

RTec consists of various components of the statics software from RIB

RTOOL: Reinforced concrete, steel and wood dimensioning according to DIN and EN with corresponding NAs for DE, AT, SK/CZ and UK

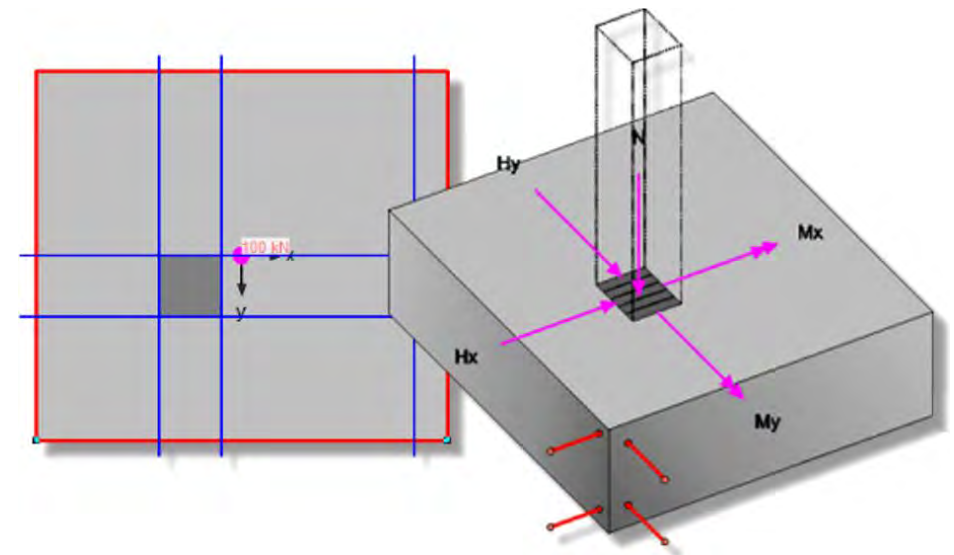
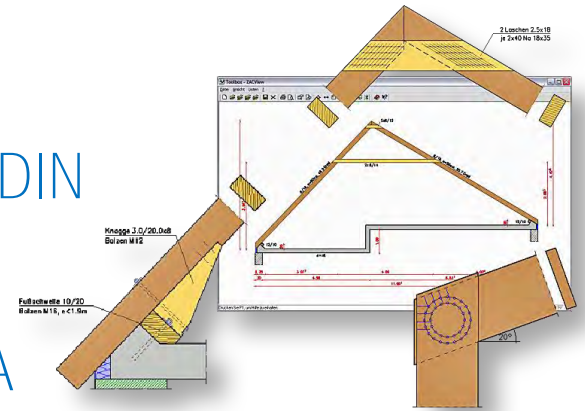
RTOOL: Masonry verification according to DIN 1053 & DIN EN 1996-3/NA

RTSLAB: Simple structural board

BALKEN: Continuous beams in concrete with design and verification for openings and notches, load-bearing capacity and serviceability

RTBEST: Structural columns made of reinforced concrete with standard cross-sections

RTFOOTING: rectangular reinforced concrete



RIB RTool - Collar beam roof

Structural member Statics Setting Options ?

Purlin, rafter and collar beam roofs

Component / material System dimensions Rafter / collar beam Snow load / Wind load Line load Single load

Structural member: C.1.3. Collar beam roof

Design settings

Wood type...	C24	Fire protection...		Partition of spans into n =	10
Utilization class	UC 1 (indoor, heated)			Deflection all. w _{inst} = L/	300
Live load category	A: Living rooms			Deflection all. w _{fin} = L/	250

RIB RTool - Timber frame corner

Structural member Statics Setting Options ?

Structural member: Dowel-connection Frame Corner (B.4.2.3)

Geometry

Strut	<input checked="" type="radio"/> twice	Beam	<input type="radio"/> twice
Width =	12.00 cm	Width =	20.00 cm
Height =	110.00 cm	Height =	110.00 cm
Overlap =	7.00 cm	Overlap =	7.00 cm
		Slope =	14.00

Connection type

Dowel pin

Special structure dowel

Wedge dovetail

Connection method

2 Dowel circles

Dowel diameter: Stabdübel 20 mm

Loading

Md =	-275.00 kNm	Radius 1	47.00	Radius 2:	37.00 cm
Nd =	-138.00 kN	Number 1:	24	Number 2:	19 pcs
Vd =	-94.50 kN				

regarding Post Tie beam

Corner protection

reduce allow.Nst Nailing

Frame corner connected by dowel pins, special dowel designs or wedge dovetails

Lateral torsional buckling analysis with consideration of the deformation and torsional restraint

Calculation of internal forces, deformations, reactions and stresses for continuous steel beams

Partial safety factors

Structural safety		
Permanent action	gamma F,g	1.35
Variable action	gamma F,q	1.50
Resistance factor	gamma M	1.10

Moment about y-axis:

0.00 18.56 -22.92

6.00

Structural member: Purlin (Kahlmeyer)

Input for: plane bending without normal force

Beam dimensions and design stress resultants: Span length $l = 6.00$ m

Normal force: $N, d = 100.00$ kN

Moments	$M_{1,d}$	$M_{q,d}$	$M_{2,d}$	Shape
y-axis	0.00	18.56	-22.92	Parabola
z-axis	0.00	22.30	0.00	Triangle

Partial safety factor: $\gamma_M = 1.10$

Buckling length coefficients: $\beta_y = 1.00$, $\beta_z = 1.00$

Interaction coefficients acc. to table: 8.1

Correction coefficient, EN 1993: $k_c = 0.86$

Ideal buckling moment in bending with torsion: $M_{cr,y}$

Spans / Support:

Span 1	$l = 6.00$ m	Supp. A v=fixed d=free
Span 2	$l = 6.00$ m	Supp. B v=fixed d=free
Span 3	$l = 6.00$ m	Supp. C v=fixed d=free
		Supp. D v=fixed d=free

Loading:

$g = 5.00/5.00$	$q = 0.00/5.00$	kN/m	$a = 0.00 - 6.00$
$g = 5.00$	$q = 5.00$	kN/m	$a = 6.00 - 12.00$
$g = 5.00/5.00$	$q = 5.00/0.00$	kN/m	$a = 0.00 - 6.00$
$G = 2.00$	$Q = 2.00$	kN	$M_g = 0.00$ $M_q = 0.00$
$R = 1.00$	$Q = 1.00$	kN	$a = 12.00$

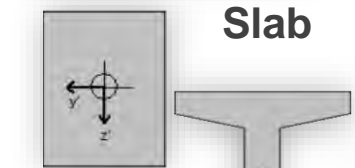
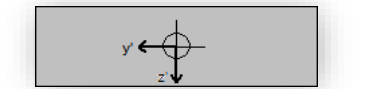
Profile / Material: IPE_180, Steel quality S235(t<=40)

Profile dimensions: $d = 180.0$, $b = 91.0$, $t = 5.3$

BALKEN – Reinforced Concrete Continuous Beam

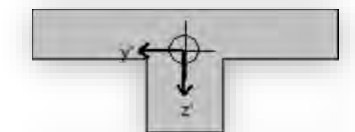
Analysis of different cross-sections

No.	Length [m]	Type	Cross-section Q1	Cross-section Q2	Lv,le	Lv,ri	Elements
1	6.175	Type 5	T1	T2		6.175	10
2	8.400	Type 1	T2				10
3	6.175	Type 4	T2	T1	6.175		10

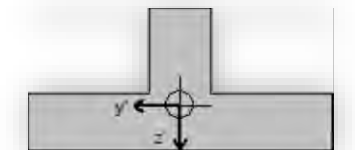


Rectangle

General CS



T-beam



Upstand beam

RTBEST - Dimensioning of slender structural columns

Table of properties

Modern and efficient working environment

Analysis of fire protection
Tabular fire protection: flame application on more than one side
Zone method: 1-, 2-, 3- or 4-lateral (License required)

Design combinations

LCC	Type	Origin/Leading action	Name	Fire	Lagerung 1	LC 1	LC 2	LC 3	LC 4	LC 5
1(u)	Creep	User-defined	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.00				
2(G)	Basic comb.	Living rooms (Live load A)	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1.35	1.50	1.50*0.50=0.75	1.50*0.60=0.90	
3(G)	Basic comb.	Snow	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1.35	1.50*1.00=1.50	1.50	1.50*0.60=0.90	
4(G)	Basic comb.	Wind	--	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1.35	1.50*1.00=1.50	1.50*0.50=0.75	1.50	
5(Ad)	Accidental	Snow	--	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.00	*0.80=0.80	*0.20=0.20		1.00

Table of properties

Different reinforced concrete cross-sections

Reinforced concrete

Reinforced concrete

Structural steel

New

- Rectangular section
- Box girder
- H-section
- U-section
- Circle
- Tubular section

RTfooting - Economic dimensioning of rectangular foundations

Overview

Introduction

Foundation

Section 2 y-dir. auto.
Section 3 x-dir. auto.
Section 4 x-dir. auto.
Section 5 y-dir. auto.
Section 6 y-dir. auto.
Section 7 x-dir. auto.
Section 8 x-dir. auto.

Load cases

- LC 0 (Dead load) $q_z=12.3 \text{ kN/m}^2$, $P_z=59.3 \text{ kN}$
- LC 1 Permanent load (Lastfall 1)
 - Column load $P_z=533$
 - Column load $P_z=120$
 - Single load $P_z=60 \text{ kN}$

Design combinations

- Automatic load case comb. unfavorable
- no leading action

Loads

Load: LC: 1 All visible

Visibility: Legend Name Width <><

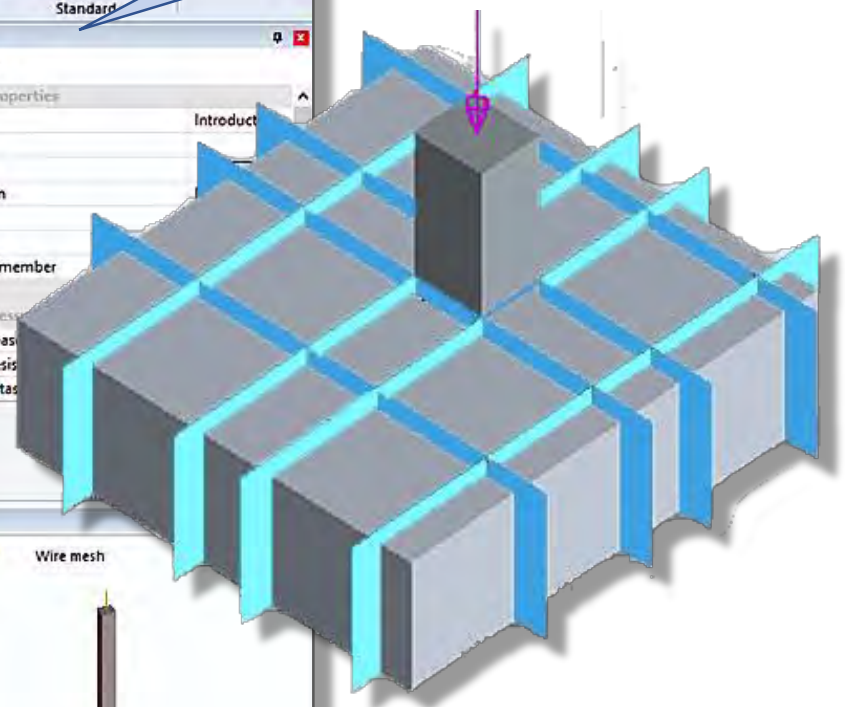
LC	Type	Name	Pz[kN]	Mb[kNm]		My[kNm]		Hx[kN]		Hy[kN]		dMxI[kNm]	dMyI[kNm]	dHxI[kN]	dHyI[kN]	dPzI[kN]
				x1[m]	y1[m]	x2[m]	y2[m]									
1	Column load		533.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Column load		120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Single load		60.00	0.00	0.00											

Design sections: Loads | Load cases | Design combinations | Earth statical analyses

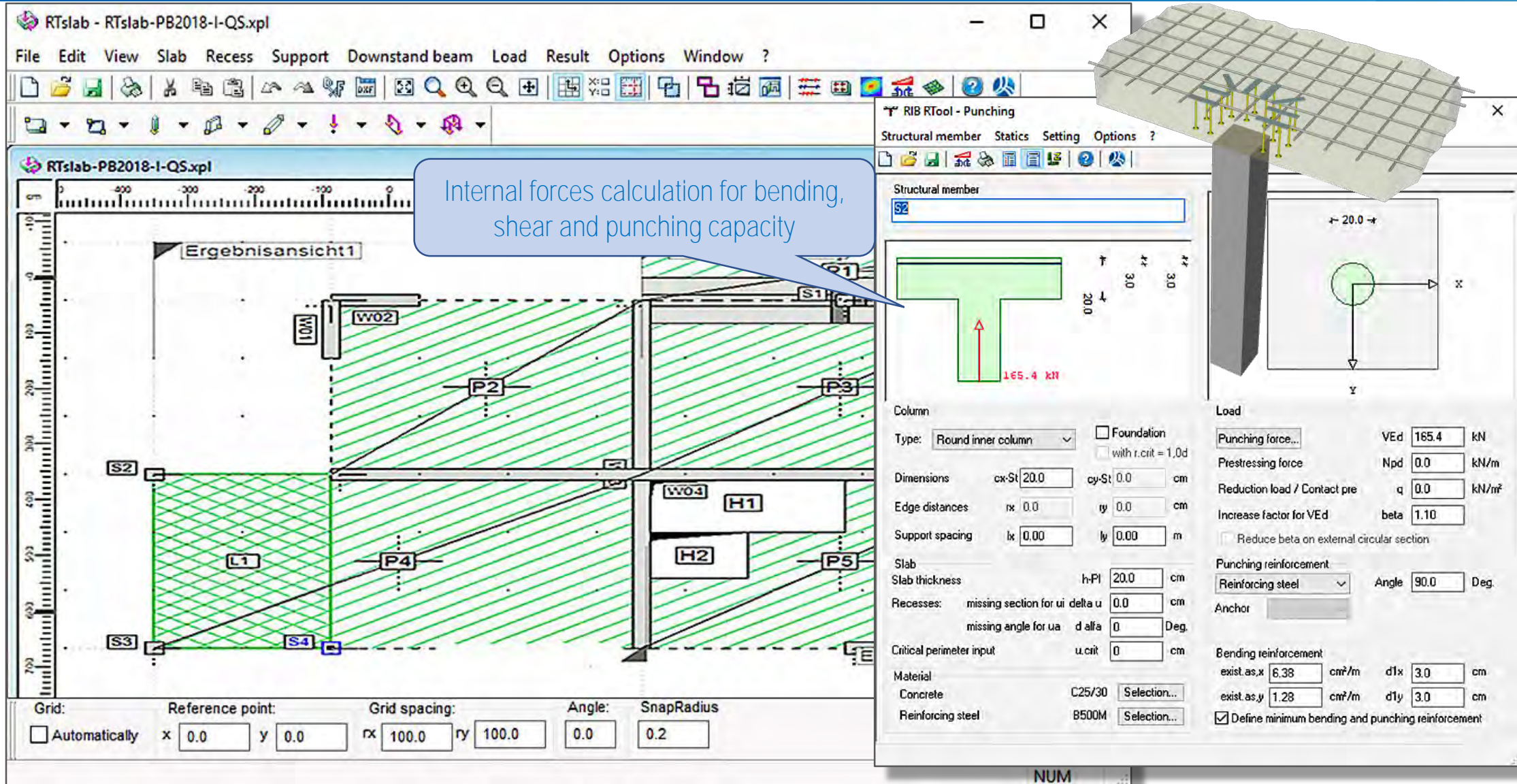
x= 1.500 y= 1.100 z=0.000 [m]

New Program Environment

Table of Properties



2-D / 3-D Graphic Display



The screenshot displays the RTslab software interface. The main window shows a structural model with a grid and various elements labeled (e.g., S1, S2, S3, S4, L1, L2, H1, H2, P1, P2, P3, P4, P5, W01, W02, W03, W04). A blue callout box points to the model with the text: "Internal forces calculation for bending, shear and punching capacity".

The right-hand side features a detailed view of a column-slab connection. The column is labeled "S2" and is a "Round inner column" with a diameter of 20.0 cm. The slab thickness is 20.0 cm. The punching force is 165.4 kN. The load parameters are: $V_{Ed} = 165.4$ kN, $N_{pd} = 0.0$ kN/m, $q = 0.0$ kN/m², and $\beta = 1.10$. The punching reinforcement is "Reinforcing steel" with an angle of 90.0 degrees. The bending reinforcement is: exist.as.x = 6.38 cm²/m, d1x = 3.0 cm, exist.as.y = 1.28 cm²/m, d1y = 3.0 cm. The checkbox "Define minimum bending and punching reinforcement" is checked.

The bottom of the interface shows grid settings: Reference point (x: 0.0, y: 0.0), Grid spacing (rx: 100.0, ry: 100.0), Angle (0.0), and SnapRadius (0.2).