Hybrid GEN 2

ICCONS Serious Connections

TDS 2019.1

BIS-HY GEN2

Hybrid Injection Adhesive ETA Assessed for Post-Installed Rebar Connections

ETA - 19/0130

Post-Installed Rebar Dowels Ø8 - Ø32 mm

- Rebar EN 1992-1-1:2004 + AC:2010 Annex C
  Bars and de-coiled rods class B or C with fyk and k acc. to NDP or NCL of EN 1992-1-1/NA
  $f_{uk} = f_{tk} = k \cdot f_{yk}$

Features

- NEW! ETA Assessed for the Installation in Flooded Holes
- NEW! No Cleaning required for Hollow Drilling
- NEW! Extended Seismic C2 Range: M12 - M24
- For Extreme Loads
- Fast Curing
- Styrene Free
- Low VOC: A+ Rating
- Fire Rated
- Leed Tested
- Potable Water Approved
- DesignFix® support

Conditions of Use

- Installation in Cracked & Non-Cracked Concrete C20/25 to C50/60
- For Anchor Rods M8-M30, Rebar Ø8-32 mm and Threaded Sleeves M6-M20
- Seismic Action C1: M8-M30, Ø8-32 mm
- Seismic Action C2: M12 - M24
- For Hammer/Air drilled Holes
- Installation in Dry and Wet Holes
- Installation in Flooded Holes
- Overhead Installation allowed.

Approvals & Test Reports

ETA - 19/0130 | ETA - 19/0131

C1 SEISMIC | C2 SEISMIC | F120

ÉMISSIONS DANS L'AIR INTÉRIEUR A+ (A+ A B C)

AS/NZS 4020 POTABLE WATER APPROVED

NCC NATIONAL CODE COMPLIANT

LEED

Temperature Range

B+BTec BIS-HY GEN2 injection mortar may be applied in the temperature ranges given below. An elevated base material temperature leads to a reduction of the bond resistance.

Max. long term base material temperature: Long term elevated base material temperatures are roughly constant over significant periods of time.

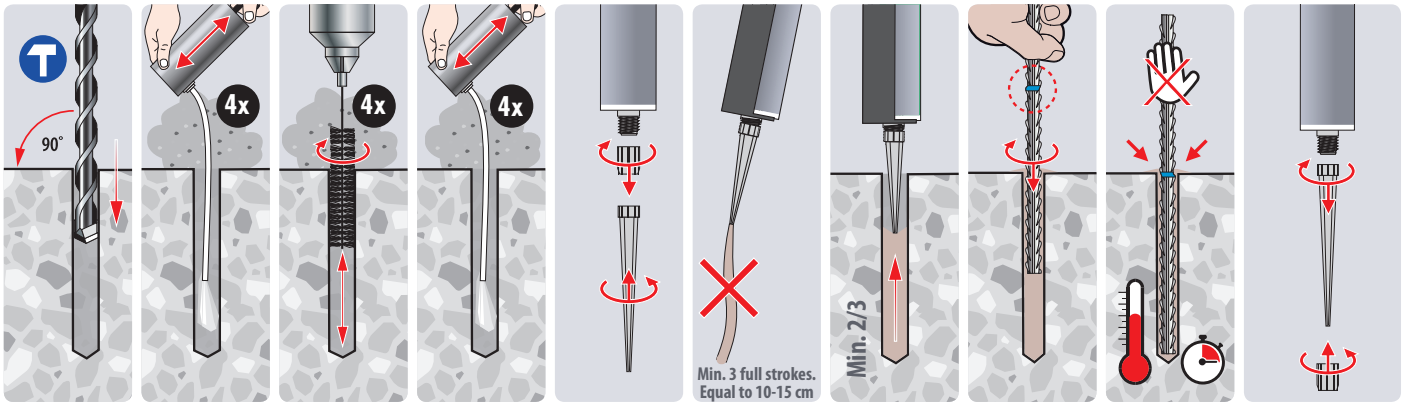
Max. short term base material temperature: Short term elevated base material temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling.

Temperature Range	Temperature Base Material	Max. Long Term Base Material Temperature	Max. Short Term Base Material Temperature
Temp. Range I	-40°C to +80°C	+ 50°C	+80°C

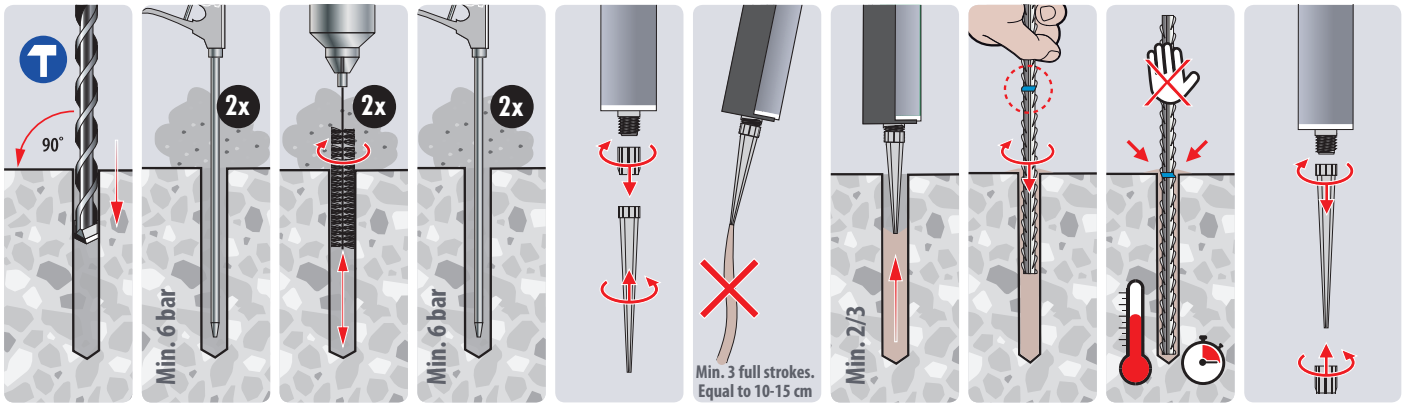
BIS-HY GEN2

Installation Procedures (Hand Pump Cleaning)

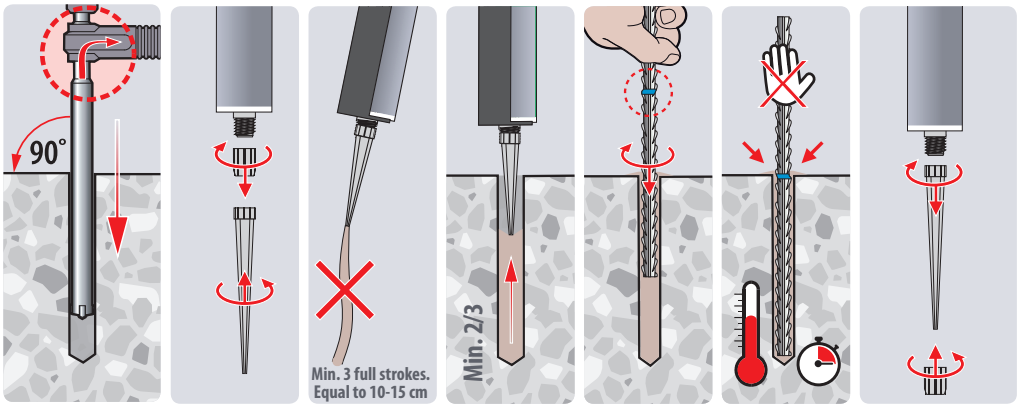
Hand Pump Cleaning for bore hole diameter $d_0 \leq 20$mm, bore hole depth $h_0 \leq 10d_{nom}$ and Non-Cracked Concrete only.



Installation Procedures (Compressed Air Cleaning)



Installation Procedures (Hollow Drilling) - Heller Duster Expert Hollow Drill Bits



DONE AND DUSTLESS

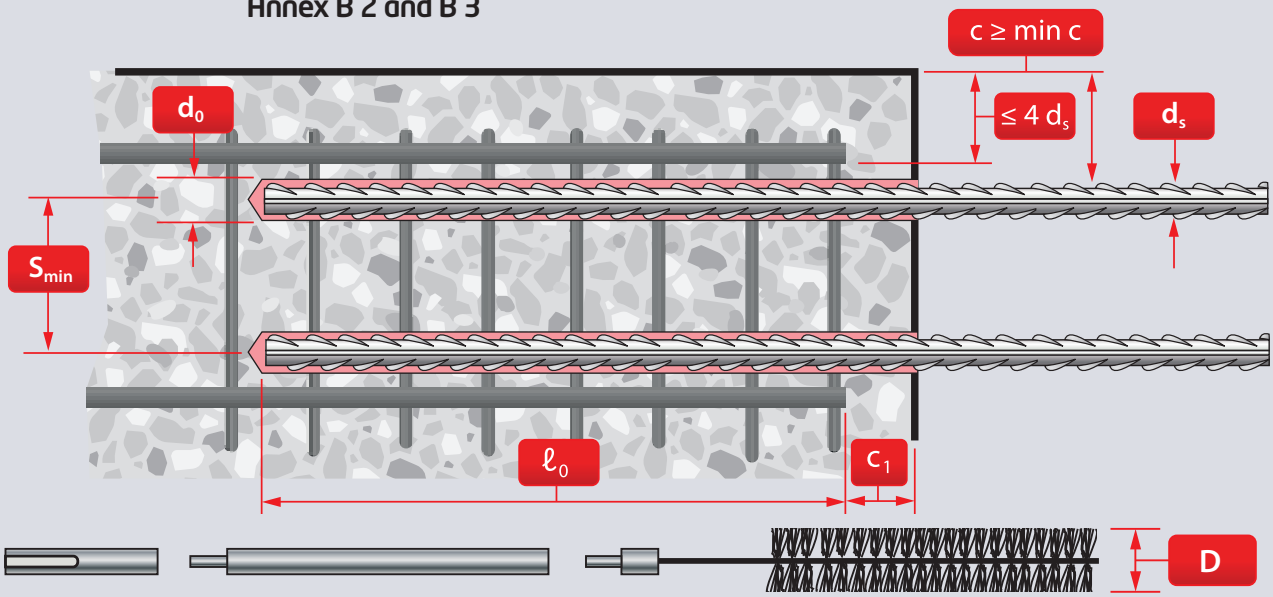
Curing Times[1)]

Temperature[2)] °C	-5 to -1	0 to +4	+5 to +9	+10 to + 14	+15 to +19	+20 to +29	+30 to +40
Processing/Working Time	50 min	25 min	15 min	10 min	6 min	3 min	2 min
Curing Time Dry Holes	5 h	3,5 h	2 h	1h	40 min	30 min	30 min
Curing Time Wet Holes	10 h	7 h	4 h	2h	80 min	60 min	60 min

1) Cartridge Temperature must be between +5°C and +40°C. 2) Concrete Temperature

ETA - 19/0130

Specification Data for the use in reinforced & unreinforced Concrete and Hammer/Air Drilled Holes according to EN 1992-1-1 :2004+AC:2010, EN 1992-1-2:2004+AC:2008, Annex B 2 and B 3



Installation Dimensions

Rebar Size	d_s		Ø10	Ø12	Ø16	Ø20	Ø22	Ø24	Ø28	Ø32
Hole Diameter	d_o	[mm]	14	16	20	25	28	32	35	40
Min. Anchoring Length C20/25	$l_{b,min}$ 1)2)	[mm]	142	170	227	284	312	340	397	454
Min. Anchoring Length C50/60	$l_{b,min}$ 1)2)	[mm]	100	120	160	200	220	240	280	320
Min. Lap Length C20/25	$l_{0,min}$ 1)2)	[mm]	200	200	240	300	330	360	420	480
Min. Lap Length C50/60	$l_{0,min}$ 1)2)	[mm]	200	200	240	300	330	360	420	480
Design Anchoring Length										
- for Yield of Rebar C20/25	$l_{bd,y\ (\alpha 2=1)}$	[mm]	473	567	756	945	1040	1134	1323	1512
- for Yield of Rebar C50/60	$l_{bd,y\ (\alpha 2=1)}$	[mm]	253	303	404	506	556	607	708	809
- for Yield of Rebar C20/25	$l_{bd,y\ (\alpha 2=0,7)}$	[mm]	331	397	529	662	728	794	926	1059
- for Yield of Rebar C50/60	$l_{bd,y\ (\alpha 2=0,7)}$	[mm]	177	212	283	354	389	425	495	566
Max. Embedment Depth	l_{max} 3)	[mm]	1000	1200	1600	2000	2000	2000	2000	2000
Min. Spacing	s_{min}	[mm]	50	60	80	100	110	120	140	160
Required Volume per cm Embedment Depth	V_s	[ml/cm]	0,90	1,06	1,36	2,12	2,83	4,22	4,16	5,43

1) According to EC2: EN 1992-1-1:2004 $l_{b,min}$ (8.6) and $l_{0,min}$ (8.11) are calculated for good bond conditions with characteristic yield strength f_{yk} = 500 N/mm², γ_M = 1,15 and α_6 = 1,0
2) Minimum anchorage length $l_{b,min}$ and the minimum lap length $l_{0,min}$ according to EN 1992-1-1 shall be multiplied by relevant amplification factor α_{lb} (see amplification factor table)
3) When using the hollow drill bit system (HDB) the maximum embedment depth is 1000 mm for all diameters

Steel Brush & Piston Plug Dimensions[4)]

Rebar Size	d_s		Ø10	Ø12	Ø16	Ø20	Ø22	Ø24	Ø28	Ø32
Brush Diameter	D	[mm]	16	18	22	27	30	34	37	42
Min. Brush Diameter	D_{min}	[mm]	14,5	16,5	20,5	25,5	28,5	32,5	35,5	40,5
Piston Plug	#	--	14	16	20	25	28	32	35	40

4) No cleaning required for holes that are drilled with the hollow drill bit system (HDB)

BIS-HY GEN2

Minimum Concrete Cover

Drilling Method		d_s [mm]	Without Drilling Guide [mm]	With Drilling Guide [mm]
Hammer Drilling/Hollow Drill Bit	**HD/HDB**	<25	$30 + 0{,}06 \cdot \ell_v \geq 2d_s$	$30 + 0{,}02 \cdot \ell_v \geq 2d_s$
		≥25	$40 + 0{,}06 \cdot \ell_v \geq 2d_s$	$40 + 0{,}02 \cdot \ell_v \geq 2d_s$
Compressed Air Drilling	**CD**	<25	$50 + 0{,}08 \cdot \ell_v$	$50 + 0{,}02 \cdot \ell_v$
		≥25	$60 + 0{,}08 \cdot \ell_v$	$60 + 0{,}02 \cdot \ell_v$

Design Values of the ultimate bond stress $f_{bd,PIR}$ in N/mm² for all drilling methods and for good conditions[5)]

Rebar	Concrete Class								
	C12/15	C16/20	C20-25	C25-30	C30/37	C35/45	C40/50	C45/55	C50/60
Ø8 - 32 mm	1,6	2,0	2,3	2,7	3,0	3,4	3,7	4,0	4,3

5) All other bond conditions multiply the values by 0,7.

Amplification factor α_{lb} related to concrete class and drilling method

Concrete Class	Drilling Method	Rebar Size	Amplification Factor
C12/15 to C50/60	All Drilling Methods	Ø8 - 32 mm	1,0

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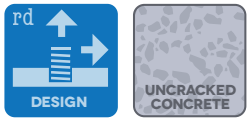
Static and quasi-static resistance

All data in this section subject to:
- Correct setting (see setting instructions).
- Embedment depth l_{bd} used in the tables below is equal to $l_{b,min}$, unless $l_{bd,y} \geq l_{b,min}$
- Temperature range I: (max. long/short term temperature +50°C/+80°C).
- Amplification factor $\alpha_{lb} = 1,0$ for all concrete classes, drilling methods and bar sizes.

Design Resistance Dry/Wet Holes Concrete Class C20/25

Reinforcing bars, $f_{yk} = 500$ N/mm²
Design loads in [kN]



Rebar Size ▶ d_s	Ø10	Ø12	Ø16	Ø20	Ø22	Ø24	Ø28	Ø32
▼ Embedment Depth $\ell_{,b}$								
113								
142	10,2							
170	12,3	14,8						
198	14,3	17,2						
227	16,4	19,7	26,2					
284	20,5	24,6	32,8	41,0				
312	22,5	27,0	36,1	45,1	49,6			
340	24,6	29,5	39,3	49,2	54,1	59,0		
354	25,6	30,7	41,0	51,2	56,3	61,5		
378	27,3	32,8	43,7	54,6	60,1	65,6		
397	28,7	34,4	45,9	57,4	63,1	68,8	80,3	
454	32,8	39,3	52,5	65,6	72,1	78,7	91,8	104,9
473	**34,1**	41,0	54,6	68,3	75,1	82,0	95,6	109,3
567		**49,2**	65,6	82,0	90,2	98,3	114,7	131,1
662			76,5	95,6	105,2	114,7	133,9	153,0
756			**87,4**	109,3	120,2	131,1	153,0	174,8
945				**136,6**	150,3	163,9	191,2	218,5
1040					**165,3**	180,3	210,4	240,4
1134						**196,7**	229,5	262,3
1181							239,0	273,2
1323							**267,7**	306,0
1512								**349,7**
Design yield force of bar $N_{Rd,s}$	**34,1**	**49,2**	**87,4**	**136,6**	**165,3**	**196,7**	**267,7**	**349,7**

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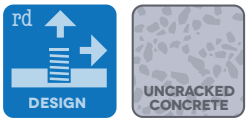
Static and quasi-static resistance

All data in this section subject to:
- Correct setting (see setting instructions).
- Embedment depth l_{bd} used in the tables below is equal to $l_{b,min}$, unless $l_{bd,y} \geq l_{b,min}$
- Temperature range I: (max. long/short term temperature +50°C/+80°C).
- Amplification factor α_{lb} = 1,0 for all concrete classes, drilling methods and bar sizes.

Design Resistance Dry/Wet Holes Concrete Class C50/60

Reinforcing bars, f_{yk} = 500 N/mm²
Design loads in [kN]



Rebar Size ▶ d_s	Ø10	Ø12	Ø16	Ø20	Ø22	Ø24	Ø28	Ø32
▼ Embedment Depth ℓ_b								
100	13,5							
120	16,2	19,5						
140	18,9	22,7						
160	21,6	25,9	34,6					
200	27,0	32,4	43,2	54,0				
202	27,3	32,8	43,7	54,6				
220	29,7	35,7	47,6	59,4	65,4			
240	32,4	38,9	51,9	64,8	71,3	77,8		
250	33,8	40,5	54,0	67,5	74,3	81,1		
253	**34,1**	41,0	54,6	68,3	75,1	82,0		
280		45,4	60,5	75,6	83,2	90,8	105,9	
303		**49,2**	65,6	82,0	90,2	98,3	114,7	
320			69,2	86,5	95,1	103,7	121,0	138,3
354			76,5	95,6	105,2	114,7	133,9	153,0
404			**87,4**	109,3	120,2	131,1	153,0	174,8
506				**136,6**	150,3	163,9	191,2	218,5
556					**165,3**	180,3	210,4	240,4
607						**196,7**	229,5	262,3
632							239,0	273,2
708							**267,7**	306,0
809								**349,7**
Design yield force of bar $N_{Rd,s}$	**34,1**	**49,2**	**87,4**	**136,6**	**165,3**	**196,7**	**267,7**	**349,7**

INNOVATIVE SOFTWARE – ANCHOR DESIGN MADE EASY

- Innovative 3d visual user interface, ETAG-001 & AS 5216:2018 compliant Fasteners.
- SEISMIC DESIGN under earthquake loads according to ETAG-001, Annex E, TR045
- Finite element analysis steel baseplate design

ICCONS® DesignFiX Software is simple, intuitive and FREE to DOWNLOAD anchor design program for Design Engineers, Project Managers, Site Engineers and End Users. Complex mechanical or chemical heavy duty anchor arrangements can be calculated in minutes. All designs are ETA based and qualify under AS 5216:2018 now directly referenced in the National Construction Code 2019.

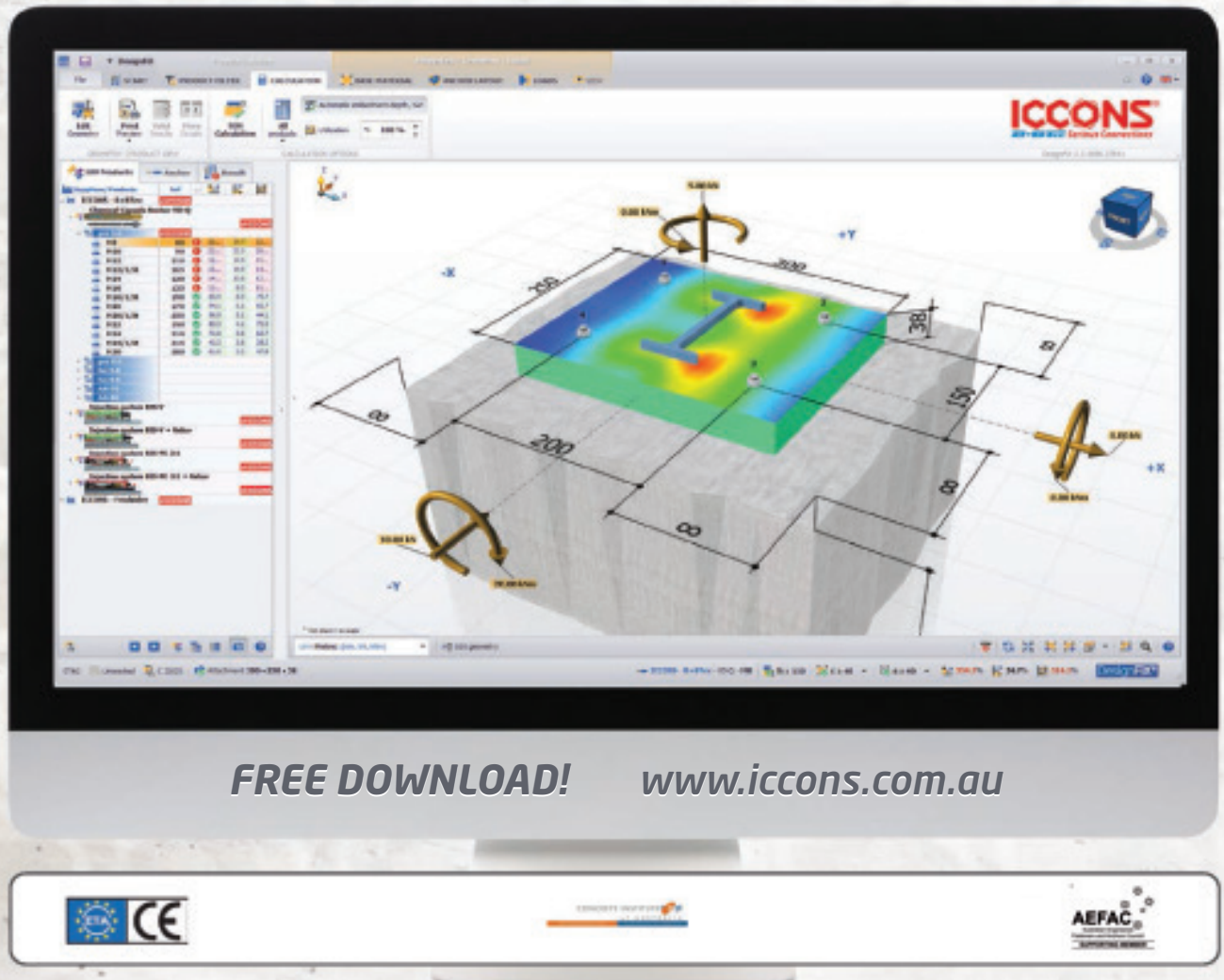
With input Freedom & 3D user Interface ICCONS® DesignFiX offers complete freedom to select an anchor pattern and base plate configuration, as well as the position and direction of load combinations. Changes are made directly into the 3D user interface.

Anchor Type Comparison

ICCONS® DesignFiX displays the usability of the various anchor types (according to ETAG-001, Annex C, TR029), including the values for each load type. This allows you to compare the calculation result of the different anchor types in a single easy to read panel.

Optimum BIS Injection System Anchorage Depth when selecting a BIS Injection Mortar.

ICCONS® DesignFiX allows for the automatic calculation of the most effective anchorage depth, taking in consideration the minimal and maximum values of the ETA.
The integrated FEM-Calculation Method (Finite Element Method) in ICCONS® DesignFiX allows you to calculate the base plate thickness based upon the stresses in the base plate combination with the base plate configuration.



ICCONS®
Serious Connections

Hybrid GEN 2

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