



module MASONRY



ANCHORS – module Masonry

General Information:

Data Input:

Model 3D:

Results:

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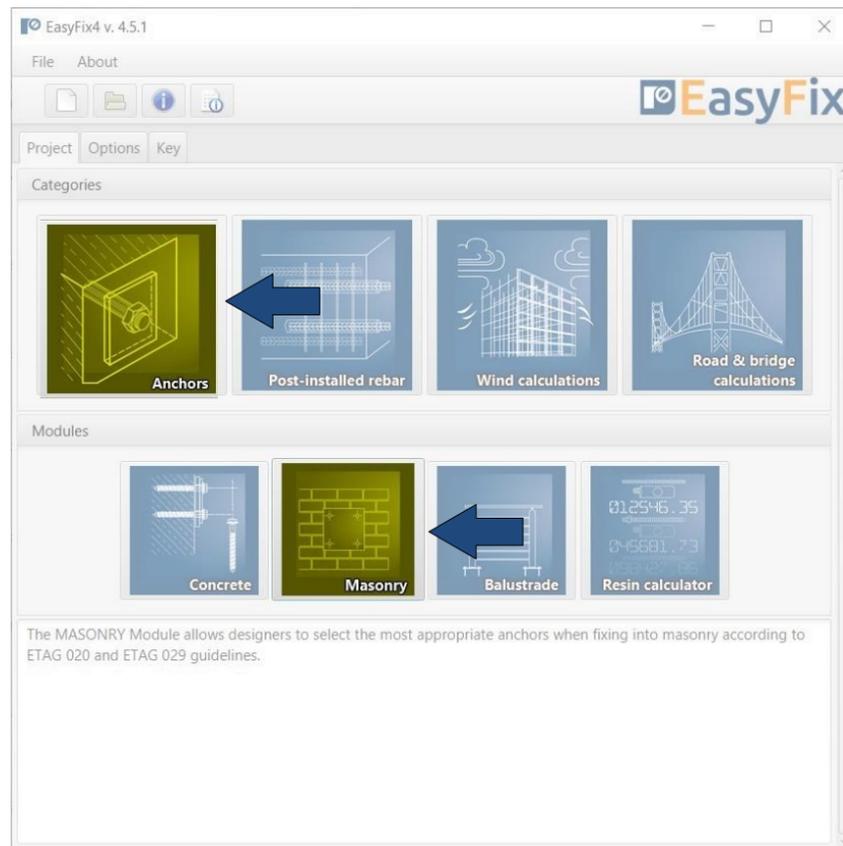


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General information

Select a category and module :



Designation of icons and symbols :



Create a new project



Open project



Save | Save as project



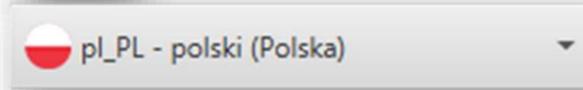
Undo | Redo changes



Generate printout to pdf file



Program information



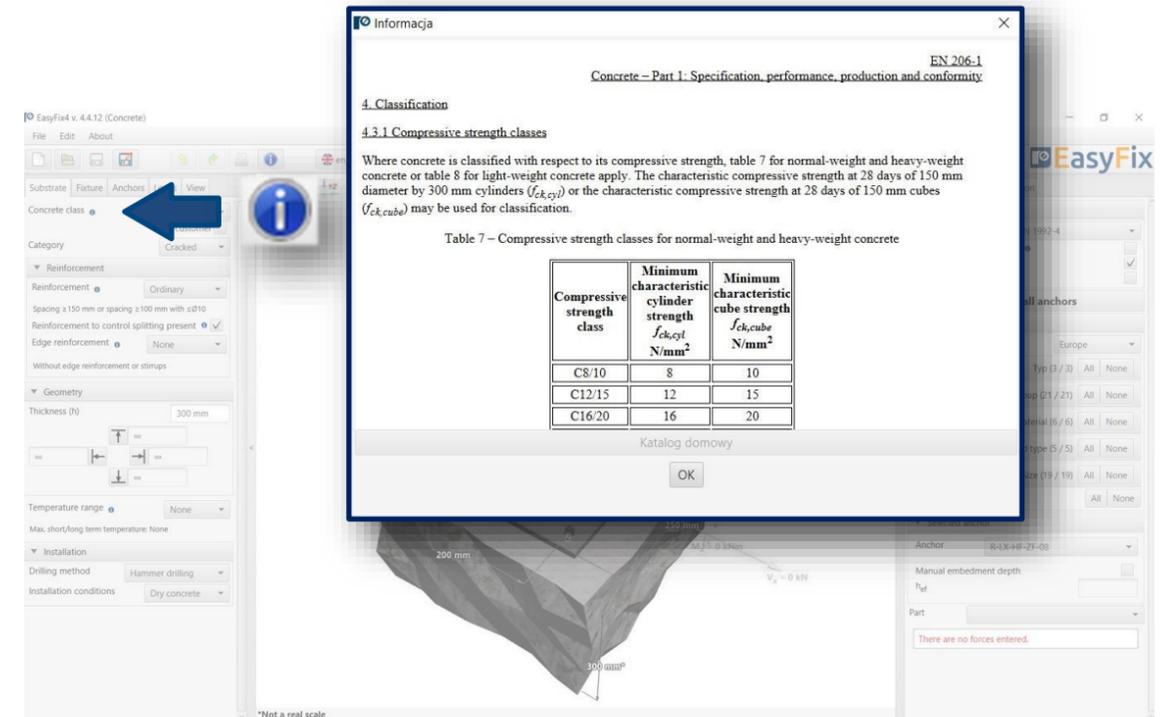
Selecting the program language



Information icon



User Manual





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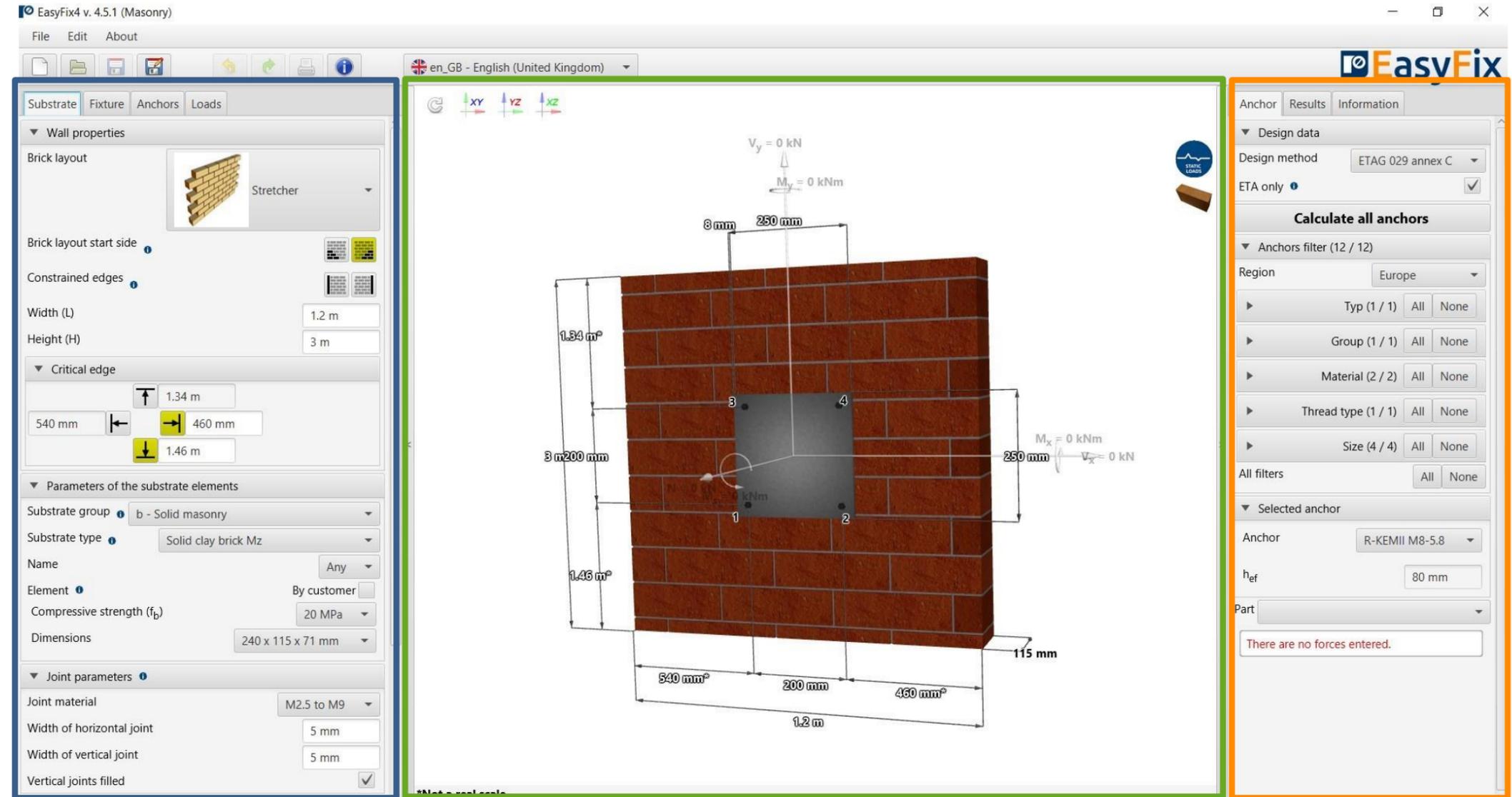
2 Introduction
Basic window of the masonry module

It is separated into three areas:
-data entry
-model view
-results with filters

Input area
Substrate
Fixture
Anchors
Loads

Model view
3D view with rotation and zoom in/out

Result area
Anchor - Filter products
Results - for a selected product
Product information





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3 Substrate tab Data input area

Wall properties

- Brick layout - pull-down list
- Brick start side - left or right
- Constrained edges
- Dimensions

Critical Edge

- distances from edges wall

Parameters of the substrate elements

- Selected from pull-down list or by customer

Joint parameters

- Class and dimensions
- Vertical joints filled or not



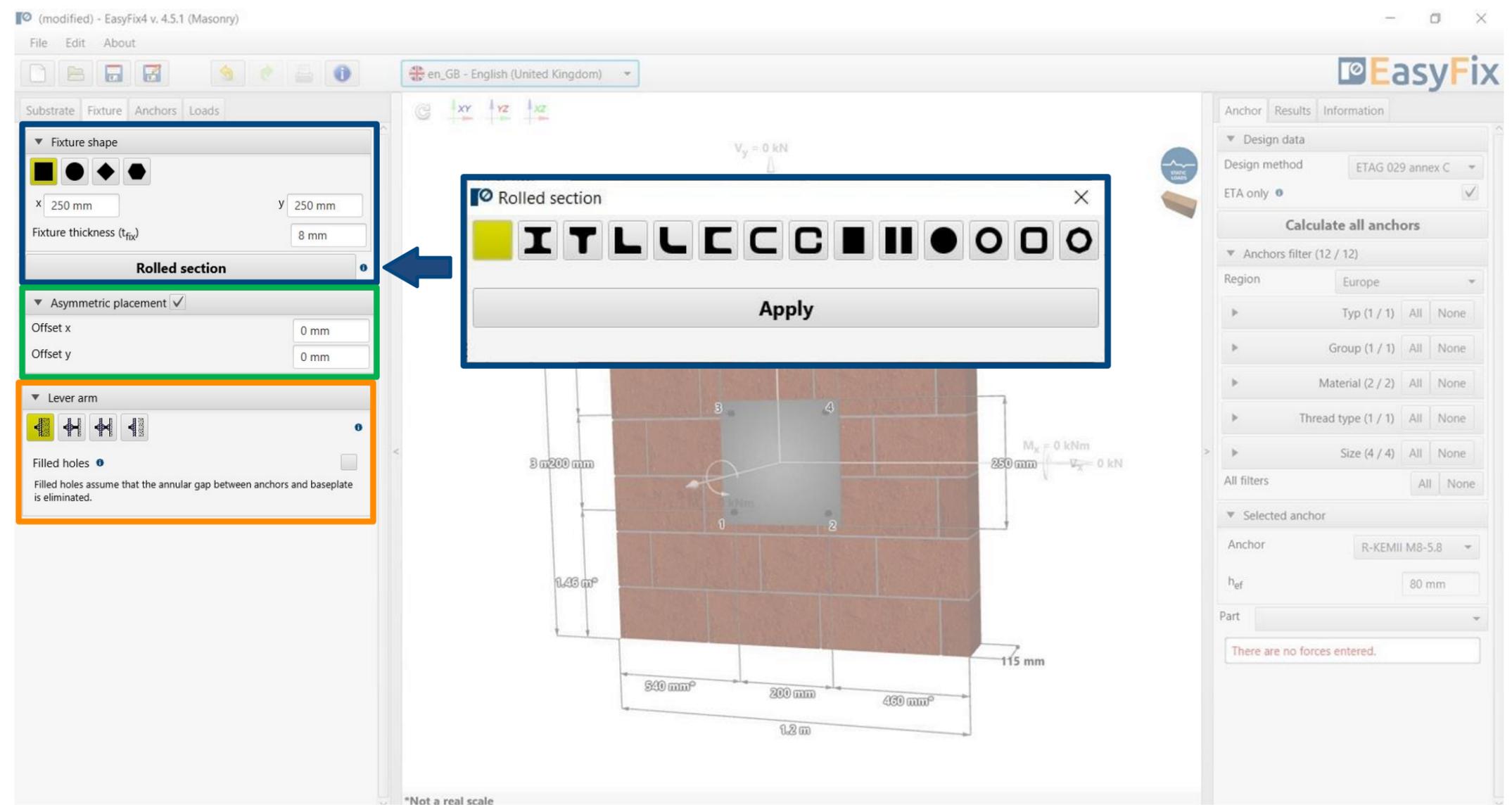
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4 Fixture tab Input area

Specify the **Material** and **Shape** of the fixture from the shape palette and the dimensions
Rolled section allows you to select the type and size of the shape.

Choosing an **asymmetrical placement** allows you to shift the force application point relative to the base's center of gravity

Selecting **Lever arm** allows you to calculate the forces on the arm due to the distance between the base plate and the ground



*Not a real scale



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5 Fixture tab Input area

Allows selection of anchor layout from pre-defined layouts.

Geometry - distances between anchors can be entered in the tab or directly on the model by clicking on the dimension line.

Declaring elongated "bean" holes changes the distribution of shear forces on the anchors

Asymmetric placement - determination of the offset of the anchor system from the centre of gravity of the base plate

*Not a real scale



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6 Loads tab Input area

The introduction of fire and seismic loads affects the filtering range of the anchors.
 The suffix SUS applies to long-term loads for screw-in anchors according to EN 1992-4

Static loads - calculated or characteristic, with user-defined safety factors.
 Load Variants - allows you to calculate load variants for a structure. It is possible to import load variants from Robot (csv, xls)

The screenshot shows the EasyFix software interface with the 'Loads' tab selected. A dropdown menu for 'Design action/Factored' is open, showing options: 'Design action/Factored' and 'Characteristic action/Unfactored'. A 'Load variants' dialog box is also open, displaying a table of load variants.

Variant	Max. Loads		N	M _x	M _y	V _x	V _y	M _s	Safety factor	Tension	Shear	Combined	Total
0		Design action/Facto	1 kN	0 kNm	0 kNm	1 kN	1 kN	0 kNm					Delete
1		Design action/Facto	1 kN	2 kNm	0 kNm	1.5 kN	0 kN	0 kNm					Delete
2		Design action/Facto	2 kN	0 kNm	0 kNm	3 kN	0 kN	0 kNm					Delete

*Not a real scale



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Model tab
Model view with data input

View - Clicking on a dimension line or force vector allows you to enter data directly into the drawing

The screenshot displays the EasyFix software interface for masonry anchor design. The central window shows a 3D model of a brick wall with a square anchor plate. The wall has a height of 1.34 m and a width of 1.2 m. The anchor plate is 200 mm x 200 mm, with a thickness of 8 mm. The wall is subjected to a vertical load $V_y = 1 \text{ kN}$ and a horizontal load $V_x = 1 \text{ kN}$. The anchor is labeled with points 1, 2, 3, and 4. The wall is supported by a substrate with a compressive stress of 0 Pa. The software interface includes a menu bar (File, Edit, About), a toolbar, and a sidebar with various tool icons. The right sidebar shows design data, including the design method (ETAG 029 annex C), the region (Europe), and the selected anchor (R-KEMII M8-5.8). The utilisation values are: Tension (20.9%), Shear (25.3%), and Combined (38.5%).

Load	Value
N	1 kN
M_x	0 kNm
M_y	0 kNm
V_x	1 kN
V_y	1 kN
M_s	0 kNm

Compressive stress on the wall: 0 Pa

Utilisation values:

- Utilisation - Tension: 20.9%
- Utilisation - Shear: 25.3%
- Combined: 38.5%

*Not a real scale



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8 Anchor tab Result area

By checking the box **ETA only** data it is possible to use test data from Rawlplug

Design data - enables selection of the calculation method and the program database.

Filters allow selection of anchors by design region, and type and material of construction

Selected anchors- makes it possible to specify the choice of anchor, to impose the depth of anchorage

Utilisation - summary results window for the selected anchor

The screenshot displays the EasyFix software interface for masonry anchor design. The central window shows a 3D model of a brick wall with four anchors (1, 2, 3, 4) and applied loads: $V_y = 1 \text{ kN}$, $M_x = 0 \text{ kNm}$, $N = 1 \text{ kN}$, and $V_x = 1 \text{ kN}$. Dimensions include a wall width of 1.2 m and height of 3 m. The left sidebar contains 'Wall properties' (Brick layout: Stretcher, Width: 1.2 m, Height: 3 m) and 'Parameters of the substrate elements' (Substrate group: b - Solid masonry, Substrate type: Solid clay brick Mz, Compressive strength: 20 MPa, Dimensions: 240 x 115 x 113 mm). The right sidebar shows 'Design data' (Design method: ETAG 029 annex C, ETA only: checked), 'Anchors filter (12 / 12)' (Region: Europe, Typ: 1/1, Group: 1/1, Material: 2/2, Thread type: 1/1, Size: 4/4), 'Selected anchor' (Anchor: R-KEMII M8-5.8, h_{ef} : 80 mm, Part: R-KEMII+R-STUDS-08110-FL), and 'Utilisation' (Utilisation - Tension: 20.9%, Utilisation - Shear: 25.3%, Combined: 38.5%).



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9 Anchor tab Result area

Calculate all anchors - calculation of all anchors for a given load

The screenshot displays the 'Calculate all anchors' dialog box in the foreground, which is a table with columns for Anchor, Typ, h_{ef}, Tension, Shear, Combined, Total, and Apply. The table lists 12 different anchor types with their respective utilization percentages. A blue arrow points from the 'Calculate all anchors' button in the dialog to the 'Calculate all anchors' button in the 'Anchor' tab of the results area on the right. The results area shows design data (Design method: ETAG 029 annex C, ETA only checked) and a table of utilization results for the selected anchor (R-KEMII M8-5.8).

Anchor	Typ	h _{ef}	Tension	Shear	Combined	Total	Apply
R-KEMII M8-5.8	Bonded	80 mm	20.9%	25.3%	38.5%	38.5%	<input checked="" type="checkbox"/>
R-KEMII M10-5.8	Bonded	85 mm	17.9%	17.7%	29.7%	29.7%	<input type="checkbox"/>
R-KEMII M12-5.8	Bonded	95 mm	17.9%	12.7%	25.5%	25.5%	<input type="checkbox"/>
R-KEMII M16-5.8	Bonded	105 mm	17.9%	12.7%	25.5%	25.5%	<input type="checkbox"/>
R-KEMII M8-8.8	Bonded	80 mm	20.9%	25.3%	38.5%	38.5%	<input type="checkbox"/>
R-KEMII M8-A4	Bonded	80 mm	20.9%	25.3%	38.5%	38.5%	<input type="checkbox"/>
R-KEMII M10-8.8	Bonded	85 mm	17.9%	17.7%	29.7%	29.7%	<input type="checkbox"/>
R-KEMII M10-A4	Bonded	85 mm	17.9%	17.7%	29.7%	29.7%	<input type="checkbox"/>
R-KEMII M12-8.8	Bonded	95 mm	17.9%	12.7%	25.5%	25.5%	<input type="checkbox"/>
R-KEMII M12-A4	Bonded	95 mm	17.9%	12.7%	25.5%	25.5%	<input type="checkbox"/>
R-KEMII M16-8.8	Bonded	105 mm	17.9%	12.7%	25.5%	25.5%	<input type="checkbox"/>
R-KEMII M16-A4	Bonded	105 mm	17.9%	12.7%	25.5%	25.5%	<input type="checkbox"/>

Utilisation	Value
Utilisation - Tension	20.9%
Utilisation - Shear	25.3%
Combined	38.5%



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10 Anchor tab Result area

Resulting forces in anchors - gives values for pull-out and shear forces acting on individual anchors

Tensile loads - percentage strain of the anchor system from tensile forces in individual failure images

Shear loads - percentage stress of the anchor system from shear forces in individual failure images

Combined action - shear and tensile interaction

The screenshot shows the EasyFix software interface for masonry design. The central view displays a 3D model of a brick wall with four anchors (1, 2, 3, 4) embedded. A vertical load $V_y = 1 \text{ kN}$ is applied at the top, and a horizontal load $V_x = 1 \text{ kN}$ is applied at the bottom right. The wall dimensions are 1.2 m width and 3 m height. The anchors are spaced 250 mm apart horizontally and 200 mm vertically. The wall properties are set to 'Stretcher' brick layout, 1.2 m width, and 3 m height. The substrate is 'Solid clay brick Mz' with a compressive strength of 20 MPa. The joint material is 'M2.5 to M9' with a width of 5 mm. The results panel on the right shows the following data:

Resulting anchor forces			
No.	V_x	V_y	N
1	250 N	250 N	250 N
2	250 N	250 N	250 N
3	250 N	250 N	250 N
4	250 N	250 N	250 N

Tensile load	
β_{N1}	2.1%
β_{N2}	10.5%
β_{N3}	20.9%
β_{N4}	15.4%

Shear load	
β_{V1}	5%
β_{V2}	ND
β_{V3}	25.3%
β_{V4}	ND
β_{V5}	ND

Combined - Tension/Shear	
Combined	38.5%



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11 Anchor tab Information area

Installation data - installation parameters for the designed anchor

Links to:
 Technical Library
 BIM Library
 RTH Technical Help

The screenshot displays the EasyFix software interface for the Masonry module. The central 3D model shows a brick wall with a square anchor embedded in it. The anchor is labeled with points 1, 2, 3, and 4. Applied forces are shown: a vertical force $V_y = 1 \text{ kN}$, a horizontal force $N = 1 \text{ kN}$, and a moment $M_x = 0 \text{ kNm}$. Dimensions for the wall and anchor are provided, such as a wall width of 1.2 m and an anchor hole diameter of 10 mm.

On the left, the 'Wall properties' panel includes settings for brick layout (Stretcher), width (1.2 m), height (3 m), and critical edge dimensions (1.34 m, 540 mm, 460 mm, 1.46 m). The 'Parameters of the substrate elements' panel shows 'Solid clay brick Mz' with a compressive strength of 20 MPa and dimensions of 240 x 115 x 113 mm. The 'Joint parameters' panel shows M2.5 to M9 joint material with 5 mm horizontal and vertical joint widths.

On the right, the 'Information' tab is active, displaying 'Installation data' for part R-KEMII+R-STUDS-08110-FL. The data includes:

Thread diameter (d)	8 mm
Hole diameter in substrate (d_0)	10 mm
Min. hole depth in substrate (h_0)	85 mm
Nominal depth (h_{nom})	80 mm
Calculated min. substrate thickness (h_{min})	115 mm
Installation torque (T_{inst})	5 Nm
Anchor length (L)	110 mm
Fixture thickness (t_{fix})	8 mm
Hole diameter in fixture (d_f)	9 mm
Amount of resin per one mount (normal loss)	5 ml

Below the table, technical data is listed as ETA-12/0528, and there is a 'Show photo' button. At the bottom of the right panel, there are links to 'Technical Library', 'BIM', and 'Technical questions'.



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Generation of Printout

Print option - enables generation of a calculation report in pdf extension.

