

SteelCON-Tools



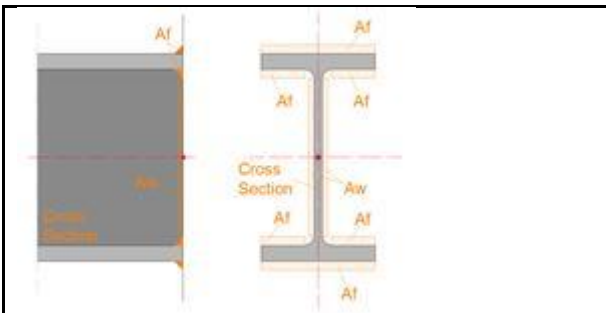
Steel connections detailing software as well as the standards worldwide, are dealing only with typical configuration connections. In real life this is not a certainty. There are some times that the engineer must evaluate the strength of complicated connections by dividing them in smaller components - well

described in the standards – and examining each one of them.

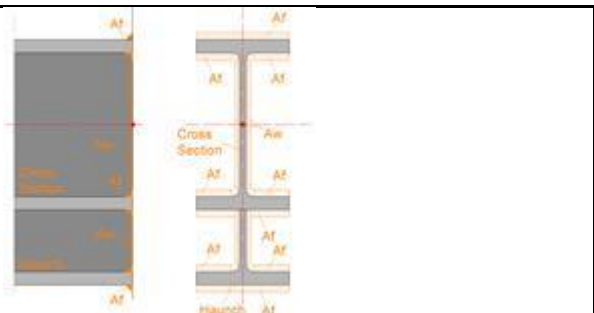
For this purpose FIDES-DVP has started developing a new program: “*SteelCON-Tools*”. It provides simple tools for calculating the strength of individual components of connections between steel elements. The engineer can either use it for quick calculations or for modelling non typical steel connections by dividing them into separate components. The program contains an extensive library with steel profiles and materials and a very simple interface so that can be used immediately.

The first version of the program can handle in plane weldings under in plane and out of plane moments and forces.

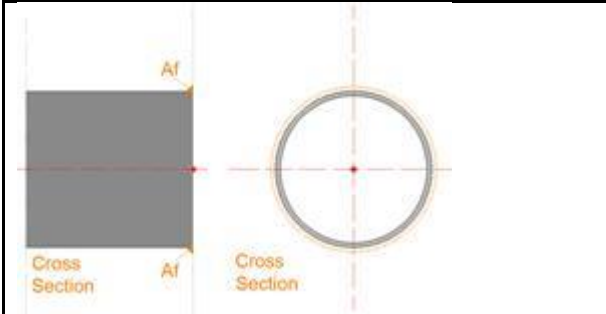
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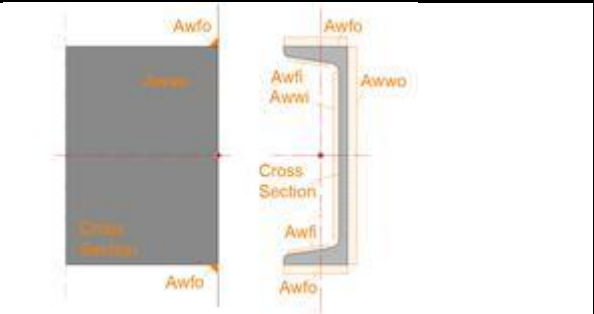
All around welding on a double tee cross section.



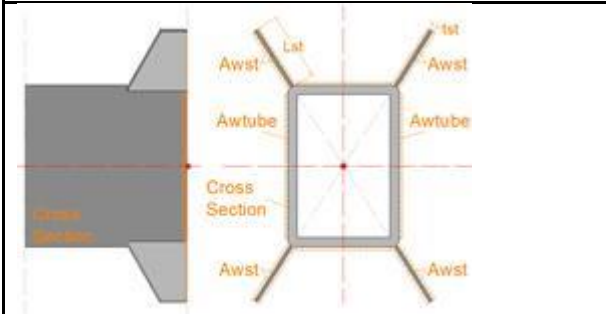
All around welding on a double tee cross section with haunch.



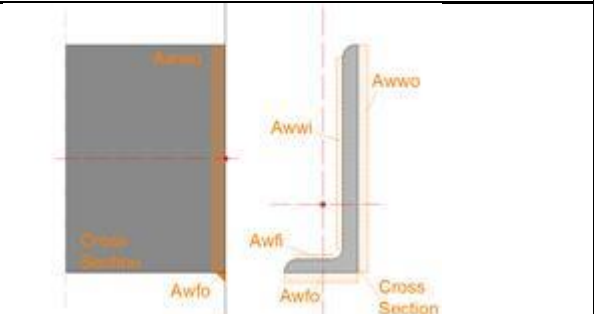
Circular Welding



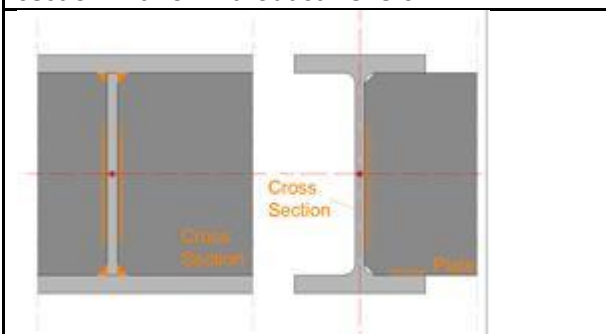
All around welding on a U cross section.



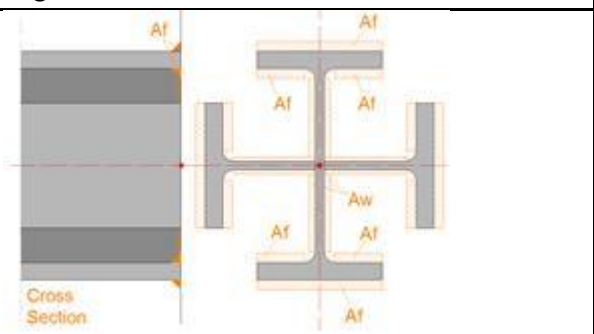
All around welding on a Rectangular tube cross section with or without stiffeners.



All around welding on an equal or unequal angle cleat cross section.



Welding of a stiffener plate on double tee cross section. Weldings may be intermittent.



All around welding on a Crossed Double Tee cross section. The existence of all welds is selectable.

The result of the calculations can be exported to Adobe PDF format for printing.

Welds Resistance

Point	Angle (Degrees)	Stress (cm)		
		Equivalent	Normal (σ_{\perp})	Shear
1	0	10	2.418768E-07	0
2	90	2.418768E-07	20	2.418768E-07
3	180	0	2.418768E-07	2.418768E-07
4	270	2.418768E-07	2.418768E-07	0

Result

Maximum Equivalent Stress is 10 at point 1 at angle 0 degrees.
Maximum Normal Stress is 20 at point 1 at angle 0 degrees.

• Loadcase 2

Welds Applied Stress and Resistance at points are calculated according to the following formulas from Eurocode 3 [1]

$$Equivalent\ Stress = \sqrt{\sigma_{\perp}^2 + 3(\tau_{\perp}^2 + \tau_{\parallel}^2)} \quad (4)$$

$$Shear\ Stress = \frac{f_u/\sqrt{3}}{\beta_w \gamma_{M2}} \quad (5)$$

The design resistance of the fillet will be sufficient if the following are both satisfied (Eurocode 3, formula 4.1):

$$\sqrt{\sigma_{\perp}^2 + 3(\tau_{\perp}^2 + \tau_{\parallel}^2)} \leq f_u/(\beta_w \gamma_{M2}) \quad (6)$$

$$\sigma_{\perp} \leq f_u/\gamma_{M2}$$

All checks are based upon eurocode EN 1993-1-8.

Supported Operating Systems:

Windows 7, Windows 8.0, Windows 8.1

It will be developed continuously and in the next versions bolts, cross section checks (full or cut and drilled), plate element checks, T-Stubs, anchoring and a lot other tools will be available.