

Innovations in winLIFE Version 3.2 compared to 3.005

Canges/Improvement 3.20.00 gegenüber 3.01.07

- Operating ratio added
- The stress unit can be entered manually.
- Calculation speed increased by factor 2.
- In the Nominal Stress and Notch Stress methods, the breaking stress can be taken into account optionally (Project Info; calculation parameter; damage accumulation).
- For the damage the number of cycles is considered in the results graphics (S-N curve, Haigh diagram, range mean pair count and rainflow)
- The cycles are considered in the export files -> and therefore also in the summation
- The number of cycles is considered in the summation.
- Haigh-Diagram User with flexible upper limit
- Simplified selection of multi-column files with same name for load import using 'V' button
- For import of loadings file, an altered file ending is automatically used when selecting anew.
- Classifying results can now also be shown with a set (external) rainflow matrix.
- In the damage sum print out in local approach, the loading is considered.
- In the DEL-calculation, the classifying limits are selected automatically
- Statistical analysis included
- For the forces loading and the equivalent stress path you can select a maximum number of values. This speeds up the loading time even of very large files.
In the second x axis the total amount of the values is shown.
Ranges can be selected in the second x axis
- In the generation of component S-N curves according to FKM, a safety factor can now also be entered.

Bugs/Features

- Graphic keys are now always shown where they can be seen.
- The damage sum is limited to a sensible accuracy.
- Forces loading generator: amplitude = 0 is possible.
- In a DEL calculation "not possible" is shown for a load spectrum.
- For a S-N curve with loading, the loading is shown correctly for varying step sizes.
- In the Haigh-FKM graphic the mean stress of the load values was moved by a class with into minus.
- If the loading was converted to torsion/shear in the local approach, then newly entered values will be taken as bending
- Report contents of the damage sum corresponds again to the damage sum contents on the screen
- The points are shown exactly in the FKM-Haigh-Diagram (previously displaced by a class limit)
- Possible to zoom the cyclic graphic correctly
- Result rainflow graphic, values shown in columns for classes and damage
- Problem of program crashing when no project loaded has been solved.
- For gearwheel/bearing calculation no classification parameter is given in the damage sum protocol
- In the range pair count small values (<1.0) are shown correctly.
- Correct consideration of the alternative Kt when generating FKM notch stress stress gradient.
- Correctly shows x-direction in Mohr's circle when calculating according to Findley
- Correct graphic arrangement (standing/hanging) of hystereses in stress/strain path
- Correct consideration of upper voltage regarding breaking stress for amplitude transformation
- Shows the loading in the Haigh diagram exactly (class limit) for amplitude transformation
- Report of damage sum corresponds exactly to the damage sum graphic

Canges/Improvement 3.01.07 gegenüber 3.01.06

- In den Ergebnisgrafiken (Wöhlerlinie, Haighdiagramm, BMPZ und Rainflow wird beim Schaden die Zyklenanzahl berücksichtigt
- Berechnung des Betriebsfaktors
- Haigh-Diagramm User mit flexibler oberer Grenze

Bugs/Features

- Kräftebelastungsgenerator ist Amplitude = 0 möglich.
- Bei der DEL_Berechnung wird beim Lastkollektiv 'nicht möglich' angezeigt.
- Bei der Wöhlerlinie mit Belastung wird die Belastung bei verschiedenen Schrittweiten korrekt dargestellt.



Canges/Improvement 3.01.06 gegenüber 3.01.05

- New SN-curvegenerator for welded component: Method GL Wind.
- New Force generator for sinusoidal curve.
- The Multiplier in the sum damage dialog is by default the cycle parameter .
- The No. of occurenes in the DEL calculation dialog is by default the cycle parameter .

Bugs/Features

- The results of the DEL-calculation are new organized in the *_sum.csv file.
- The results of the DEL-calculation int the *_sum.csv file have as decimal seperator ','.

Canges/Improvement 3.01.05 gegenüber 3.01.03

- Calculation of DELs (Damage equivalent loads) under Extras | Tools | DEL calculation
- The temperature file has been deleted from the data grid in the FE Dialogue and is now separate. In addition, it is possible to select whether the temperature file is to be used.
- When adding the damage sums together, the multiplication factor is saved in each project.
- If there is a VZ3 in a project, then the sum value from this file is entered in the is-value for the calculation/extrapolation.
- In the dialogue counting of residence time and extrapolation, the channel description and the minimum and maximum channel values are shown when the mouse is above a channel selection and there is a relative TAB file. Double click to add the channel number to the channel selection list.
- A calculation parameter dialogue does not show the residual dialogue when a superimposition or an extrapolation is carried out.
- No longer a 2 GB file limit for uniaxial classification.
- When showing the level crossing count and the range pair mean count, there is now a uniform line 1 curve used for the current project.
- When importing the strain measurements, the values entered are saved in the project and used when the dialogue is next opened.
- All graphic settings for the current project can be transferred to the data base. When creating a new project, these values are used.
- For the forces load, the 2nd x-axis is only shown if required.
- When showing the loads, the negative range is not taken into account when zooming.
- After a pre-zoom, the 2nd x-axis is no longer shown in the forces path.

Bugs/Features

- When creating the neutral file, a maximum of 4 files are entered because otherwise FEMAP will crash.
- Viewing of cyclic S-N curves no longer with errors.
- For stress and strain path diagrams the start position is also set correctly on a 2nd screen.
- When creating a RAI file, the interger overflow is tested and if positive, an error message appears.
- Program no longer crashes when calculating the factor for the surface when $R_m < 300$

Canges/Improvement 3.01.03 gegenüber 3.01.02

- Extrapolation of a rain flow classification implemented
- Superposition of a rain flow classification with existing rain flow classifications or loadings implemented
- Extrapolation of a counting of residence time implemented
- Superposition of a counting of residence time with existing counting of residence times implemented
- Counting of residence time of a loading implemented -> transmission calculation with loading
- Showing the VZ3 file under "view classification results"
- Showing the forces path under "View loading"
- Selection of a user file ending for a force loading

Bugs/Features

- In more than 20 projects error corrected when showing the rolled-over collective
- In the report generator for the methods bearings or gearwheels the correct diagram selection are set.
- When the damage sums of several projects are added, the correct FEMAP-neutral file is now created.

Canges/Improvement 3.01.02 gegenüber 3.01.00

- In a non-linear calculation, up to 10000 load cases are possible
- the graphics appear on the screen much more quickly
- step sizes can be changed in the graphics



- the values can be shown in the graphics

Bugs/Features

- Damage sum dialogue: if only one project has been selected you have to press return or activate another field so that the OK button can be activated.
- S-N curve: If you change the axis to "logarithmic" then the help lines will be drawn correctly.
- In the Import load dialogue the columns not marked are grey.
- For plate elements the damage equivalent amplitude are given correctly in multiaxial calculations.

Changes/Improvement 3.01.00 gegenüber 3.00.05

- New damage parameters Socie and Fatemie Socie have been included.
- Graphic evaluation of the classification without fatigue life calculation is possible.
- Graphic evaluation of the classification as level crossing counting, , level crossing counting of several projects possible, sum of level crossing counting, rainflow pair mean counting, range pair counting, sum of range pair counting, sum of range pair counting for several projects, range pair counting corrected, sum of range pair counting corrected, sum of range pair counting corrected for several projects.
- Generating S-N curve for welded parts, FKM guidelines re-organised, whereby we differentiate between nominal stress, notch stress and structure stress concept.
- Generating S-N curves according to Germanischer Lloyd.
- Showing the equivalent amplitude for endurance strength and the safety factor in the protocol and in the export file.
- Showing the equivalent amplitude for 1 cycle, for the collective for the endurance strength and the safety factor in the FEMAP neutral file.
- Consideration of the loading (torsion/shear) for uniaxial local concept (shear stress amplitude)
- Creating a neutral file for FEMAP according to the sum of several damage sums.
- Graphics key is printed in the same colour as the background (can now also be white)
- Graphic load collective can be called up from the generation dialogue.
- Help buttons in the dialogues for generating component S-N curves.
- Optionally, the column information and loading number for the forces history can be shown.
- Calculation parameters are sorted alphabetically.
- Dialogue for changing the failure probability has been improved.
- S-N curve graphic with coloured names of the hypothesis.
- Generator for S-N curves according Hück/Haibach for ductile graphite iron.
- Deleting single data sets from the database for component S-N curves is now possible.
- Mouse key functions for the graphic appear in the status indicator line.
- Saving and restoring the user's material database has been included.
- Multiple selections in the FEMAP interface is now possible.

Bugs/Features

- Database is standardised to be activated in C:\Documents and Settings \user...*.mdb.
- Component SN-curve is shown logarithmically when the graphic is opened.
- Elementary S-N curves are shown correctly in the report generator.
- Information on the failure probability is maintained with the S-N curve.
- Conversion factors for transmissions have been corrected.
- When the graphics are changed, the calculation results remain activated.
- The correct number of half loops is shown in the rainflow graphic.
- 3D graphics (rainflow) can be moved.
- Correct consideration of the stress gradient of the diameter for bending and torsion when generating component S-N curves according to the FKM guidelines and the nominal stress concept.
- The standard vector is scaled automatically in the methods welded, elastic notch stress and multiple load uniaxial force.
- We have corrected the problem of S-N curves for bearings being shown the wrong way round.
- Component S-N curves no longer result in a possible system crash when the crease load number > 1e10.
- GL influence factors GL have been removed from the safety factor of the FKM generation.
- When the axle scale is changed, the other graphic settings remain the same.
- The problems when zooming from bottom right to top left have been solved.
- The menu item cyclic S-N curve has been changed to cyclic stress-strain S-N curve.
- Problem in the S-N curve database if there was a blank in the material number has been solved.
- Indication in the S-N curve dialogue as to whether the data in the database has been overwritten or whether a new data set has been created.
- When loading an old S-N curve, the parameter r_t, hns, cdyn and p is corrected and set.
- Colours in the rainflow graphic have been swapped over: edge = line 1, area = subsidiary line 1.