

*Features of WeldCalc for
The Analysis and Design of Weld Groups
Subjected to Simultaneous Shear, Bending, Torsion and Axial Loading
by
Dr Shaiq U.R. Khan
BEng (Civil), MEng, PhD, PE, CEng, FStructE
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WeldCalc helps design weld groups having any configuration of multi-linear weld lengths in an x-y plane. It employs the elastic method to analyse weld groups subjected to 3 dimensional loading in the x, y and z directions. Hence, the loading can comprise simultaneous tension, compression, shear, bending and or torsion in x, y and z directions. When present, it takes into account the influence of unsymmetrical bending in its analysis.

Features

- ◆ The file size is under 1Mb.
- ◆ Comprehensive documentation and sketches included within the template file to describe the analysis method and to serve as reference during interactive use.
- ◆ Sign convention for applied loads illustrated via **3D-Sketch** on the screen and in the printed output for ease of use and ready reference.
- ◆ All calculation components shown on the screen and in the printed output. The user and the checker both can verify results by hand calculations.
- ◆ On the spot screen display of background information via comments, when moving the mouse pointer over cells.
- ◆ At each weld node, calculation and display of induced stresses.
- ◆ WeldCalc offers 3 options to calculate the equivalent resultant stress. These options are Von Mises Shear, Von Mises Axial and SRSS.
- ◆ At each weld length, calculation and display of the load carried in x, y and z direction.
- ◆ The influence of unsymmetrical bending is taken into account, when present.
- ◆ Applied Loading: Point loads F_x , F_y and F_z and Moments M_x , M_y and M_z
- ◆ Design weld strength can be any value to suit your design standard e.g. BS 5950 or BS449.
- ◆ A weld group can have up to 30 linear lengths forming any weld configuration in the x-y plane.
- ◆ Lines of weld can be continuous or discontinuous. Each continuous series of weld lengths being termed as a PART, a weld group can have up to 15 separate PARTS connecting 30 nodes.
- ◆ Live display of weld group configuration via sketch makes input errors obvious at a glance.
- ◆ The position of user origin can be any convenient point for ease in describing complex weld
- ◆ The origin and centroid is shown in the weld group sketch for easy comprehension of input data and analysis results.
- ◆ WeldCalc includes 5 worksheets for the calculation of coordinates for 5 standard sections. By inputting basic dimensions of I, L, Channel, PFC & CHS sections, the coordinates for the full profiles of these sections can be calculated and pasted into WeldCalc with ease and rapidity.
- ◆ Database facility within the WeldCalc file keeps each Weld Group data in its worksheet STORE. Using a reference number starting from 1001 upwards, each Weld Group can be retrieved, changed and re-designed with easily at a later time.
- ◆ The Database in the worksheet STORE is visible to the user. Using spreadsheet features of Excel, new data can be generated and the existing one examined and or modified.
- ◆ Data for up to and over 10,000 Weld Groups can be stored within its file for later retrievals & revisions. Rows can be added and or deleted in multiples of 10, starting from a minimum 200 rows.
- ◆ Auto Analysis facility is available via two columns in the Worksheet STORE. One column allows selection for analysis and the other selection for printing. All SELECTED Weld Groups can therefore be analysed and or their results printed by a mouse click.
- ◆ Auto Analysis facility also stores the analysis results in the worksheet STORE. The spreadsheet cells showing inadequate strength becomes red in colour. After Auto Analysis, all Weld Groups having inadequate strength become obvious at a glance.
- ◆ A utilisation ratio for each Weld Group is calculated and shown in the worksheet "Store".
- ◆ The template has virtually no user interface. The A4 size printed out matches the Screen Display. Knowing Excel use and the ability to verify the output as a designer is sufficient for using WeldCalc.
- ◆ Shaded cells in the spreadsheet mean **User-Input** and un-shaded cells **Spreadsheet-Results**. This permits easy checking at a glance both by the user and the checker of WeldCalc output.