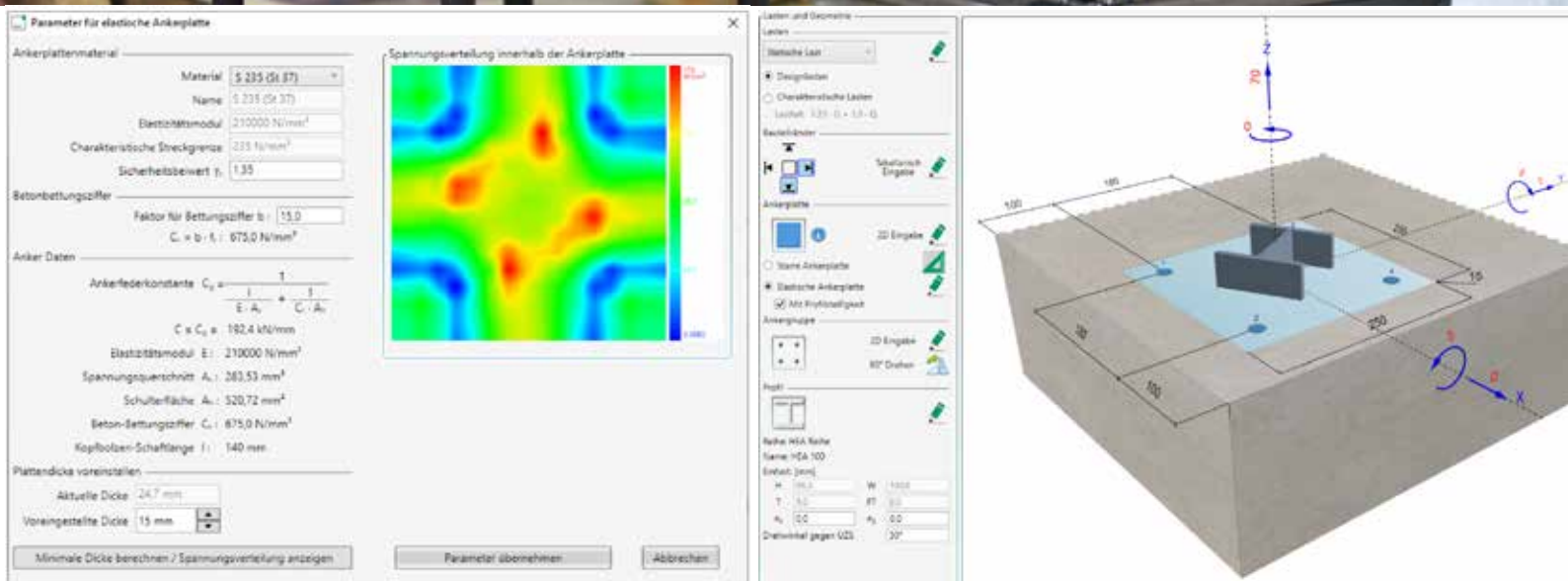




# SDdesign Pro

DESIGN SOFTWARE FOR STEEL MOUNTING PARTS WITH WELDED-ON SB SHEAR CONNECTORS

# EASY, INTUITIVE USABILITY



SDDDESIGN PRO IS A SOFTWARE FOR DESIGNING SHEAR CONNECTORS FOR STEEL MOUNTING PARTS IN CONCRETE ACC. TO EAD 330084-00-0601, CEN TS 1992-4:2009, PART 1 AND 2 AS WELL AS ETA-11/0120. IT ENABLES NOT ONLY THE DIMENSIONING OF STATIC, BUT ALSO OF FATIGUE LOADS, E.G. CRANE RUNWAYS, ACADEMICALLY SECURED BY EOTA TR061.

## DIMENSIONING OF SINGLE CONNECTORS OR GROUPS

- » stud dimensions from 10 x 50 up to 25 x 525
- » studs from structural steel or from stainless steel
- » groups consisting of two to nine connectors and welded on anchor plates
- » anchors plates from structural steel up to S460N and from stainless steel A4
- » in uncracked and cracked concrete (all concrete strength classes from C20/25 to C50/60 as well as custom definition)
- » anchor groups can have different axial spacing in x- and y-direction

TRUE-TO-SCALE 3D GRAPHICS WITH INTERACTIVE INPUT OPTIONS (DIMENSIONS AND LOADS; ALSO CONTROLLABLE VIA TABS)

DISPLAY OF SELECTED CONNECTORS GRAPHICALLY AND WITH ALL RELEVANT INFORMATION (MATERIAL, LENGTH, SHAFT DIAMETER, ANCHORING DEPTH ETC.)

EXISTING REINFORCEMENT AND SUPPLEMENTARY REINFORCEMENT CAN BE CONSIDERED

ANY STRESS COMBINATIONS CAN BE APPLIED TO THE ANCHOR PLATE

- » characteristic loads or design loads
- » static and fatigue\* loads separately
- » with or without welded profile for load application
- » the profile can be turned and moved on the plate
- » numerous profile types are stored in the program

BOUNDARY CONDITIONS TO BE MET (GEOMETRY, EDGE AND AXIS DISTANCES) ARE CHECKED IMMEDIATELY UPON ENTRY

IMMEDIATE DISPLAY OF THE UTILISATION OF CONCRETE AND STEEL IN RELATION TO THE MODES OF FAILURE

NECESSARY THICKNESS OF THE ANCHOR PLATE CAN OPTIONALLY BE VERIFIED „BEND INFLEXIBLE“ OR „ELASTIC“

Gewählte Anker und Ergebnisse

**Ergebnisse**

- ▲ Zug: 63,6%
  - Stahlversagen: 14,1%
  - Herausziehen: 13,9%
  - Betonausbruch: 63,6%
  - Spalten: 0,0%
  - Lokaler Betonausbruch: 0,0%
  - Stahlversagen Bewehrung: 0,0%
  - Verbundversagen Bewehrung: 0,0%
- ▲ Quer: 60,5%
  - Stahlversagen: 11,9%
  - Pryout: 19,4%
  - Betonkantenbruch (x-): 60,5%
  - Stahlversagen Bewehrung: 0,0%
  - Verbundversagen Bewehrung: 0,0%
- ▶ Interaktion: 97,8%
- ▶ Ankerplatte ( $\sigma/f_{yk}$ ): 39,8%

Anwenderdefiniert

Ankergröße:

$h_{ef}$ [mm]:

SDdesign Pro 2.0.0 (Beta) - Zusammenfassender Ausdruck

2. Ankerschnittgröße und Nachweis der Ankerplatten-Eigenhaftigkeit

**Ankerschnittkräfte (kN)**

Anker-Nr.	Normalkraft	Querkraft	Querkraft x	Querkraft y
1	12.500	7.620	0.762	0.000
2	12.500	7.620	0.762	0.000
3	12.500	7.620	0.762	0.000
4	12.500	7.620	0.762	0.000

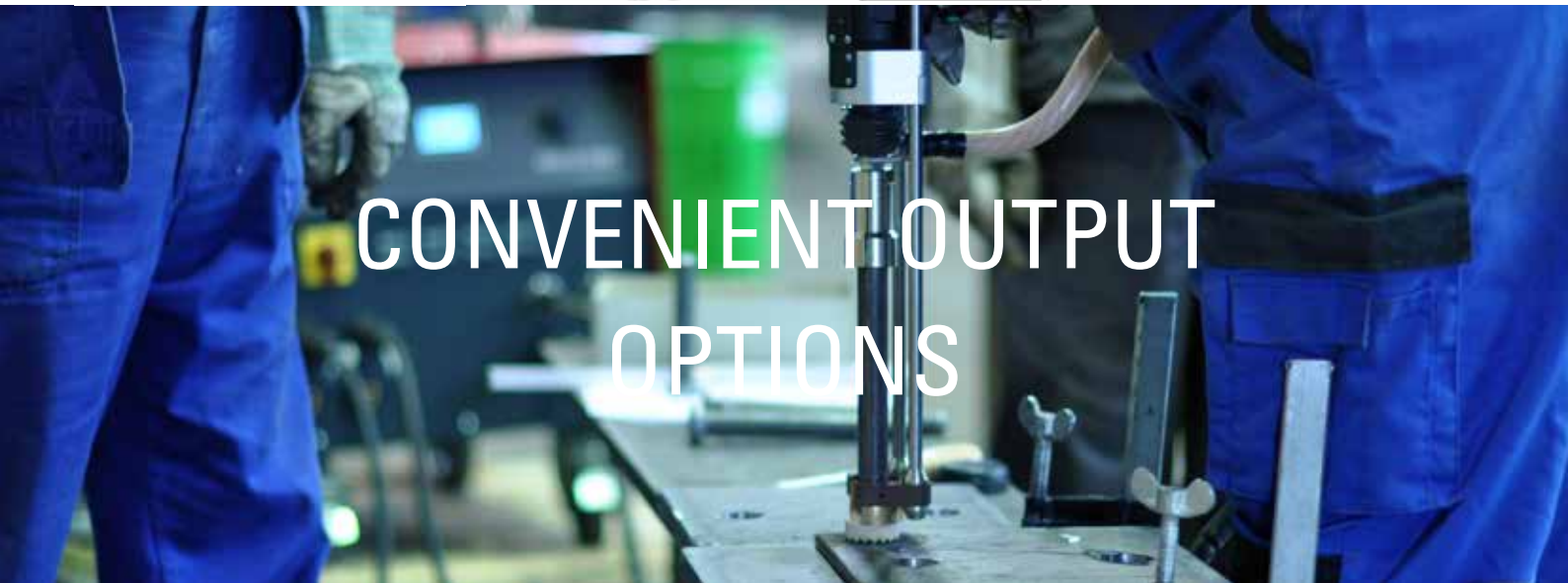
maximale Betonbruchspannung  $f_{ctd}$  0,0000  
 maximale Betonbruchspannung  $f_{ctd}$  (N/mm<sup>2</sup>)  
 resultierende Zugkraft  $F_{t,red}$  in (kN) 0,00 (0,00) 0,0000 (0,00)  
 resultierende Druckkraft  $F_{d,red}$  in (kN) 0,00 (0,00) 0,0000 (0,00)  
 Bemerkung: Der Festlastanteil ist nicht maßgebend.

Berechnung der erforderlichen Dicke für die biegegesteiften Ankerplatte (Mit Profilblech):  
 Die erforderliche Dicke beträgt 24,0 mm. Damit sind die Nachweiseinstellungen für eine äquivalente biegegesteifte Ankerplatte erfüllt.  
 Angenommene Ankerfestigkeitsklasse  $C_s = 179,1$  N/mm<sup>2</sup>  
 Angenommene Faktor für Betonfestigkeitsklasse  $\alpha = 13,3$  → Betonfestigkeitsklasse  $C_{ct} = \alpha \cdot C_s = 2382,9$  N/mm<sup>2</sup>

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4	12.500	7.620	0.762	0.000

max. Ankerfestigkeitsklasse in Beton (kN/cm<sup>2</sup>) 179,1 (N/mm<sup>2</sup>)  
 maximale Betonbruchspannung  $f_{ctd}$  0,0000 (N/mm<sup>2</sup>)  
 resultierende Zugkraft  $F_{t,red}$  in (kN) 0,00 (0,00) 0,0000 (0,00)  
 resultierende Druckkraft  $F_{d,red}$  in (kN) 0,00 (0,00) 0,0000 (0,00)

$\sigma/f_{yk} = 49,83743 = 39,8\%$   
 $(N_x^2 + N_y^2)^{1/2} = (12.500^2 + 12.500^2)^{1/2} = 17.677,66 = 1,4\%$



# CONVENIENT OUTPUT OPTIONS

CLEARLY ARRANGED RESULTS PRINTOUT, OPTIONALLY „CONSOLIDATED“ OR „EXTENDED“ WITH USER AND PROJECT DATA

DISPLAY OF ALL INPUTS AS WELL AS ALL ITEMIZATIONS

OUTPUT OF A MATERIAL LIST FOR SHEAR CONNECTORS AND ANCHOR PLATES WITH WEIGHTS

GERMAN OR ENGLISH PROGRAM VERSION

AUTOMATIC ONLINE UPDATES

\* The building inspection regulations for steel components (anchor plates) with welded-on SB headed studs (manufacturing and assembly) are specified in the European Technical Assessment (ETA-10/0120 for structural steel and for stainless steel). The basis is the European Assessment Document 330084-00-0601 „Steel plate with cast-in anchors“.

Steel components with welded-on SB headed studs are dimensioned according to CEN/TS 1992-4:2009 „Design of fastenings for use in concrete“. EN 1992-4, published in 2019, is to become the basis for design in the future.

**With version 2.0.0, our SDdesign Pro dimensioning software can not only provide evidence for steel components with welded-on SB headed studs in accordance with the above rule, but also for fatigue, e.g. on crane runways.**

EAD 330084-00-0601 (European Assessment Document „Steel plate with cast-in anchors“), the basic document for ETA-10/0120 (European Technical Assessment), does not contain the fatigue assessment for formal, non-technical reasons. According to the previously valid ETA-10/0120 (European Technical Approval), SB headed studs were also allowed to transfer fatigue-relevant loads.

Users of SDdesign Pro therefore have the option of using the previously valid values from ETA-10/0120 to conduct a fatigue verification for SB headed studs that are welded to steel components. This proof corresponds to the state of the art and is scientifically proven. The relevant documents are available in the SDdesign Pro dimensioning software.

SDdesign Pro can be downloaded free of charge on our website under [sddesignpro.bolte.gmbh](http://sddesignpro.bolte.gmbh)





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