Easy 2020 Release Notes

November 2019
technet GmbH, Pestalozzistraße 8, 70563 Stuttgart, Germany

1   Installing

- Please note that installing Easy Release 2020 will not overwrite an older (2019, 2018, ...) existing installation of Easy. You can use Easy 2020 and an older release of Easy on the same computer.

- Easy Release 2020 requires a new password!

2   System Requirements

Operating systems:

- Windows 10 (current service pack) 64-bit
- Windows 8.1 (current service pack) 64-bit
- Windows 8 (current service pack) 64-bit
- Windows 7 (current service pack) 64-bit

Minimum Hardware:

- A graphic card with an OpenGL accelerator is strongly recommended.

3   General

- GEDViewer/BeamEditorViewer: The viewers are running without dongle. Saving and exporting do not work. In the EASY setup you can choose whether program icons should be created on the desktop or not.


- New Rhino plugin (BRep2Easy): Brep2Easy is the central command in the new Plugin provided by technet. With this command one or more surfaces or polysurfaces can be transferred into a common ein-file and into their corresponding triangle (dre) and polygon files (eck). BRep2Easy requires an Easy.R license which is automatically included in Easy.Vol.

4   EasyShell

- Help system: Support of Adobe Acrobat full version.

- Optimization of the synchronization of the project file easy.ini.

- The determination of the figure of equilibrium is now possible with a new iterative solver. The new solver is installed in the programs StatikD, VolstaD and BeamD. In the modules "Statical Analysis" and "Volume Statical Analysis" the solver can be chosen in the EasyShell.
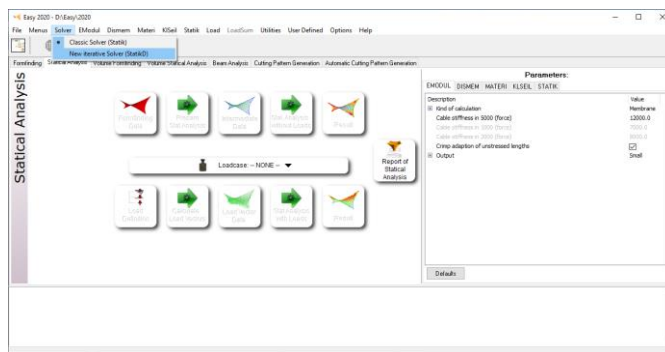
The option for the new calculation method in Easy Beam module must be set as shown:
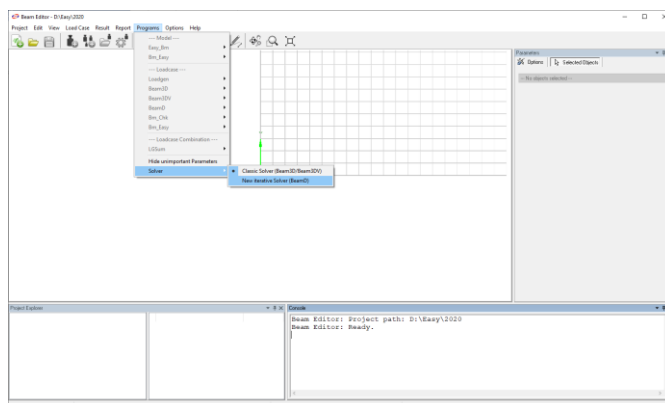
The advantages of the new iterative solver are:

Based on the approximate values, the solution is achieved in many small steps. This allows, for example, the iterative adaptation of wind loads but also the observance of conditions of equal force values in many pieces of cables (slip cables).

Only the principal diagonal elements of the stiffness matrix are used for the determination of the unknowns. Large non-linear equation systems can be solved.

Slip cables can easily modelled (see program Ged).

Very fast for chambers if the inner pressure is given.

Some calculations are only possible with classic solver for example:

- Flexibility Ellipsoids
- Redundancy values of the elements
- Eigenfrequencies and eigenvalues

4.1   Cutting pattern generation

- AutoCut: New option "Adjust start and end width". The first and last strip gets the same width.
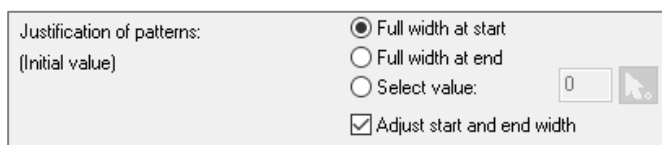
- Remesh and Flatten: "EckDrei" was removed.

- Cutting Patterns: Cut-Mode "Cut and Grow" removed.

- The program Strip shows the width of each strip after defining the geodesic lines and their orientation. In some cases, for example when the strips have a concave form, the fast width determination was different - more than 2 centimeter - from the exact value in EasyTailor. The algorithm for the fast width determination is improved by an advanced triangulation.

4.2   Statics

- Integration of new iterative solvers (StatikD/VolstaD)
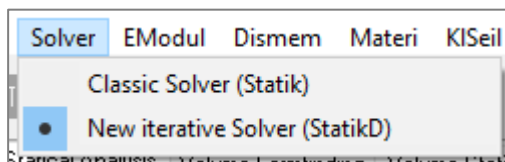
- Dialog "Configuration of User Interface" renamed to "EasyShell Settings"

- About-Box shows license number and remaining days of time limited passwords.

5   Rhino2Easy

The Rhino CAD system is widely used by users in the architecture sector and nurbs surfaces are often used in architectural modelling. It has been a customer wish to move quickly from a Rhino model to an Easy model.

BRep2Easy is the new Rhino plugin based on RhinoCommon API provided by technet.

Brep2Easy is the central command in the Plugin. With this command one or more surfaces or polysurfaces can be transferred into a common ein-file and into their corresponding Triangle- and Polygon files.

The commands are creating a discrete mechanical Easy model (ein, eck, dre) from Rhino Nurbs surfaces. The user can define

- the mesh sizes.

- the direction of the net lines.

- the distance between the boundary points.

The result is topological correct and watertight and can be used directly for the static calculation of e.g. pneumatic membrane structures (inflatable tubes, air halls).
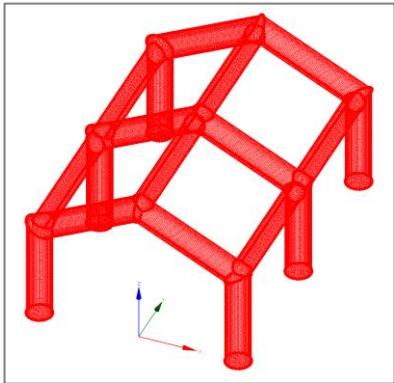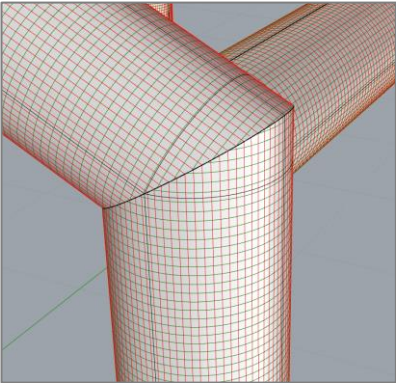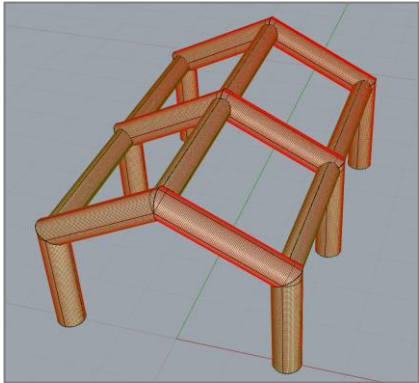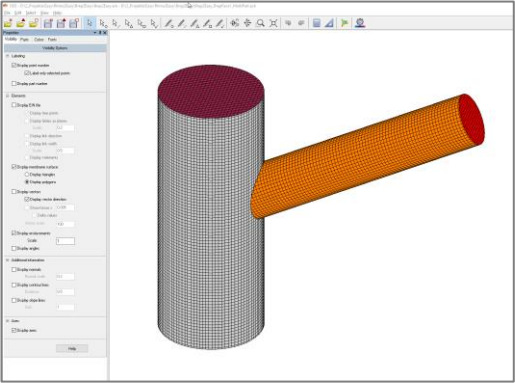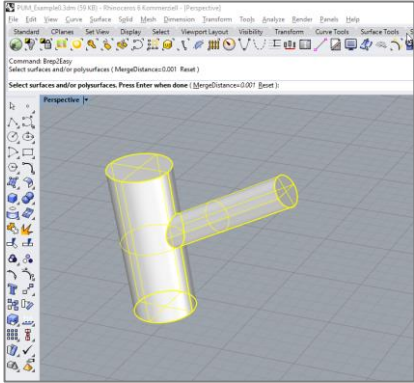
For more information please read the document Brep2Easy.pdf in the documents directory of your Easy installation.
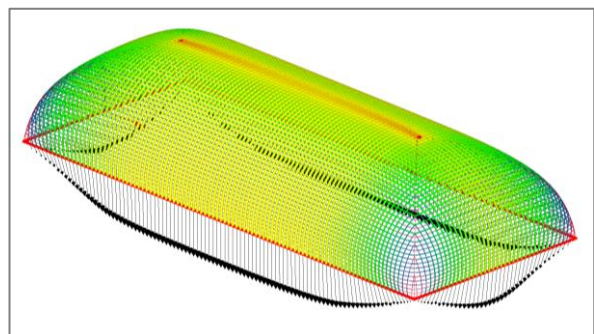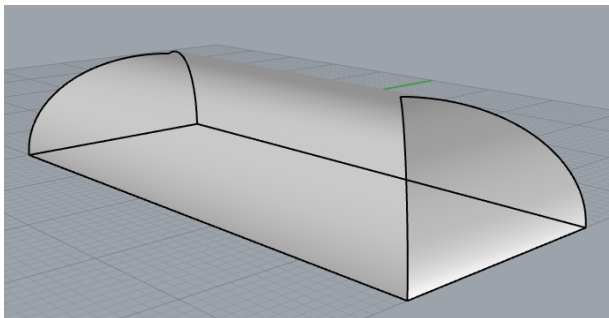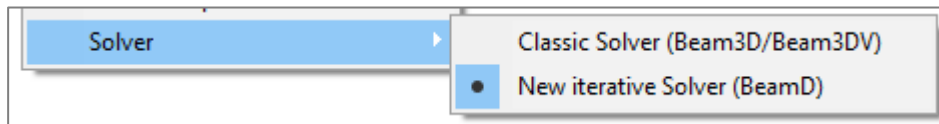
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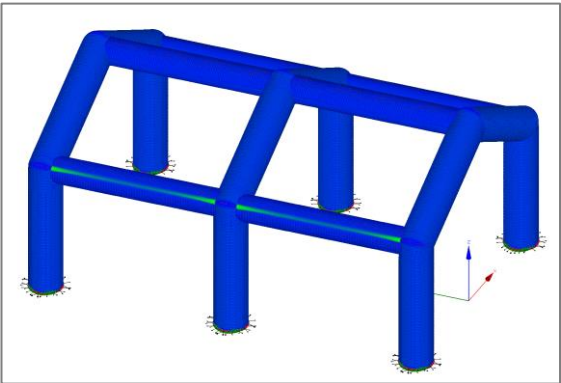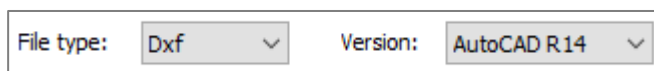
6   Beam Editor

• Integration of new iterative solver "BeamD".
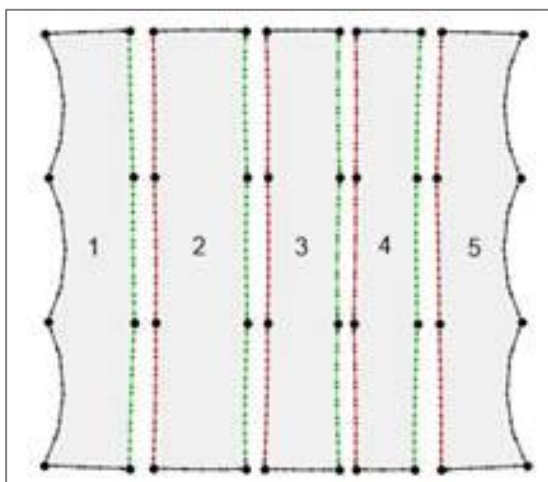

• Support for SAP200 v21.0.1.

7   Easy Tailor

• New dxf/dwg export interface. Also, dwg can be exported directly.

• Compensation/Seam Allowance: New option "Swap all successors" switches all following seams when changing the Line Type of a geodesic line.

• Cutting patterns across multiple net parts using kink points.

- Extra lines and points reorganized: Differentiation between Persistent points, Welding marks and Additional points/links:

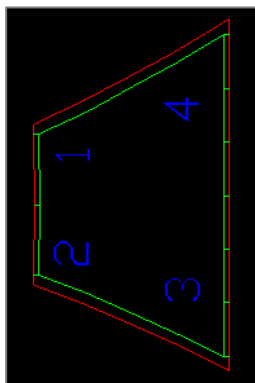- DXF export: Separate layers for Persistent points, Welding marks and Additional points/links:

- New Pattern name position: Right bottom corner

- Labeling of Corner points optionally inside the pattern
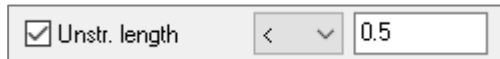

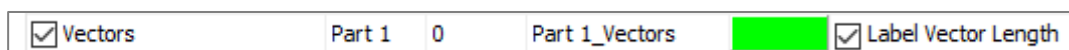- Persistent points are only in stabb.ein and no longer in stadd.ein.

8   GED

- Filter: Links can be also filtered by unstressed length.
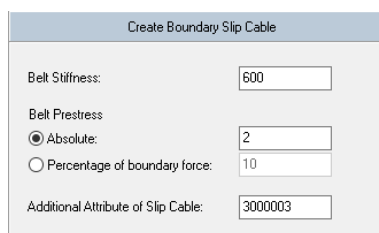
- Dwg Export: Triangles and Polygons get color of net part.

- Dwg Export: Labeling links with current length

- Dwg Export: Labeling of vectors with delta values and length

- Point properties: Copy/Paste buttons for coordinates.

- New context menu item for link: "Create Boundary Slip Cable"

- Changes the boundary cable to slip cable and creates links for a belt:

- Topology Check: New context menu item "Select all points"

- File open dialogs: Allow to select more than one file.

- Copy Point: Additional Attribute of new links changed.

9 Strip

- Open Kink lines:

- Loading and showing of files with kink edges.

- The geodesic lines get kinks at these edges:
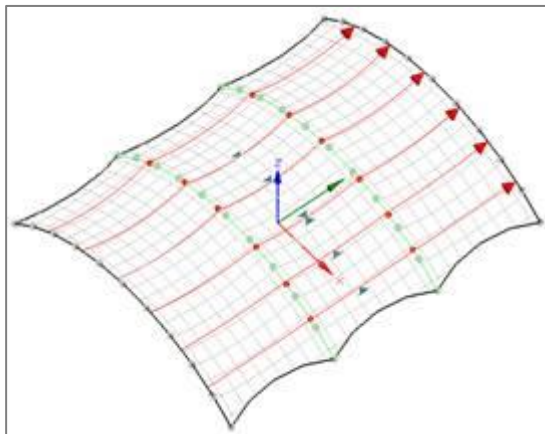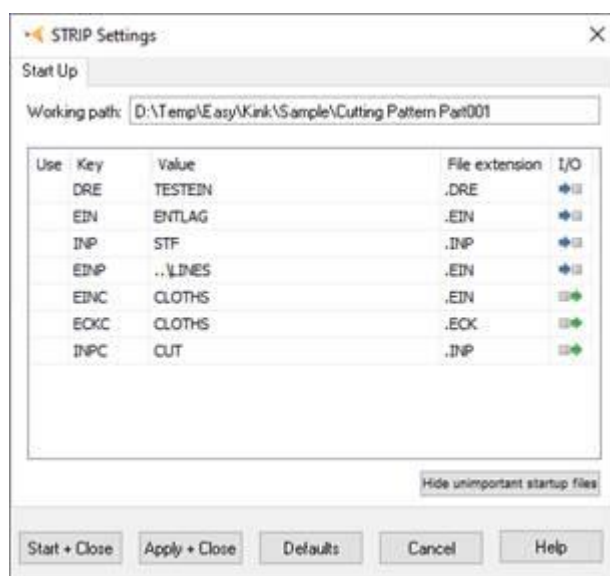

- The file name of the kink lines EIN file is stored in the Strip startup file.

- The kink lines are opened automatically at program start:

- The kink points of the geodesic lines can be fixed on the kink lines or they can slide on the lines to get the shortest distance between starting and ending point.
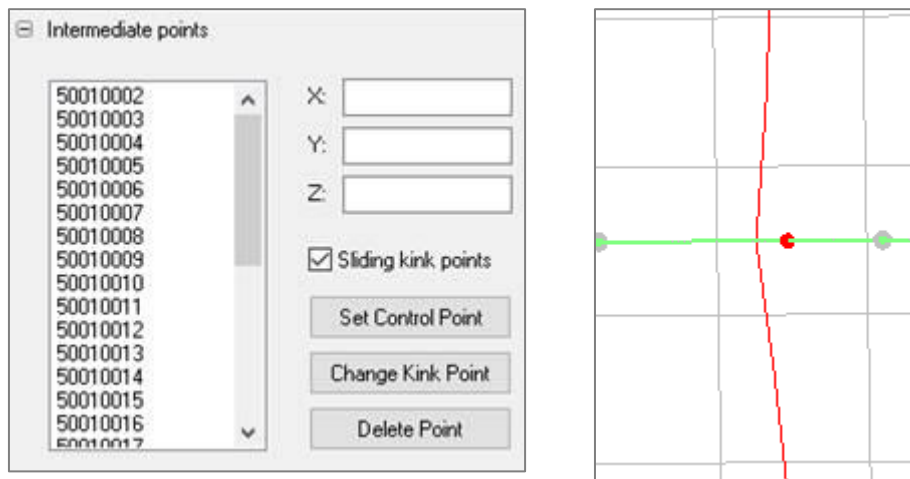
- For more information about Kink points/lines see example 16 in the Easy training manual.

- New Options "Snap to points of background/kink lines" and "Snap to links of background/kink lines"

- Kink points are also snapping to background data or kink lines.

- Switch orientation of geodesic lines also changes the order of the kink points

- New main menu item: "File/Save as/Geodesic Lines in EIN-File…" stores only the geodesic lines in an EIN file.

- These files can be used as slip cables data.

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10 FormEdit

- In FormEdit it is now possible to save user-defined default values for the properties of the model elements. It is also possible to reset elements individually or as a group to user-defined default values.
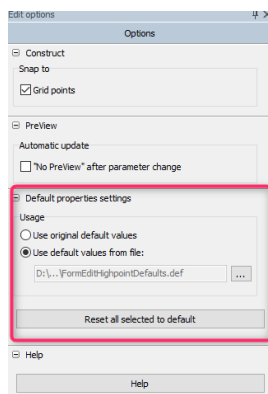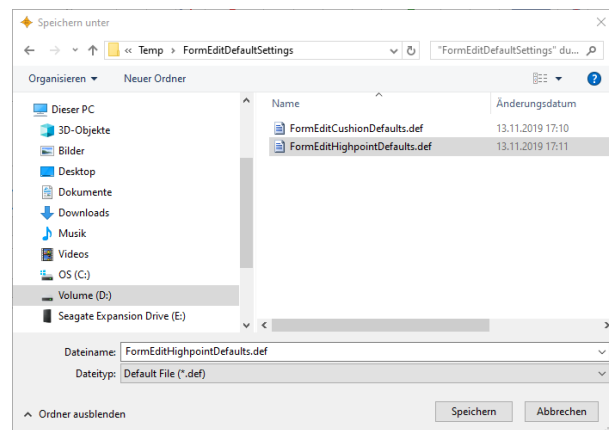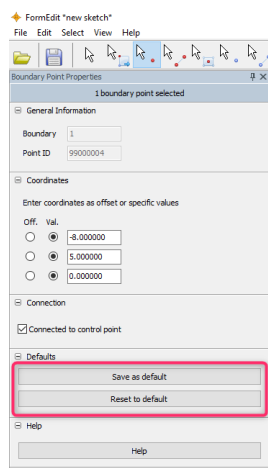
- The bug that the high points of a double cone are connected to each other has been fixed. This error only occurred when calculating using EasyShell.
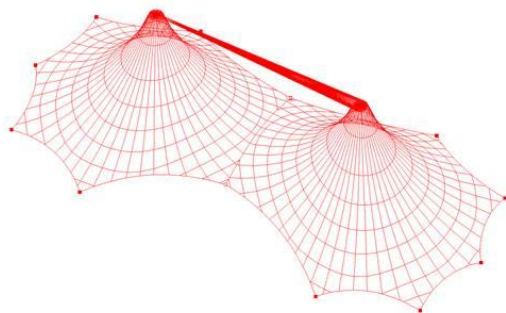
11 Report Generator RepGen

When generating the project analysis, the minimum and maximum components of the reaction forces are better prepared and displayed in the report. In addition, a file named RepGenProjectAnalysisReactionForces.las is now created when the report is generated. This file contains the absolute maximum vector components as shown in the report. The las file can be opened in GED as a vector file.

1 Project analysis

1.1 Minimum and maximum reaction forces

Project analysis

Point ID	MinRXL / Loadcase	MaxRXL / Loadcase	MinRYL / Loadcase	MaxRYL / Loadcase	MinRZL / Loadcase	MaxRZL / Loadcase	Max abs RXL / Max abs RYL / Max abs RZL / ResLength
99000001	0.370450 / 500	1.191100 / BW 1	3.448244 / PreStress	12.433970 / BW 1	1.785595 / PreStress	7.222451 / BW 1	1.191100 / 12.433970 / 7.222451 / **14.428656**
99000002	-0.330409 / 500	-0.205665 / BW 1	2.940564 / PreStress	8.253245 / BW 1	7.366300 / PreStress	17.951505 / BW 1	-0.330409 / 8.253245 / 17.951505 / **19.760611**
99000006	3.847654 / PreStress	20.227961 / BW 1	-8.165557 / BW 1	-1.278055 / PreStress	2.627008 / PreStress	8.769220 / BW 1	20.227961 / -8.165557 / 8.769220 / **23.510550**
99000007	-0.413125 / 500	0.036984 / BW 1	-11.201955 / BW 1	-2.558669 / PreStress	7.022371 / PreStress	13.413698 / BW 1	-0.413125 / -11.201955 / 13.413698 / **17.480897**
99000008	-0.065734 / BW 1	0.015422 / PreStress	2.862058 / PreStress	7.393759 / BW 1	7.418745 / PreStress	18.858914 / BW 1	-0.065734 / 7.393759 / 18.858914 / **20.256619**
99000011	-0.325010 / BW 1	-0.054927 / 500	-14.238548 / BW 1	-2.971817 / PreStress	7.169944 / PreStress	15.719031 / BW 1	-0.325010 / -14.238548 / 15.719031 / **21.211549**
	-0.026465	0.490247	-18.627465	-3.164847	6.696954	19.978176	0.490247