

Manual OptiDie

The program OptiDie consists of three sub-programs:

- Calculation of Single Armoured Dies
- Calculation of Double Armoured Dies
- Calculation of Dies with Slotted Sleeves

These sub-programs calculate the optimal diameter of dies and the optimal interference used for pre-stressing these dies.

Every sub-program contains some cells with red borders. They're all placed in the column "Your choice". If you like, you can enter values for the parameters necessary to perform the calculations. In most cases, however, this is not necessary since the program also comes with a proposal in the column "Proposal". If a cell in the column "Your choice" is left empty, the value standing right from this cell in the column "Proposal" will be used to perform the calculation. If the user wants to use another value, then the value proposed by the program will be overruled by the value entered by the user. In the column "Value" you find the values of the parameters the program is actually calculating with.

Starting from the top, the first inputs from the user are the external diameter of the complete die and the inner diameter of the core. This is followed by material data from the 2 or 3 elements the complete die consists of.

The block that follows shows the combination of values leading to the highest allowable internal pressure in the core p_i (caused by a forging operation). If you prefer another value for one of the parameters in this block you can enter it in the column "Your choice". If the interference of the core diameter or the external diameter of the are standardised in your company, you can enter it and the proposed values will be adapted to the new situation. Further calculated results are shown below this optimisation block.

In the graph you can see the stress distribution in the complete die. On the X-axis you find the radius of the complete die and the vertical lines show the size of the core and sleeves. The blue line shows the radial stress and the red line the hoop stress in the die, depending on the value of the maximum internal pressure in the core p_i . If p_i is set to 0 in "Your choice", you can see the stress distribution after prestressing the die. If the stress as it occurs during forging has been filled in in "Your choice", the actual stress distribution will be shown.

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