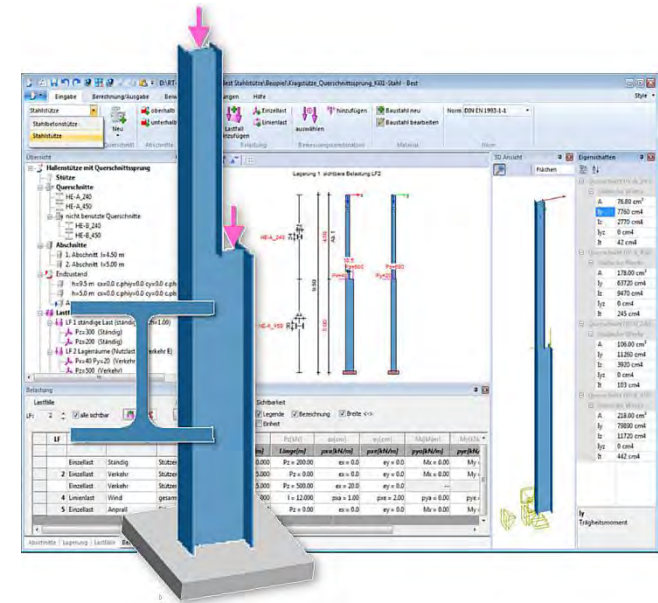


- Verification according to DIN and EN with national annexes for DE, AT, SK/CZ & UK
- Modelling of multi-storey columns with different stepped cross-sections
- Use of welded and rolled profiles for I-shape cross-sections as well as rectangular hollow or tube cross-sections
- Determination of the pre-deformation affine to the buckling shape per load combination
- Option to set language and program configuration
- Stability analysis for flexural buckling and lateral torsional buckling
- EE and EP verification for biaxial bending with normal load
- Simple and clear result evaluation using preview function with additional configuration and filter options
- Calculation according to the linear and nonlinear theories, considering imperfections



BEST steel column – Fast solution for demanding engineering tasks

Table of properties

Graphic-interactive work environment

Structural steel

Different structural steel cross-sections

Reinforced concrete

Structural steel

New

Section from database

Freely defined I-section

Rectangular hollow section

Tubular section

LCC	Type	Origin/Leading action	Name	LC 1
1(u)	Deformation SLS	User-defined	Verformung	1.00
2(G)	Basic comb.	no leading action	ständige Last	1.35
3(G)	Basic comb.	Storage rooms (Live load E)	..	1.35
4(G)	Basic comb.	Storage rooms (Live load E)	..	1.35
5(G)	Basic comb.	Storage rooms (Live load E)	..	1.35
6(G)	Basic comb.	Snow	..	1.35

BEST Steel Column – Load Types and Support Conditions

Loading

Load cases: LC: 5, All visible

LC	Type	Name	Related to	a [m]	Pz [kN]	ex [cm]	ey [cm]	My [kNm]	Px [kN]	Py [kN]
				z-Origin [m]	Length [m]	pxa [kN/m]	pxe [kN/m]	pya [kN/m]	pze [kN/m]	pze [kN/m]
1	Single load	Traffic	Column head	a = 0.000	Pz = 200.00	ex = 0.0	ey = 0.0	My = 0.00	Px = 0.00	Py = 0.00
	Single load		Column base	a = 5.000	Pz = 300.00	ex = 15.0	ey = 0.0	--	Px = 0.00	Py = 0.00
2	Single load	Traffic	1. Segment, bottom	a = 0.000	Pz = 500.00	ex = 15.0	ey = 0.0	--	--	--
3	Line load		Entire column	za = 0.000	l = 0.000	pxa = 2.00	pxe = 2.00	--	--	--
4	Single load		Column head	a = 0.000	Pz = 80.00	ex = 0.0	ey = 0.0	--	--	--
5	Single load		Column base	a = 1.500	Pz = 0.00	ex = 0.0	ey = 0.0	--	--	--

Supports in both directions or only one direction (optionally with spring constants)

Load Cases Information

Load Combinations

Design combinations

LCC	Type	Origin/Leading action	Name	LC 1	LC 2	LC 3	LC 4
1(u)	Deformation SLS	User-defined	Verformung	1.00	1.00*0.80=0.80	1.00*0.20=0.20	1.00*0.00=0.00
2(G)	Basic comb.	no leading action	ständige Last	1.35			
3(G)	Basic comb.	Storage rooms (Live load E)		1.35	1.50		1.50*0.50=0.75
4(G)	Basic comb.	Storage rooms (Live load E)		1.35	1.50	1.50*0.60=0.90	1.50*0.50=0.75
5(G)	Basic comb.	Storage rooms (Live load E)		1.35	1.50	1.50*0.60=0.90	
6(G)	Basic comb.	Snow		1.35	1.50*1.00=1.50		1.50

Elastic support (z=0.00)

Beam restraint, x | Beam restraint, y | Foundation restraint | Spring constant, x | Spring constant, y

Elastic restraint by beam

C-phi = 40320 kNm | c = 756000 kN/m

Material concrete: C25/30 | Young's modulus beam: 31500 MN/m²

Dimensions of beam:

l1	10.000 m	l2	10.000 m
b1	0.300 m	b2	0.300 m
h1	0.400 m	h2	0.400 m

hinged | rigid | hinged | rigid

Calculation of the spring constants:

Factor for torsion spring c.phi: 1.00

Factor for axial force spring c: 1.00

OK | Cancel | Apply

BEST Steel column – Load transfer to FUNDA

Quick calculation of the foundations by direct import of the column loads in the program FUNDA

Column load import

C:\Users\Public\Documents\RIB\RIBTEC\Demo\RIBtec\Best\Stahlbet bif File...

- Column load**
 - LC 2 Basic combination**
 - gamma-fold Th.2.Order 1646.62 kN
 - 1.00-fold Th.2.Order 1157.50 kN
 - LC 3 Basic combination**
 - gamma-fold Th.2.Order 1736.62 kN
 - 1.00-fold Th.2.Order 1217.50 kN
 - LC 4 Basic combination**
 - gamma-fold Th.2.Order 1646.62 kN
 - 1.00-fold Th.2.Order 1157.50 kN
 - LC 5 Accidental combination**
 - gamma-fold Th.2.Order 1021.50 kN
 - 1.00-fold Th.2.Order 1021.50 kN
 - LC 6 Accidental combination**
 - gamma-fold Th.2.Order 997.50 kN
 - 1.00-fold Th.2.Order 997.50 kN

Ok Close

Loads

LC	Type	Name	Pz[kN]	Mx[kNm]	My[kNm]	Hx[kN]	Hy[kN]	dMxII[kNm]	dMyII[kNm]	dHxII[kN]	dHyII[kN]	dPzII[kN]
1	Column load		257.00	0.00	-96.00	0.00	0.00	0.00	-48.00	0.00	0.00	0.00
2	Column load		573.00	0.00	-180.00	20.00	0.00	0.00	-106.00	0.00	0.00	0.00
3	Column load		0.00	0.00	-90.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00

BEST Steel column – Configurable result output

The screenshot displays the RIB Software SE interface for configuring a report. The main window shows a table of contents on the left with checkboxes for various report sections. A central window displays a preview of the report content, including project information, system information with a diagram, and column geometry with a table. A 'Style sheet configurations' window is open, showing header and footer preview options. A 'Header editing' window is also open, showing a text editor for the header content. A callout bubble points to the 'Office specific results' section in the header editing window.

Table of Contents (Left Panel):

- BEST
 - Project information
 - System information
 - System graph
 - Standard
 - Column geometry
 - Material
 - Support
 - Loading
 - Load cases
 - Load case combinations
 - Results
 - Ultimate limit state
 - Serviceability limit state
 - Support forces
 - Foundation loads
 - Summary
 - Analysis summary
 - Material consumption

Project Information (Main Preview):

Contract	Stahlbau
Description	Kragstütze mit Querschnittsprung
Position	Beispiel 1
Structural member	Stütze in Achse A12

System Information (Main Preview):

Column Geometry (Main Preview):

Typ	h	t _w	b _f	t _f	b _w	t _w	A [cm ²]	I _y [cm ⁴]
wp	300	12	300	19	200	19	169.0	25170
wp	450	14	300	26	200	26	218.0	79890

Header Editing (Callout):

Office specific results

RIB Software SE Vaihinger Straße 151 70567 Stuttgart
Software for Structural Engineers CAD-FEM-Structural Member Design RIB
Hotline: 0711 7873 41 statik-hotline@rib-software.com running together
Auftrag: %ProjectKey% Position: Bauteil: %ProjectMember%

The report can be easily configured using the markers in the table of contents

BEST Steel column – Clear and verifiable list of results

RIB Software SE | Vaihinger Straße 151 | 70567 Stuttgart
 Software for Structural Engineers | CAD-FEM-Structural Member Design
 Hotline: 0711 7873 41 | statik-hotline@rib-software.com

Auftrag: Stahlbau | Position: Beispiel 1 | Bauteil: Stütze in Achse

Deformations in the SLS

$v_{x,rel.}, v_{y,rel.}$ Displacement in global direction x / y from pre-deformation
 $v_{x,1st}, v_{x,2nd}, v_{y,1st}, v_{y,2nd}$ Displacements in global direction x / y / z acc. to 1st or 2nd order theory (including pre-deformation)

Deformations in the ULS for LCC 7

LCC	Height [m]	Pre-deformation			1st order theory		2nd order theory		$\phi_{y,z}$ [rad/100]
		$v_{x,rel}$ [mm]	$v_{y,rel}$ [mm]	$\phi_{y,z}$ [rad/100]	$v_{x,1}$ [mm]	$v_{y,1}$ [mm]	$v_{x,2}$ [mm]	$v_{y,2}$ [mm]	
7	9.30	32.0	0.0	0.0	59.1	0.0	109.5	0.0	2.99
7	9.05	29.4	0.0	0.0	55.6	0.0	101.9	0.0	1.87
7	8.80	26.8	0.0	0.0	52.0	0.0	94.2	0.0	1.71
7	8.55	24.2	0.0	0.0	48.4	0.0	86.4	0.0	1.54
7	8.30	21.6	0.0	0.0	44.8	0.0	78.7	0.0	1.37
7	8.05	19.0	0.0	0.0	41.2	0.0	71.0	0.0	1.20
7	7.80	16.4	0.0	0.0	37.6	0.0	63.3	0.0	1.03
7	7.55	13.8	0.0	0.0	34.0	0.0	55.6	0.0	0.86
7	7.30	11.2	0.0	0.0	30.4	0.0	47.9	0.0	0.69
7	7.05	8.6	0.0	0.0	26.8	0.0	40.2	0.0	0.52
7	6.80	6.0	0.0	0.0	23.2	0.0	32.5	0.0	0.35
7	6.55	3.4	0.0	0.0	19.6	0.0	24.8	0.0	0.18
7	6.30	0.8	0.0	0.0	16.0	0.0	17.1	0.0	0.01
7	6.05	-1.8	0.0	0.0	12.4	0.0	9.4	0.0	-0.16
7	5.80	-4.4	0.0	0.0	8.8	0.0	1.7	0.0	-0.33
7	5.55	-7.0	0.0	0.0	5.2	0.0	-10.0	0.0	-0.50
7	5.30	-9.6	0.0	0.0	1.6	0.0	-18.3	0.0	-0.67
7	5.05	-12.2	0.0	0.0	-2.0	0.0	-26.6	0.0	-0.84
7	4.80	-14.8	0.0	0.0	-5.6	0.0	-34.9	0.0	-1.01
7	4.55	-17.4	0.0	0.0	-9.2	0.0	-43.2	0.0	-1.18
7	4.30	-19.9	0.0	0.0	-12.8	0.0	-51.5	0.0	-1.35
7	4.05	-22.5	0.0	0.0	-16.4	0.0	-59.8	0.0	-1.52
7	3.80	-25.1	0.0	0.0	-20.0	0.0	-68.1	0.0	-1.69
7	3.55	-27.7	0.0	0.0	-23.6	0.0	-76.4	0.0	-1.86
7	3.30	-30.3	0.0	0.0	-27.2	0.0	-84.7	0.0	-2.03
7	3.05	-32.9	0.0	0.0	-30.8	0.0	-93.0	0.0	-2.20
7	2.80	-35.5	0.0	0.0	-34.4	0.0	-101.3	0.0	-2.37
7	2.55	-38.1	0.0	0.0	-38.0	0.0	-109.6	0.0	-2.54
7	2.30	-40.7	0.0	0.0	-41.6	0.0	-117.9	0.0	-2.71
7	2.05	-43.3	0.0	0.0	-45.2	0.0	-126.2	0.0	-2.88
7	1.80	-45.9	0.0	0.0	-48.8	0.0	-134.5	0.0	-3.05
7	1.55	-48.5	0.0	0.0	-52.4	0.0	-142.8	0.0	-3.22
7	1.30	-51.1	0.0	0.0	-56.0	0.0	-151.1	0.0	-3.39
7	1.05	-53.7	0.0	0.0	-59.6	0.0	-159.4	0.0	-3.56
7	0.80	-56.3	0.0	0.0	-63.2	0.0	-167.7	0.0	-3.73
7	0.55	-58.9	0.0	0.0	-66.8	0.0	-176.0	0.0	-3.90
7	0.30	-61.5	0.0	0.0	-70.4	0.0	-184.3	0.0	-4.07
7	0.05	-64.1	0.0	0.0	-74.0	0.0	-192.6	0.0	-4.24

Deformations in the ULS for LCC 7

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Clear and comprehensible output of results

Deformations, internal forces and stresses (SLS)

RIB Software SE | Vaihinger Straße 151 | 70567 Stuttgart
 Software for Structural Engineers | CAD-FEM-Structural Member Design
 Hotline: 0711 7873 41 | statik-hotline@rib-software.com

Auftrag: Stahlbau | Position: Beispiel 1 | Bauteil: Stütze in Achse

RIB Software SE | BEST V18.0 Build-No. 24072018 | Type: Steel column
 File: Kragstütze-Querschnittsprung.KZ.Besx

Project information

Contract	Stahlbau
Description	Kragstütze mit Querschnittsprung
Position	Beispiel 1
Structural member	Stütze in Achse A/12

System information

DIN EN 1993-1-1
 vor: xz-plane
 ances: elastic - elastic / plastic

Geometry

h	Section height	L _w	Web thickness							
br	Flange width, top/bottom	Type WP	Rolled section from the section database							
t _f	Flange thickness, top/bottom	Type SP	Section, welded							
All cross-section dimensions in [mm]										
Section	Typ	Height	Web	Top flange	Bottom flange	Resistance				
HE-B_300	wP	300	11	300	19	A [cm ²]	I _y [cm ⁴]	I _z [cm ⁴]	I _t [cm ⁴]	
HE-B_450	wP	450	14	300	26	218.0	79890	11720	442	

$e_{x,y}$ Eccentricity of the section relative to the section below

Rotation
 0°: y - Cross-section axis is in the global y - axis
 90°: y - Cross-section axis is in the global x - axis

Section	Section	Length [m]	e_x [mm]	e_y [mm]	Rotation [°]
1	HE-B_300	4.50	7.5	0.0	0
2	HE-B_450	5.00	0.0	0.0	0

Material

Structural	f_y [N/mm ²]	E-Modulus	γ_{pl}	γ_{pl}	Unit
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 Software for Structural Engineers | CAD-FEM-Structural Member Design
 Hotline: 0711 7873 41 | statik-hotline@rib-software.com

Auftrag: Stahlbau | Position: Beispiel 1 | Bauteil: Stütze in Achse

RIB Software SE | BEST V18.0 Build-No. 24072018 | Type: Steel column
 File: Kragstütze-Querschnittsprung.KZ.Besx

Stress resultants and stresses (EE) for LCC 7 (2nd order theory)

LCC 7 Analyses EE (2nd order theory)

LCC	Height [m]	Qu	N [kN]	M _y [kNm]	M _z [kNm]	V _y [kN]	V _z [kN]	$\sigma_{x,Ed}$ [N/mm ²]	$\sigma_{y,Ed}$ [N/mm ²]	$\sigma_{z,Ed}$ [N/mm ²]	IAB
10	9.30	1	-129.9	0.0	0.0	0.0	0.0	-22.1	2.0	22.1	0.10
10	9.05	1	-330.6	0.0	0.0	0.0	0.0	-22.1	2.0	22.1	0.11
10	8.80	1	-631.3	0.0	0.0	0.0	0.0	-24.0	2.0	24.0	0.12
10	8.55	1	-932.0	10.0	-10.0	0.0	0.0	-26.2	2.0	26.2	0.13
10	8.30	1	-1232.7	20.0	-20.0	0.0	0.0	-28.4	2.0	28.4	0.14
10	8.05	1	-1533.4	30.0	-30.0	0.0	0.0	-30.6	2.0	30.6	0.15
10	7.80	1	-1834.1	40.0	-40.0	0.0	0.0	-32.8	2.0	32.8	0.16
10	7.55	1	-2134.8	50.0	-50.0	0.0	0.0	-35.0	2.0	35.0	0.17
10	7.30	1	-2435.5	60.0	-60.0	0.0	0.0	-37.2	2.0	37.2	0.18
10	7.05	1	-2736.2	70.0	-70.0	0.0	0.0	-39.4	2.0	39.4	0.19
10	6.80	1	-3036.9	80.0	-80.0	0.0	0.0	-41.6	2.0	41.6	0.20
10	6.55	1	-3337.6	90.0	-90.0	0.0	0.0	-43.8	2.0	43.8	0.21
10	6.30	1	-3638.3	100.0	-100.0	0.0	0.0	-46.0	2.0	46.0	0.22
10	6.05	1	-3939.0	110.0	-110.0	0.0	0.0	-48.2	2.0	48.2	0.23
10	5.80	1	-4239.7	120.0	-120.0	0.0	0.0	-50.4	2.0	50.4	0.24
10	5.55	1	-4540.4	130.0	-130.0	0.0	0.0	-52.6	2.0	52.6	0.25
10	5.30	1	-4841.1	140.0	-140.0	0.0	0.0	-54.8	2.0	54.8	0.26
10	5.05	1	-5141.8	150.0	-150.0	0.0	0.0	-57.0	2.0	57.0	0.27
10	4.80	1	-5442.5	160.0	-160.0	0.0	0.0	-59.2	2.0	59.2	0.28
10	4.55	1	-5743.2	170.0	-170.0	0.0	0.0	-61.4	2.0	61.4	0.29
10	4.30	1	-6043.9	180.0	-180.0	0.0	0.0	-63.6	2.0	63.6	0.30
10	4.05	1	-6344.6	190.0	-190.0	0.0	0.0	-65.8	2.0	65.8	0.31
10	3.80	1	-6645.3	200.0	-200.0	0.0	0.0	-68.0	2.0	68.0	0.32
10	3.55	1	-6946.0	210.0	-210.0	0.0	0.0	-70.2	2.0	70.2	0.33
10	3.30	1	-7246.7	220.0	-220.0	0.0	0.0	-72.4	2.0	72.4	0.34
10	3.05	1	-7547.4	230.0	-230.0	0.0	0.0	-74.6	2.0	74.6	0.35
10	2.80	1	-7848.1	240.0	-240.0	0.0	0.0	-76.8	2.0	76.8	0.36
10	2.55	1	-8148.8	250.0	-250.0	0.0	0.0	-79.0	2.0	79.0	0.37
10	2.30	1	-8449.5	260.0	-260.0	0.0	0.0	-81.2	2.0	81.2	0.38
10	2.05	1	-8750.2	270.0	-270.0	0.0	0.0	-83.4	2.0	83.4	0.39
10	1.80	1	-9050.9	280.0	-280.0	0.0	0.0	-85.6	2.0	85.6	0.40
10	1.55	1	-9351.6	290.0	-290.0	0.0	0.0	-87.8	2.0	87.8	0.41
10	1.30	1	-9652.3	300.0	-300.0	0.0	0.0	-90.0	2.0	90.0	0.42
10	1.05	1	-9953.0	310.0	-310.0	0.0	0.0	-92.2	2.0	92.2	0.43
10	0.80	1	-10253.7	320.0	-320.0	0.0	0.0	-94.4	2.0	94.4	0.44
10	0.55	1	-10554.4	330.0	-330.0	0.0	0.0	-96.6	2.0	96.6	0.45
10	0.30	1	-10855.1	340.0	-340.0	0.0	0.0	-98.8	2.0	98.8	0.46
10	0.05	1	-11155.8	350.0	-350.0	0.0	0.0	-101.0	2.0	101.0	0.47

Stress resultants and stresses (EE) for LCC 10 (2nd order theory)

Seite: 9/13

Stress resultants 2nd Order Theory