



> FEMCard Basic

FEMCard Basic Version: [1.3.0](#)

Release Notes

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1 Release Notes for FEMCard Basic 1.3.0

The current release is **FEMCard Basic** Version 1.3.0 (with femcard.dll Version 1.4.5). Since **FEMCard Basic** Version 1.2.0 (with femcard.dll Version 1.4.4) the following program functions and manuals have been expanded or updated:

General improvements in FEMCard Basic (GUI, numerics und manuals)

1. Hill- (Visco-) Plasticity at small and large strains (,Small/Large strain Hill (Visco-) plasticity'):
 - a. The elastic part of the deformation can now be simulated with either isotropic or orthotropic (resp. transversely isotropic) elasticity.

2 Previous Release Notes for FEMCard Basic

2.1 Release Notes for FEMCard Basic 1.2.0

Release: **FEMCard Basic** Version 1.2.0 (with femcard.dll Version 1.4.4). Since **FEMCard Basic** Version 1.1.1 (with femcard.dll Version 1.4.3) the following program functions and manuals have been expanded or updated:

General improvements in FEMCard Basic (GUI, numerics und manuals)

1. Viscoelasticity at large strains (,LARGE strain OGDEN VISCOELASTICITY'):
 - a. A material model with linear evolution equation has been implemented in FEMCard Basic, which now replaces the previous material model with nonlinear evolution equation.
 - b. Concerning this matter, this change resolves previous restrictions in the compatibility between the large strain viscoelastic model in FEMCard Basic and the Finite Element softwares specified in the Theory Manual. (Please consider also the other annotations in subsection ,*Materialparametersatz in Finite-Elemente-Software*' of this material model in the Theory Manual. The English manuals for FEMCard Basic will be available in a following release.)

2. Test type 'LARGE strain | SIMPLE SHEAR':
 - a. For this test type that is available for the HILL (visco-) plasticity models, now the technical shear strain and technical shear stress are used for the measurement inputs. Typically, these measurement data are directly available for all tests under simple shear. (As a matter of course, for this test type the geometrically nonlinear theory will still be taken into account.)

FEMCard Basic numerics (femcard.dll)

1. Fixed: The parameter identification iteration will not be aborted any longer because of using other systems of units than the 'mmNS' system (see theory manual chapter 1.1).
 - a. Background: In the previous version the usage of, for example, the 'MKS' unit system with the stress in Pascal could have led to a termination of the iteration. This termination did not occur when applying the same measurement data with the stress in MPa ('mmNS' unit system; 1MPa = 10⁶Pa).

FEMCard Basic Theory Manual

1. The conversions of material parameters from FEMCard Basic to the MARC® Mentat® (2014.2.0) software are now included. (Please also take into account the further annotations in the respective sub-sections '*Materialparametersatz in Finite-Elemente-Software*' and the chapter 'Trademarks' in the FEMCard Basic Theory Manual. The English manuals for FEMCard Basic will be available in a following release.)

2.2 Release Notes for FEMCard Basic 1.1.1

Release: **FEMCard Basic** Version 1.1.1 (with femcard.dll Version 1.4.3). Since **FEMCard Basic** Version 1.0.0 (with femcard.dll Version 1.4.1) the following program functions and manuals have been expanded or updated:

FEMCard Basic GUI

1. Import of measurement data:
 - a. Note: You can insert any number of comment lines, which begin with a #. This notice has now been added to the User Manual (see below).
 - b. Solved: The case of (i) comment lines in the data file do not start with # and at the same time (ii) for this file, the data is first loaded

and then the delimiter is adjusted, will not lead to a crash of the GUI anymore.

- c. Solved: Data files for which data columns are separated only by spaces, can now be imported.
 - d. Solved: The imported data will now be read always by English standards, i.e. separator for real numbers is the point (.). A fallback to the German standard (if the computer has a regional code DE), i.e. a comma as a separator, was removed.
2. Solved: The color representation of the weighting areas will be updated after manual modification of the weighting TR.

FEMCard Basic numerics (femcard.dll)

Since femcard.dll Version 1.4.2:

1. Solved: If the measurement data is not sufficient for identifying the parameters for the compressible part of hyperelasticity or hyperviscoelasticity, a warning will be issued and a default parameter fixation will be made.
2. Solved: Test type shear is no longer eligible for 1D Mises small strain viscoplasticity.
3. Solved: Improvement of the convergence of local Newton iteration for uniaxial compressive load with Ramberg-Osgood.

Since femcard.dll Version 1.4.3:

4. Solved: For 1D Mises small strain plasticity a lack of convergence of the local Newton iteration can no longer lead to hang-up of FEMCard Basic.

FEMCard Basic Theory Manual

1. Solved: Equation for the Cowper-Symonds overstress model corrected.
Rem.: Correction of the program was not necessary!

FEMCard Basic User Manual

1. Solved: Detailed description of the import of measurement data has been added.