graphical evaluation was selected.	8540
27.02.15	Design control	The change of an exposure class is now adopted for all selected members.	8548
27.02.15	Design control	A <i>nonlinear calculation</i> of systems with imperfection load cases, joints or linear approach functions implicated erroneous calculation runs for <i>repetitive consecutive calculations in the analysis control</i> .	7948
27.02.15	Evaluation	For a <b>soil model</b> with activated calculation with the methods according to <i>OHDE</i> or <i>HOOKE (dependent on depth)</i> the E-modulus value is issued in the output list, which was determined in the calculation in the constitutive law.	8643
27.02.15	Evaluation	A shear reinforcement, which is actually not necessary, was sometimes calculated during the shear force fatigue analysis. The shear force fatigue analysis now only provides the required shear reinforcement.	8635
27.02.15	Evaluation	Is an output generated in the evaluation of shear design results of slabs, then the numerical values in the element are displayed again as accustomed.	8634
27.02.15	Evaluation	Only the node superposition load cases are now offered in the dialog for the selection of the action in the punching analysis.	8341
27.02.15	General	The <b>settings for the soil model</b> (Information about the elements and widening; generation of the half-space as hemisphere or cylinder) as well as information about the used calculation method and the corresponding soil parameters are now issued in the log.	8629
27.02.15	Generation	The generation of FE loads from eccentric load macros has been improved. Hitherto, partially not all point loads were transferred to FE loads - especially for very slightly curved beams.	8610
27.02.15	Generation	When <b>aligning the mesh</b> of an area <b>at</b> the edge lines of the <b>area</b> , the mesh was only displayed correctly after repeated linking.	8242
27.02.15	Generation	The centers of a circle of circular arcs are no longer treated as fixed points in the mesh generation, so that the mesh is independent of this.	5386
27.02.15	Generation	The files with the endings <b>*.btb</b> , <b>*.btc</b> , <b>*.btp</b> and <b>*.spg</b> are being stored in the <b>folder Member</b> of the project directory for a better overview. All previously mentioned files are deleted before saving in the project directory, so that no old files of no longer available objects exist.	5146
27.02.15	Input	Eccentric point loads on a beam are now also copied when copying a beam.	8712
27.02.15	Input	When copying load macros on a beam, the current load case persists as original load case now.	8538
27.02.15	Input	When deleting point supports, the associated column dimensions are being deleted as well.	8527
27.02.15	Input	<i>Eccentric point loads with reference to a beam</i> are considered when adding loads from a different load case.	8526
27.02.15	Input	In the numbering of points and lines, the numbers of the prestressing are no longer displayed.	8509
27.02.15	Input	When copying a load macro along a line or along a set of lines, the labeling of the original load case is now transferred and no longer "Load case_....".	8273
27.02.15	Input	If load case attributes for certain bridge uses were defined, but not the action type associated with the attribute, -1.0 has been displayed for the partial safety factors and combination coefficients. The selection of the load case attribute also considers the validity of the action type in the structural class or bridge use.	8124

Build	Module	Description	ID
27.02.15	Input	The window "Calculation of the prestressing geometry" of the function "Prestressing -> Results -> Calculation" remained on the screen even after finishing the calculation in the <b>system input for prestressing</b> . Now, the current state of the calculation is shown via a progress bar.	6952
27.02.15	Prestressing	The program termination during the output of the record of the prestressing instruction has been fixed.	8651



### Version 14.0

Build	Module	Description	ID
02.02.15	Design	For T-shaped beams under certain loadings it could happen in the determination of the decisive design sections, that not the most unfavorable design stress resultants were transferred to NAZWEI (criterion: largest tensile stress at the top). The stress resultants are now transferred correctly to NAZWEI.	8649
02.02.15	Design	<b>Summary of the utilization levels</b> In the short output - i.e. the short printout <u>without</u> a detailed output - the utilizations for the stress limitation of concrete were not saved correctly. The utilizations in the detailed printout were correct, however.	8585
02.02.15	Generation	Load macros with area loads were possibly destroyed when generating FE data - now they retain their original form when returning to the model layer.	8504
24.10.14	Evaluation	The deformations in the cracked state can be displayed again in the evaluation.	8490
22.10.14	Concrete in cracked state for the analysis of spatial frames	If a materially non-linear calculation without determining the limit load has been performed and the admissible limit strains were exceeded hereby, the program terminated when displaying the corresponding warnig message.	8405
22.10.14	Evaluation	If the superposition results in a project were additionally saved in so called ASCII-files, a program termination could occur for large amounts of data after selecting a superposition condition.	8417
15.10.14	Calculation	By a modification in TRIMAS 14.0 Build 22092014 for ID 8153, point and line supports as well as point loads with a <i>local orientation</i> were always caculated in the global coordinate system.	8470
15.10.14	Calculation	By a modification in TRIMAS 14.0 Build 22092014 for ID 8153, singularities occurred in the calculation of shear walls, which are arranged oblique to the global coordinate system and supported in local directions.	8459
15.10.14	HAUZU	MATE line for the HAUZU input limited to 80 characters again.	8455
22.09.14	Design	<b>Hydration analysis</b> The hydration analysis is also performed, if all internal force states are equal to zero.	8271
22.09.14	Evaluation	<b>New user guidance for steel stress analysis</b> The steel design for building construction is possible by an elastic stress calculation and optionally the consideration of the plastic cross-section design resistance (depending on the cross-section class). In this case, the cross-section analysis is carried out in the ULS for <b>multiple individual or superimposed result load cases</b> with subsequent <b>generation of a result load case</b> ("Utilization state") <b>with the maximum utilization</b> per section.	8283
22.09.14	Evaluation	<b>New user guidance for timber stress analysis</b> The timber design is carried out by an elastic stress calculation under consideration of modification and deformation coefficients as well as the appropriate reductions for biaxial loading. In this case, the cross-section analysis is carried out in the ULS for <b>multiple individual or superimposed result load cases</b> with subsequent <b>generation of a result load case</b> ("Utilization state") <b>with the maximum utilization</b> from bending or shear and torsion per section.	8282
22.09.14	Evaluation	The <b>individual steel or timber design for modified material coefficients or cross-sections</b> is possible for single sections, selected elements or sets of members. The hereby received results can be displayed per section as distribution at the profile or as degree of the utilization at the system.	8281
22.09.14	Evaluation	The <b>list output for the state of stress of the steel design</b> (classification of the cross-section, analysis type, max. utilization, min./max. normal stress, min./max. equivalent stress, shear stress components from Vz, Vy, Mt, resulting shear stress) is done <i>member by member</i> with the related stress resultants for the selected load cases.	8280

Build	Module	Description	ID
22.09.14	Evaluation	The <b>list output for the results of the timber design</b> (modification coefficient, max. utilization bending - corresponding normal stress from tension/compression, bending about y and z, as well as max. utilization shear - corresponding shear stresses from $V_y$ , $V_z$ , $M_t$ ) is done <i>member by member</i> with the related stress resultants for the selected load cases.	8279
22.09.14	Evaluation	The <b>diagram output of the design results for stress analyses</b> as distribution over the member, can now be done for the <i>minimum</i> , <i>maximum</i> or <i>both</i> result values.	8278
22.09.14	Evaluation	In the <b>stress analyses for timber construction</b> , the cross-section analysis is performed according to EN 1995-1-1 (and appropriate national annexes) section 6.1 and 6.2, eq. (6.1) to (6.20), the regulations in the German national annex (NA.55) and (NA.56) are considered. <i>A stability analysis according to section 6.3 is not carried out.</i>	8277
22.09.14	Evaluation	<b>Design of systems with multiple construction states</b> Only individual load cases, which are assigned to the current construction state, are still offered for the reinforced concrete design and the stress analyses steel and timber. Superposition load cases are independent of the active construction state and are therefore always all offered.	7362
22.09.14	Generation	PONTI (*.pos) as well as composite projects (*.vtr, *.bvtr) can be selected additionally to the TRIMAS projects (*.x3d) for the <b>load transfer</b> .	8037
22.09.14	Input	When generating or editing soil materials it is now checked, that their name does not contain any spaces.	8373
22.09.14	Input	The reduction factor of the concrete strength in bridge construction and the ultimate limit state for temperature actions, subsidence as well as shrinkage can be entered via the corresponding load case attributes in the dialog. For reinforced concrete bridges it is automatically considered when generating superposition regulations. The product from reduction factor and the partial safety factor $\gamma_{sup}$ or $\gamma_{inf}$ is output in the superposition regulation.	8063
22.09.14	Interface	The interface of the reinforcement transfer to Allplan NEMETSCHEK has been updated to version 5.0. Additionally, now also the shear reinforcement and the shear force capacity of area elements is being transferred.	7180
22.09.14	Prestressing	The type curve of the prestressing now also recognizes springs as supports.	8340
22.09.14	Calculation	<b>Soil model</b> The generation of volume elements in the definition of <i>joints in a bottom slab with a soil model</i> was corrected. As a consequence of the previous practice it could happen, that in certain cases no material was assigned to the elements of the soil model.	8350
22.09.14	Calculation	In determining an inconsistent loading of slab or deep beam elements the tolerance query has been eased. From now on, the individually adjustable value of <i>tol_loadvalue</i> from the control file <i>fe_cntr.pro</i> is used.	8237
22.09.14	Calculation	In the calculation of systems with <i>multiple construction states</i> , the local node reference systems were not reset when generating the FE system. This could have had an influence on the calculation results, if - e.g. - supports with local directions were no longer defined in the subsequent construction state or beams newly connect to an area.	8153
22.09.14	Calculation	If there is not enough memory available while solving a system of equations in the calculation of large systems, now an error message is output by the program.	7538
22.09.14	Design	The program termination of the TRIMAS Evaluation, when applying the <b>biaxial bending design</b> , has been fixed.	8274
22.09.14	Design	The material settings for the design of prestressed area elements have been revised.	8203
22.09.14	Design	New design parameters at an area, a beam or an element group are established when opening a project, if none already exist.	7839

Build	Module	Description	ID
22.09.14	Design control	The requirement class was changed from C to D in the design control for calculations according to DIN FB, if for DIN EN 1992-2/NA <i>reinforced concrete</i> was specified as requirement for the structural member. Therefore, the decompression analysis for prestressed shell structures could not be selected. The adjustment of the requirement class to the preset requirement is now only applied for calculations according to DIN EN 1992-2/NA.	8338
22.09.14	Evaluation	In complex systems with calculations of concrete in the cracked state for spatial frameworks in conjunction with joints and linear element approaches, sometimes a program termination could occur when displaying the deformations.	7957
22.09.14	Evaluation	The output of the results via the context menu in the evaluation of a nonlinear beam calculation in the cracked state showed an empty list for the selection of the result values.	7924
22.09.14	Evaluation	The function <i>Design information</i> in the evaluation provides a readable record again in the 64-bit Version.	7768
22.09.14	Evaluation	The output of building, ASB number, structural element, block and process in the document works again.	7761
22.09.14	Evaluation	In the <b>display of the utilization of recalculated slab bridges</b> , values less than 0.00001 were not considered at all up to now. This is why there were areas in which no isolines or iso-areas were drawn. Now, a value = 0.0 is assumed in these areas and the isolines or iso-areas are drawn in the corresponding color.	7330
22.09.14	Evaluation	The display of the extramel values in the elastic-elastic stress evaluation as distribution over the system no longer causes a program termination.	4981
22.09.14	General	When archiving a TRIMAS project (*.x3d) from the navigator the standard.xml file was not archived, if an older version of TRIMAS (<= 10.0) had been installed on the computer previously. The cause for this was an unremoved entry in the registry.	8377
22.09.14	Generation	When copying raster areas, which are linked with the option <b>Align at area</b> , the mesh orientation is also being copied.	8241
22.09.14	Generation	Were edge lines of a folded structure with an existing integration converted into circular arcs, a termination of the program sometimes occurred for a new integration.	8240
22.09.14	Generation	An integration error for a raster area with circular arcs has been fixed.	8211
22.09.14	Generation	The assignment of a partial system for an area load is possible again.	8040
22.09.14	Generation	When copying circularly edged areas by rotating around the global z-axis, it could happen that the newly generated area was warped in itself.	8038
22.09.14	Input	Problems with program terminations after <i>canceling the selection of a subsystem</i> when editing lines or the visibility of subsystems have been fixed.	8351
22.09.14	Input	The attribute „liquid, variable“ is now also superimposed in bridge construction.	8234
22.09.14	Input	The settings for the superposition of the load case attributes, which regard earth pressure, were changed. Earth pressure at rest and increased active earth pressure are now being superimposed unfavorable. <u>Note:</u> New RTbase required! An existing Standard.xml file must be deleted in the project directory.	8187
22.09.14	Input	For existing earthquake load cases, "accidental earthquake" is also being generated as standard superposition.	8184
22.09.14	Input	A program termination could occur during the input of a straight line with the function "Tangent to 2 circles".	8047
22.09.14	Input	For coexisting area prestressing and beam prestressing, no prestressing force distribution has been displayed for the beam.	7994
22.09.14	Input	The reduction value for a sidewalk load in gr1a is now 0,54 instead of 0,50.	7853
22.09.14	Interface	The interface to GLASER -isb cad- has been updated and is available for selection again.	7475

Build	Module	Description	ID
22.09.14	NAZWEI	<b>Shear force fatigue for surface structures</b> Did a shear joint exist, e.g. for prefabricated slabs, the shear joint reinforcement was misleadingly issued as design result due to shear force.	7896
22.09.14	Output document	The problems with layouts, which only include one line, do no longer occur.	7160
10.03.14	Input	The autosave setting is no longer stored or read from the user settings in the registry, but only the appropriate setting in the project is being evaluated. The default autosave for is new projects is "After time" after 300 seconds.	7757
10.03.14	Evaluation	In the result display as isolines it could happen, that no color has been assigned to certain areas. The responsible tolerance value was reduced, so that this problem should no longer occur.	7754
10.03.14	Evaluation	The interface to GLASER -isb cad- has been temporarily disabled until the adjustment to the current version by GLASER.	7753
10.03.14	Input	When quitting the dialog for the generation of a new cross-section, it could happen that the program terminated. This error only occurred for new graphic boards with certain selected display options.	7793
10.03.14	Input	User-defined load macros with area loads, which are applied to the system with a user-defined angle of rotation, were distorted after repeatedly generating FE data and saving the system.	7737
10.03.14	Superposition	If load cases without a load case attribut were included in the superposition regulations, a program termination could occur.	7771
22.02.14	Evaluation	In the results of the stress calculation for steel cross-sections or timber cross-sections there are minimum and maximum values at the cross-section in each case. These are now also displayed when requesting the display in the course of the system.	7626
22.02.14	Design	The reason for the warning " <i>Type TQP or TQR expected after QUER</i> " in the design of t-beams has been removed.	7734
22.02.14	Design	The NA 6.31.1/6.31.2 according to DIN EN 1992-1-1 is now also considered in the torsion design. The name "resisting torsion TRd1" was changed to "resisting torsion TRd,max".	7628
22.02.14	Design control	The previous corresponding requirement classes according to DIN are assigned to the specified requirements for a prestressed slab according to DIN EN 1992/NA again. The selection of the decompression analysis is depending thereof.	7649
22.02.14	Input	The entry <i>DIN FB</i> was always shown for <i>steel composite bridges as well as concrete composite bridges</i> when opening the dialog Options   Standards. The afterwards selected design standard, however, has been saved correctly and was used for the design.	7725
22.02.14	Input	Multiple permanent load cases were not considered in the automatic superposition of the basic combination in version 14.0.	7675
28.01.14	Design	Area design in the serviceability limit state The program sometimes stopped, e.g. during a deformation calculation II. This has been improved.	7388
28.01.14	Design control	In the <i>Delete results</i> dialog, the individual options are no longer selected by default.	7244
28.01.14	Design control	Selecting several structural members or an entire group (all beams or all areas) has been completely revised. Thus, setting individual parameters or transferring all parameters onto the selected element groups works more reliable. Cancelling the action without transferring data is also possible.	7236
28.01.14	Evaluation	With the shortcut "CTRL+L", respectively, "CTRL+SHIFT+L" it is possible to scroll through the results of the eigenforms and eigenmodes (frequency analysis and response spectrum) besides the already possible action load cases.	6871
28.01.14	General	The catalogue for flat reinforcement meshes has been extended with the series KA, KD, KH and KY which are common in CZ and SK. The catalogue is being installed with the basic modules of Version 14.0.	7467

Build	Module	Description	ID
28.01.14	General	If the 32-bit version is selected in the TRIMAS Navigator, but only the 64-bit version has been installed, no programs (Input, calculation or graphical evaluation) could be started. It is now checked, whether the corresponding programs for the selected version have been installed - if necessary, the version will be adjusted automatically.	7428
28.01.14	General	The output (RTprint or RTconfig) as selected by the user is used for the <b>display of the result lists from the TRIMAS-Navigator</b> . Up to now, the results lists could only be opened with RTprint.	7424
28.01.14	Generation	The display of area elements in the element layout "extended mode", displays the joint edges also apart from each other for quadratic approach functions.	7372
28.01.14	Input	The definition of the prestressing steel material in the design parameters for beams was only possible for the system filters slab, grid and 2D-frame. This restriction has been cancelled.	7488
28.01.14	Input	By presetting the component number while editing an area, the corresponding area is activated if an area exists for this number. Presetting a new number for a component is not possible with this.	7280
28.01.14	Input	All load case settings of the current tendon are inherited by a new tendon.	6896
28.01.14	Prestressing	The name <i>Plastic</i> instead of <i>Carbon</i> is used in the selection of the duct material in the prestressing methods.	7422
28.01.14	Superposition	The default superposition specifications also include the superposition of the soil pressures in the basic combination now.	7454
28.01.14	Design	<b>Area design</b> Were the superposition specifications user-defined, an unjustified error message occurred, if the infrequent combination of actions did not exist.	7383
28.01.14	Design	<b>Crack width limitation</b> The crack width limitation in building construction for reinforced concrete members is now performed with the quasi-permanent action combination.	7360
28.01.14	Design	If in the dialog "Verification data calculation" on the tab "Output" the checkbox "Superposition of deformations and support forces acc. to SUX" was selected, it could happen that the deformations of the quasi-permanent combination in the uncracked state were overwritten with the deformations in the cracked state during the calculation of the deformations in the cracked state.	7309
28.01.14	Design control	The settings of the beam parameters for the bending design (Support, bearing, connection) are assigned correctly to the selected beam.	7452
28.01.14	Design control	The adjustment of the calculated crack width to the maximum value of the specified requirement class is now only made when directly selecting a new requirement class and not at each change of the member.	7325
28.01.14	Design control	The setting of the SLS analysis for the cracking safety is always activated for areas.	7283
28.01.14	Design control	Are the parameters in the analysis control being transferred from one area to one or several others, the reinforcement direction is no longer transferred also.	6988
28.01.14	Evaluation	The calculation of the utilization IAB according to EN 1993-1-1 Gl. (6.1) has been adjusted in the <b>stress analysis steel</b> . The square root from the left side is now used, which corresponds to the usual calculation of the utilization $\sigma_v/\sigma_{Rd}$ .	7559
28.01.14	Evaluation	The <b>stress analysis steel</b> for shear stresses in T-beams was revised.	7537
28.01.14	Evaluation	The results of the shear design were deleted after the punching analysis.	7457
28.01.14	Evaluation	The list output of the bearing forces with corresponding deformations is made in the local node system in which the values were calculated. A rotated coordinate system is thereby marked with a * at the relevant node.	7348
28.01.14	Evaluation	When displaying the integral of a line section with the resultant, min and max are no longer inverted. An eccentricity e is issued also for the max value again.	7310

Build	Module	Description	ID
28.01.14	Evaluation	In the inquiry of the results in the SLS analysis the dialog box was often displayed empty, as if no results had been calculated. Now, the results are displayed in either case. Since the calculation is only performed in the center of the element, it is not possible to change the positions (i.e. nodes) in the SLS analyses.	7279
28.01.14	Evaluation	The design moments $m_{xx}$ and $m_{yy}$ of the SLS analyses were switched in the display and the inquiry. In the calculation of the required As the <b>correct values were used in either case.</b>	6987
28.01.14	Generation	When displaying edge joints at multiple converging areas (e.g. several ceilings and walls in building construction), the model related joint condition was not always shown at the corresponding area. The generation of the coupling conditions has been correct, however.	7371
28.01.14	Generation	If <i>several areas</i> are uncoupled by an <i>edge joint at a line</i> , sometimes not all areas with a joint condition were generated.	7339
28.01.14	Generation	The corresponding design parameters are also copied when copying beams or areas.	5308
28.01.14	Input	When <i>deleting a line bearing</i> , the automatically generated line is also deleted, so that all engaged lines can be deleted afterwards.	7433
28.01.14	Input	When editing the support conditions of point supports, the deformation loads were deleted as soon as the dialog for editing has been quit with OK. Now, the deformation load is only deleted, if the corresponding degree of freedom is no longer supported (rigid or with stiffness).	7354
28.01.14	Input	When copying beams with the setting <i>with local system</i> the corresponding reference coordinates are also copied at a local system aligned to a point.	7308
28.01.14	Input	When generating or editing a beam or area, a specified component name has been reset if the button "..." was used for further component parameters. Now, the specified component name is retained.	7091
28.01.14	Input	Copying the line loads <i>linearly</i> or <i>along a line</i> functions correctly again.	6864
28.01.14	Input	When importing files from older program version (up to 8.2), the selected standard was not transferred and thus the materials from the old data format were sometimes not assigned to the members.	6804
28.01.14	Input	The settings of a line load for <i>local / global</i> and <i>absolut / relative</i> are also copied when copying beams with the setting <i>with loads</i> .	6768



### Version 13.0

Build	Module	Description	ID
05.11.13	Evaluation	For <b>bridge analyses</b> according to the recalculation guideline (RCG with the option <i>bridge recalculation</i> ) the following <b>utilization levels can be evaluated graphically</b> : <ul style="list-style-type: none"> <li>Utilization, bearing capacity</li> <li>Utilization, crack width limitation</li> <li>Utilization, fatigue of longitudinal bending reinforcement</li> <li>Utilization, fatigue of shear force reinforcement</li> </ul>	7186
05.11.13	Generation	When changing the element type of a beam in bending to truss member via <i>Beam -&gt; Edit -&gt; Element type</i> , now the partition of the beam is adjusted to 1 for the truss member.	5151
05.11.13	Design control	Some selected analyses were lost in the analysis control for the SLS when switching between structural members.	7245
05.11.13	Evaluation	The respective result value of the labeling at the nodes in the unsmoothed state will be displayed correctly for each participating element during the display of the results as contour.	7192
05.11.13	Evaluation	When displaying the results as isolines or as isoareas, it is possible to specify the boundaries. While changing the result values it has to be defined, whether the user-defined values are to be kept or new ones are to be calculated automatically. So far, the user-defined values were always kept. Now, they are recalculated as intended.	6814
05.11.13	Prestressing	If 2 prestressing load cases per tendon were defined in the prestressing of areas, an abnormal termination occurred while generating the FE data.	7198
10.10.13	Design	A basic reinforcement is generally always being considered in the shear design now.	5490
10.10.13	Design control	Now the selection of the decompression analysis is possible for prestressed slabs according to DIN EN 1992-2/NA (with the requirement <i>Prestressing or Mixed construction</i> in longitudinal direction or in lateral direction).	7046
10.10.13	Evaluation	Support reactions from the superposition are only displayed if the particular node is supported in the current construction state.	7105
10.10.13	Generation	For models with very small element dimensions, sometimes elements which are outside the load area were loaded in the generation of area loads. Therefore, the tolerance was now adjusted to the specified node snap radius.	7116
04.09.13	Design	The shear stresses from torsion were calculated incorrectly for individual section types. Corrections have been made for hollow, tubular, flat and rectangular cross-sections.	6989
04.09.13	Input	The selection of standards for timber construction has been extended with the standards of the EN 1995-1 with national annexes for DE, AT and CSN. Therefore, the material values according to these standards are considered in the calculation of stress resultants and deformations. The design (stress analyses) is yet still carried out according to DIN 1052-1:1988.	6996
04.09.13	Input	The standards of the EN 1993-2 with national annexes for DE, AT and CSN have been added to the available standards for steel in bridge construction.	6990
08.07.13	Prestressing	Saving the prestressing data (file spg) functions reliably again.	6843
25.06.13	Calculation	<b>Soil model:</b> The calculation of the principal stresses for the yield function according to Mohr-Coulomb has been revised.	6156
25.06.13	Calculation	<b>Soil model:</b> The output list of the calculated stresses, displacements and soil parameters was improved in the formatting.	6155
25.06.13	Calculation	The <i>default superpositions</i> of the template "Brückenbau (PONTI)" are generally only still formed for the beam stress resultants and vertical node values. Changes in the default settings can be made via the dialogs in the input as well as in the evaluation.	6106
25.06.13	Calculation	<b>Soil model:</b> Besides the hitherto constitutive law for the soil elements (" <i>HOOKE (linear elastic)</i> "), a constitutive law with a calculation of the constrained modulus depending upon the depth (" <i>HOOKE (depending upon depth)</i> ") and the <b>constitutive law according to OHDE</b> (" <i>OHDE (depending upon stress)</i> ") were implemented. Hereby it is possible to map the subsidence behavior of buildings more realistically.	5689

Build	Module	Description	ID
25.06.13	Concrete in cracked state for the analysis of spatial frames	The <b>utilization at the cross-section</b> is now determined and can be displayed in the result evaluation.	3734
25.06.13	Design	<b>Imperfection of reinforces concrete columns</b> Assuming a linear calculation of the stress resultants according to first order theory, the minimum imperfection $e_{min}$ is being considered automatically in the design of compression members.	6816
25.06.13	Design	A crack width analysis is not possible, if a rectangular cross-section or a T-beam cross-section is under <i>biaxial loading</i> . This is now considered automatically in the program interface.	6630
25.06.13	Design	<b>Add-on of the analyses for EN 1993-1-1</b> with national annexes for DE, AT, CZ and UK For the stress analyses (el.-el.) according to EN 1993-1-1 with corresponding national annexes, the interaction condition is evaluated according to Eurocode 3. The program checks via the normal stresses in the vertices of the cross-section parts and their dimensions, which cross-section class according to EN 1993-1-1 is existent. The most unfavorable class at the cross-section (web or flange) is determined and displayed as result value at the section or in the system. For the <i>stability analyses</i> , the program module RTool-Lateral torsional buckling has also been extended for EN 1993-1-1 with the corresponding national annexes.	5730
25.06.13	Design	The <b>reinforced concrete design</b> is now also possible for reinforcement made from <b>glass fiber reinforced plastic (GFRP)</b> . Available are <i>ComBAR®</i> by SCHÖCK and <i>HFR</i> by HALFEN as new reinforcement material.	5692
25.06.13	Design	For structural members with a subsequently supplemented in-situ concrete layer, the <b>shear capacity in the joint</b> can be proven and the required shear reinforcement can be determined. The verification of the shear joint for beam - as well as for shell structures - is actuated in the analysis control through the input of a joint distance $> 0$ cm from the upper edge of the cross-section. Besides the consideration of the roughness of the joint, a shear reinforcement in element ceilings (lattice girder) can be considered by entering an angle of inclination and the reinforcing steel strength of the composite reinforcement.	4384
25.06.13	Design control	The possibility to specify the building type (general or special structural engineering) has been added in the analysis control.	6756
25.06.13	Design control	<i>Information about traffic</i> (Traffic category, number of truck lanes and total number of lanes) were amended to the input of the parameter for the <b>analysis in the limit state of fatigue</b> for beams in bridge construction. These parameter are considered in the automatic calculation of the lambda-coefficients.	6279
25.06.13	Design control	<b>Verifications in the serviceability limit state SLS</b> <ul style="list-style-type: none"> <li>There is an additional <b>selection between initial cracking and hydration</b> in the settings for the cracking protection.</li> <li>Is the hydration analysis selected, a conformity check whether the time of the initial cracking is set <math>\leq 7</math> days is carried out. If necessary, this point of time is corrected to 5 days.</li> <li>When creating the verification for the initial cracking, the adjustable point of time is tested to <math>&gt;7</math> and <math>\leq 28</math> days. If necessary, this point of time is corrected to 28 days.</li> </ul>	4769
25.06.13	Design control	It is now possible to carry out the hydration analysis and the verification for the terminated cracking in one verification cycle.	4561
25.06.13	Evaluation	The visibility of the partial systems in the different construction states is now also saved in the evaluation, if "Save" is required when quitting the program.	6753
25.06.13	Evaluation	The <b>lateral torsional buckling analysis</b> according to EN 1993-1-1 with NA for DE, AT, CZ and UK has been adjusted to the current version of the analysis program RTool.	6738
25.06.13	General	Update and upgrading of the <b>profile table</b> for <b>circular hollow sections</b> according to <i>DIN EN 10210-2</i> (hot-rolled, seamless or welded) and <i>DIN EN 10219-2</i> (cold rolled, welded).	6483
25.06.13	General	Now, the <b>release notes</b> are available in <b>English</b> .	6460
25.06.13	General	Program modifications for the <b>compatibility with Windows 8</b> .	6374

Build	Module	Description	ID
25.06.13	General	An <b>alphabetical, numerical or no sorting</b> in CheckList-Boxes, as it is used for the selection of sub-systems, load cases and element areas, is possible.	5427
25.06.13	Generation	When deleting a construction state all assigned load cases are also deleted. If these are not to be deleted, they must previously be assigned to a different construction state.	6772
25.06.13	Generation	An <b>edge moment at shell elements</b> is now generated as a line moment on the shell elements. Until now, edge moments were merged to a resulting single moment.	6157
25.06.13	Generation	The <i>concrete and reinforcement material used in the design</i> are issued in the record under <i>material</i> with the corresponding properties. For shell and beam parameters the used design materials are only issued via the name, which completes the list printout and makes it better arranged.	5513
25.06.13	Generation	Line loads can now also be entered on the edges of areas with an isoparametric mesh.	5478
25.06.13	Generation	The hitherto labeling for the "characteristic combination" has been replaced code compliant by the labeling "Standard superposition (characteristic)".	5059
25.06.13	Generation	After selecting an active substructure it is automatically set visible without having to set it visible additionally. Is an active substructure to be invisible anyhow, this can be achieved by selecting the visibility dialog with the shortcut "Shift+T".	3616
25.06.13	Input	When deleting line supports the corresponding line is now also deleted.	6595
25.06.13	Input	The default reinforcement material for new members is distinguished for areas (B500M) and for beams (B500S).	5803
25.06.13	Modal analysis	In the output list for the response spectrum method now a hint is shown, that the output of the <b>horizontal forces of the floor forces</b> is only for the generation of load cases for the <b>consideration of accidental torsional action</b> by the user. The <b>design</b> is carried out <b>with the design values of the seismic loading</b> , into which the stress resultants from the statically superimposed modal forms go.	6520
25.06.13	Output document	Improvement in the output list of the prestressing data concerning their clarity through better structuring of the headings.	6158
25.06.13	Output document	In the <b>output list</b> for shells, the definition of the coordinate system, the reinforcement direction and the stress resultants are displayed graphically.	5455
25.06.13	Analyses	<b>Shrinkage deformations of beams</b> The deformations in the cracked state due to shrinkage were incorrect. In contrast, the shrinkage deformations of areas in the cracked state were correct.	6645
25.06.13	Calculation	The coordinates of the shear center were not imported correctly from the qdi-file. Thus this coordinates were = 0, so that no torsion of the cross-section under loading in vertical direction of the section arose during the calculation of data base U-sections.	6564
25.06.13	Concrete in cracked state for the analysis of spatial frames	The value of the strain when reaching the concrete tensile strength has been corrected. The tension area of the stress-strain-relation is now mapped correctly, whereby the modulus of elasticity and the entire stiffness in the cracked state taking into account the stiffening contribution of the concrete are not underestimated any longer.	6245
25.06.13	Concrete in cracked state for the analysis of spatial frames	The <b>output of the relative stiffnesses</b> in <i>compression members</i> has been corrected. Since the stiffnesses in the cracked state are afflicted with the partial safety coefficient $\gamma_c$ , the linear stiffness has to be reduced accordingly.	6244
25.06.13	Design	<b>Biaxial design of box girder sections at piers</b> Correction of the reinforcement definition for box girder sections as compression member in the transfer from TRIMAS to the reinforced concrete design as well as correction in the design in order to reach a symmetrically distributed reinforcement.	6815
25.06.13	Design	<b>Minimum reinforcement in circular cross-sections</b> For circular cross-sections in <b>bridge construction</b> generally bored piles are assumed, for which the minimum reinforcement is automatically calculated according to EN 1536 regardless of being a bending member or a compression member. The structural minimum reinforcement (16mm / 15 cm) has been removed in this case. For circular cross-sections in <b>building construction</b> generally columns are assumed, for which automatically the minimum reinforcement of compression members is calculated.	6679

Build	Module	Description	ID
25.06.13	Design	<b>Limitation of the crack widths in shell structures</b> The calculation of the crack distance is carried out according to EN 1992-1-1, Gl. 7.15, if the direction of the principal tensile stresses differs more than 15 degrees from the decisive reinforcement direction of an orthogonal reinforcement mesh. The decisive reinforcement was possibly determined incorrect, so that a too large crack width was determined with a too high "max. crack distance $s_{max}$ ".	6677
25.06.13	Design	If the maximum admissible strut force $VR_{dmax} < V_{Ed}$ is not met, nevertheless a required reinforcement is issued. Additionally, a note about the existing exceedings is shown subsequent to the design.	6618
25.06.13	Design	The fatigue analysis for shell structures is carried out in longitudinal and transverse direction <i>independently from each other</i> based on the respectively set requirement class.	6086
25.06.13	Design control	The superposition Schale/s(I,II) is no longer set as default, because Schale/s(x,y)-as is normally sufficient.	5477
25.06.13	Evaluation	Under certain conditions (usually reinforcement directions turned about 180°) it could happen, that the design results from the earthquake analysis were not considered when calculating the maximum amount of reinforcement. The reinforcement amounts of the earthquake analysis are now also assigned.	6757
25.06.13	Evaluation	Modification of the result value identifiers of the shear design to the different identifiers in the German and European standards.	6614
25.06.13	Evaluation	For certain geometries it could occur, that not all nodes belonging to a line support were considered in the calculation of the line force distribution, respectively, the line support resultant. The algorithm has been revised completely, so that this problem should not occur any longer.	6530
25.06.13	Evaluation	Corrections have been made for the transfer of the design stress resultants to the <b>lateral torsional buckling analysis</b> . The maximum shear force of the combination is transferred as design shear force. Only sections that are contained in the section database (no welded sections) are recognized for the lateral torsional buckling analysis. A corresponding section must be selected before the analysis for user-defined cross-sections.	5568
25.06.13	Evaluation	<b>Support list with specifications of the support forces and deformations</b> According to DIN EN 1990/NA/A1:2012, a support list with support forces and associated deformations can be issued.	5125
25.06.13	Evaluation	For an edge moment along a line support a "saw tooth like support reaction distribution" has been obtained hitherto, if elements with a quadratic shape were used, because the edge moment had been generated onto the element center as a merged single resulting moment. Now, the edge moments of shells are generated as a real line moment, whereby this effect does no longer occur after a new generation and calculation.	5113
25.06.13	General	The standard values of the compressions at the maximum value of the concrete compressive stresses for non-linear stress-strain-relations according to DIN 1045-1 were corrected in the material database.	6252
25.06.13	Generation	End points of truss members are now also being considered in the mesh generation of areas.	6791
25.06.13	Generation	In construction states of prestressed shell structures an additional test, which of these elements exists in the particular construction state is carried out, if a tendon end touches two elements. For prestressing with construction states, the calculation of the FE loading may not be limited to the "visible elements".	6704
25.06.13	Generation	The generation of FE loads of copied load macros on beams has been improved. This regards the problem cases of not generated or displaced stationary loads.	6609
25.06.13	Generation	The calculation of element loads for partially loaded area elements and square element approaches has been corrected.	6557

Build	Module	Description	ID
25.06.13	Generation	Load cases with a 1XXX number (1000, 1001 ...) were used in earlier versions internally for the prestressing. When reading prestressing data these load cases were deleted though, even in current versions. This caused that these, from some users for better clarity used numbers, were missing, e.g. for generating load macros.	6519
25.06.13	Generation	Z load cases with the combination factor $\psi=0$ were filtered out in the superposition, but still referenced.	5488
25.06.13	Generation	When deleting load cases, the load case files and the associated result files are also deleted.	5432
25.06.13	Generation	The finite element display of the <b>temperature load <i>dt</i></b> for beams is made with the correct numerical values and without an "empty" dash in z-direction.	5425
25.06.13	Generation	The load cases <i>temperature constant</i> and <i>temperature linear</i> are now also combined according to EN 1991-1-5, 6.1.5 for EN 1992-2 (Bridges).	5410
25.06.13	Input	The assignment of the action type to the load attributes can be incorrect for old data sets. Therefore, the action type from the Standard.xml is used as load case attribute.	6720
25.06.13	Input	A temperature load as line load is now displayed in the local system of the line and also generated related to the local system of the line (noe the beam!).	6706
25.06.13	Input	Generating haunches at the beam via the function "Beam->Edit cross-section->haunches" always placed the selected cross-section at the beginning of the selected beam section.	6684
25.06.13	Input	The generated but <i>unused cross-sections are deleted</i> when quitting TRIMAS. Since the generated cross-sections are identified as such at the time of their generation, this information about "generated" cross-section is not available in already existing projects. Thus all unused cross-sections have to be deleted manually (in the selection dialog for cross-sections) for such a project.	6588
25.06.13	Interface	DXF lines no longer go back from the end of the polyline to the origin.	6741
25.06.13	Modal analysis	A transformation of the nodal masses for structural members, in which the area axes or the beam axes did not match the global directions (e.g. inclined walls in the xy-plane), caused wrong results in the list output of the storey results (storey masses, deformations, forces). The results of the modal analysis (effective masses, deformations, stress resultants, etc.), however, were correct.	6729
25.06.13	Modal analysis	<i>The response spectrum method is currently only possible together with quadratic element shapes.</i> When linear element shapes are selected, this selection is pointed out to the user when leaving the dialog of the calculation settings.	6088
25.06.13	NAZWEI	<b>Crack width in shell structures</b> In the calculation of crack widths in shell structures the crack width was saved incorrect for the short output and little actions - decisive stresses $< f_{ctm}$ , respectively, $f_{ct05}$ , i.e. cross-section almost uncracked, so that the minimum crack width was displayed wrong in the graphical evaluation.	6711