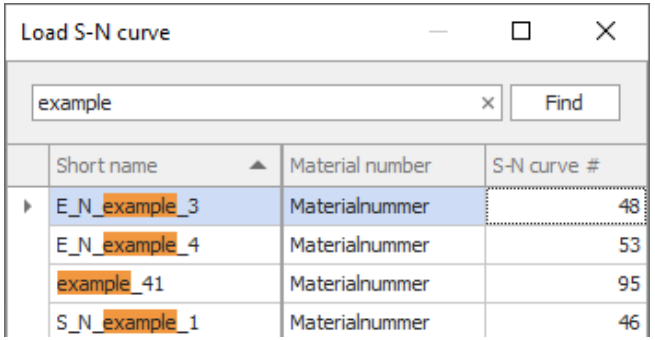
Overview of Innovations in winLIFE 2023

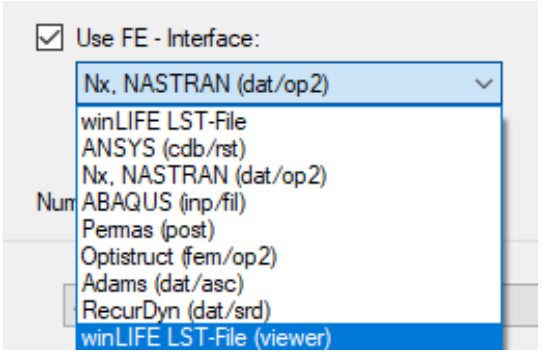
- **User Interface**
  - **Enhancement of the search function** regarding both the ‚Load' S-N curves and the ‚Load FKM' dialogue
    - Display of the S-N curve numbers
  - When copying the projects, the FE data can optionally be copied as well
  - When calculating with element stresses, a Max_schad.ele is now written

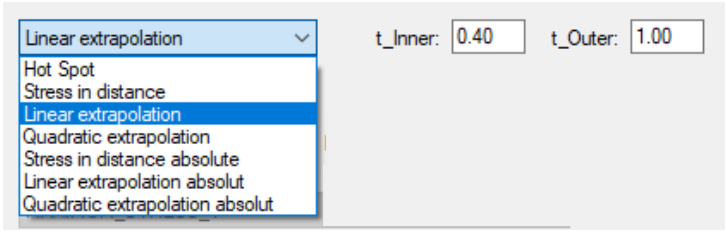


- **Container Projects**
  - Temporary window "Calculate partial loads" in container projects no longer closes automatically after the calculation, but has been given a ‚close' button
  - Speed optimisation through one-time reading of the FE stresses

Overview of Innovations in winLIFE 2023

- **FE-Interface**
  - New LST format **winLIFE LST-File (Viewer)**
  - FE interface non-linear with RecurDyn generates LST files optionally with plane or with 3D stresses
  - Optimised adding of LST files: considers shell stresses top side / bottom side from 2 (several) separate LST files and multi-adding
  - Problem with very large node numbers fixed

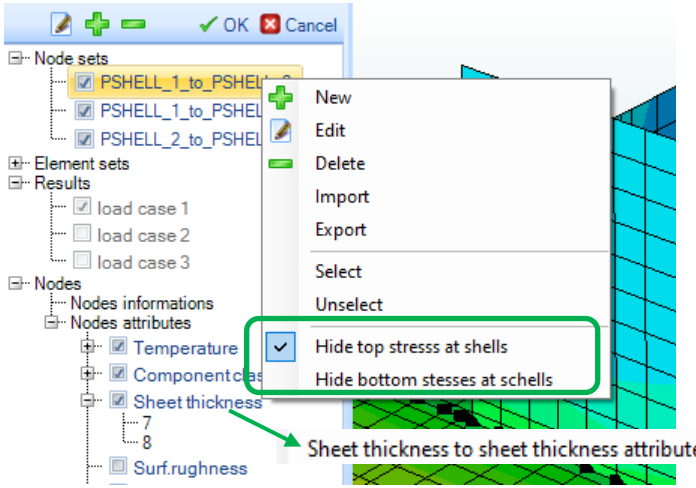


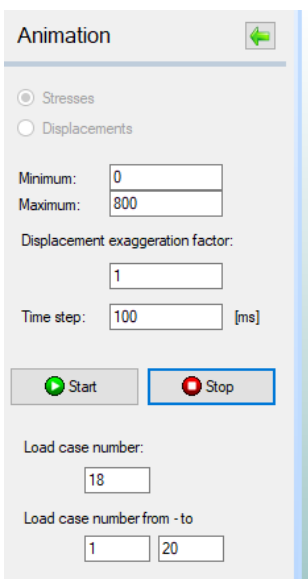


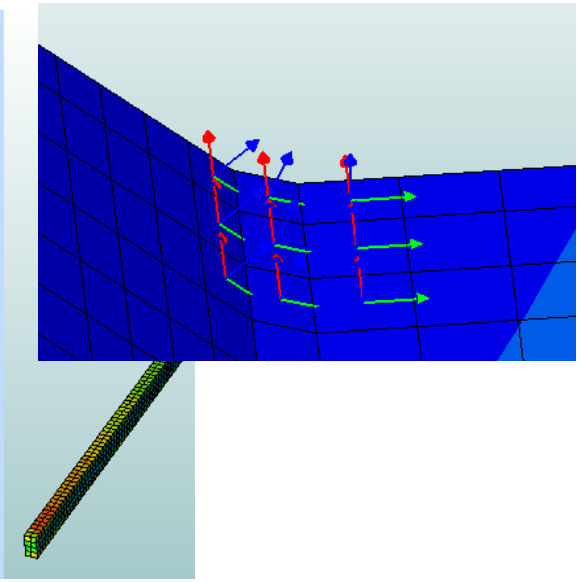
- **Solver**
  - Support of processor groups in multithreading
  - Number of classes of the allocation matrix increased from 40 to 100
  - **Classification matrix with independent loads ->** non-linear calculation (see last slide)
  - **Structural Stress Concept**
    - Stress in distance **absolute/relative** of sheet thickness
    - Linear and quadratic extrapolation **absolute/relative** of sheet thickness
    - Structural stress concept without FE data
    - Structural stress concept with LST files and node selection
    - Structural stress concept non-linear with and without FE data
    - Structural stress concept with **Findley**

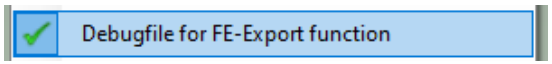
Overview of Innovations in winLIFE 2023

- **Viewer4winLIFE**
  - **New winLIFE interface**
    - Attributes of the LST files can be used imported and exported
  - **Attribute sheet thickness:** for shell elements automatic recognition of sheet thickness from the geometry file
  - Import of element stresses from LST files - HotSpot method
  - Freezing of the legend "Result global min/max" for better comparison of results
  - **Shell elements:** hide/show **top/bottom stresses** and export to LST-file,
    - Surface orientation added under element info in the Viewer
  - **Animation** from-to..
  - Detailed debug output for the calculation of the structural stress
  - Displays and views are saved



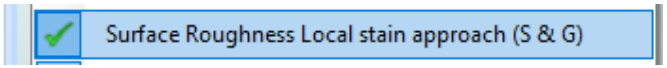




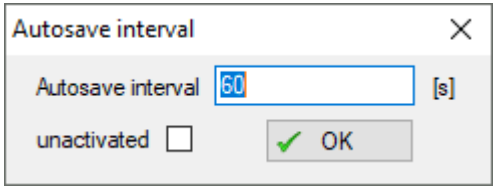


Overview of Innovations in winLIFE 2023

- **FKM**
  - With the local concept, a distinction can now be made as to whether the surface roughness is taken into account according to **Siebel&Geier** or according to **FKM Nonlinear**
  - Acceleration when using different S-N curves
  - Update: Decisive for the degree of utilisation is now only the equivalent degree of utilisation for multi-axial, proportional and synchronous stresses. See FKM section 4.6.3



- **Other**
  - Example 11 Newly created
  - Convert LST file format old --> new
  - **Autosave** function with option to set the time interval
  - Drag and Drop when creating the **multiple load file**
  - Extrapolation of the time with first and last time column of the multiple load file
  - **Formula editor** applicable via directories
  - Formula editor with modulo ,% operator



New non-linear Calculation Option with several independent Loads

In the FE calculation, several load points are calculated.
E.g.: for the force Fx the load cases 1 to 5 and for the force Fy the load points 6 to 9. In the calculation the stress components between the load are interpolates