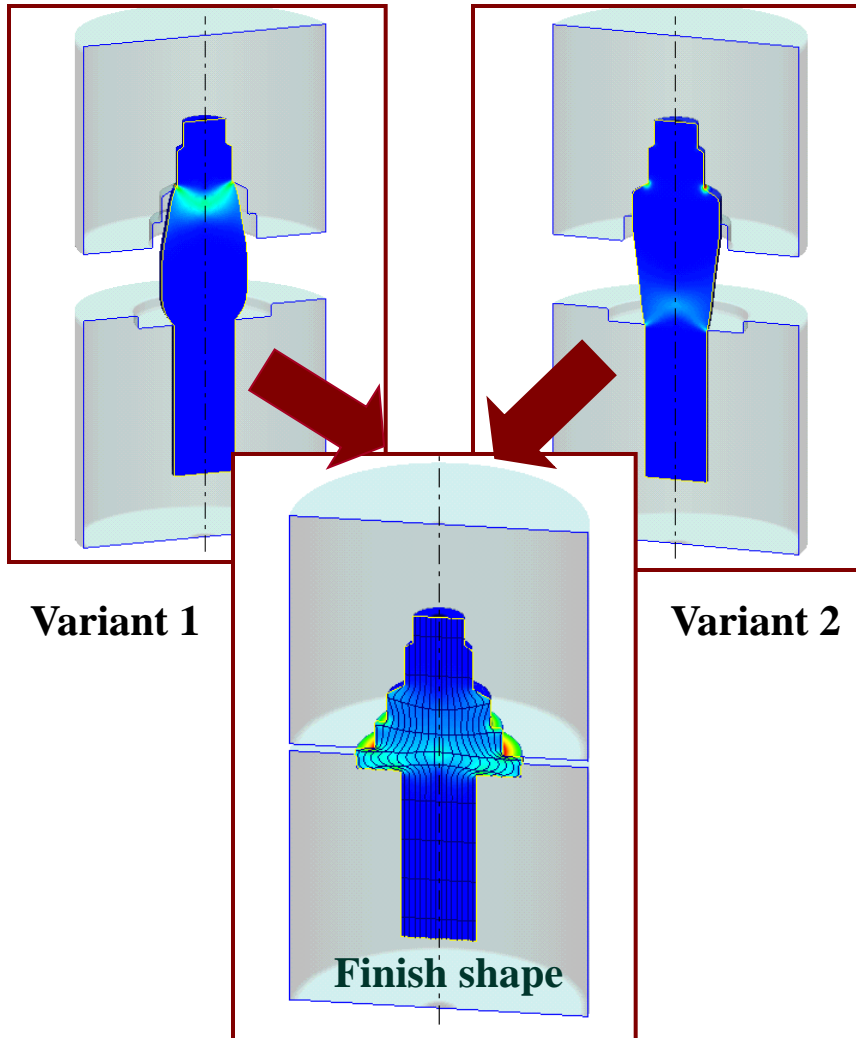


Optimization of cold forging technology by means of the simulation

QuantorForm Ltd. Moscow

Main tasks for simulation analysis



- To develop optimal design of preforming operations to fill the finish die without defects
- To reduce contact stress and fracture probability
- To optimise the die assembly for longer tool life and to keep die deflection within tolerance

Material flow analysis in cold forging

Bolt forging - material flow analysis

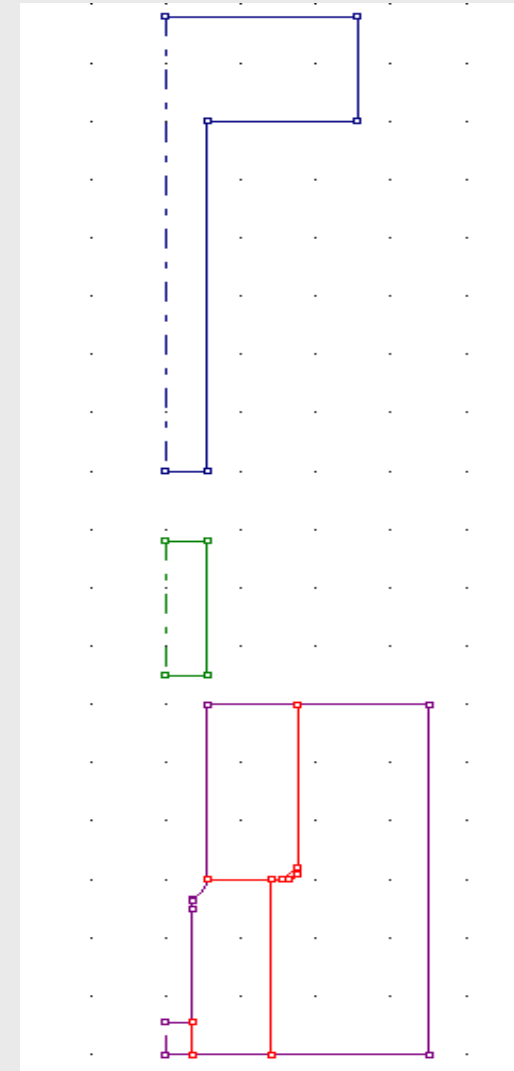


Material C45 at 20 °C
Billet 10.9x23 mm

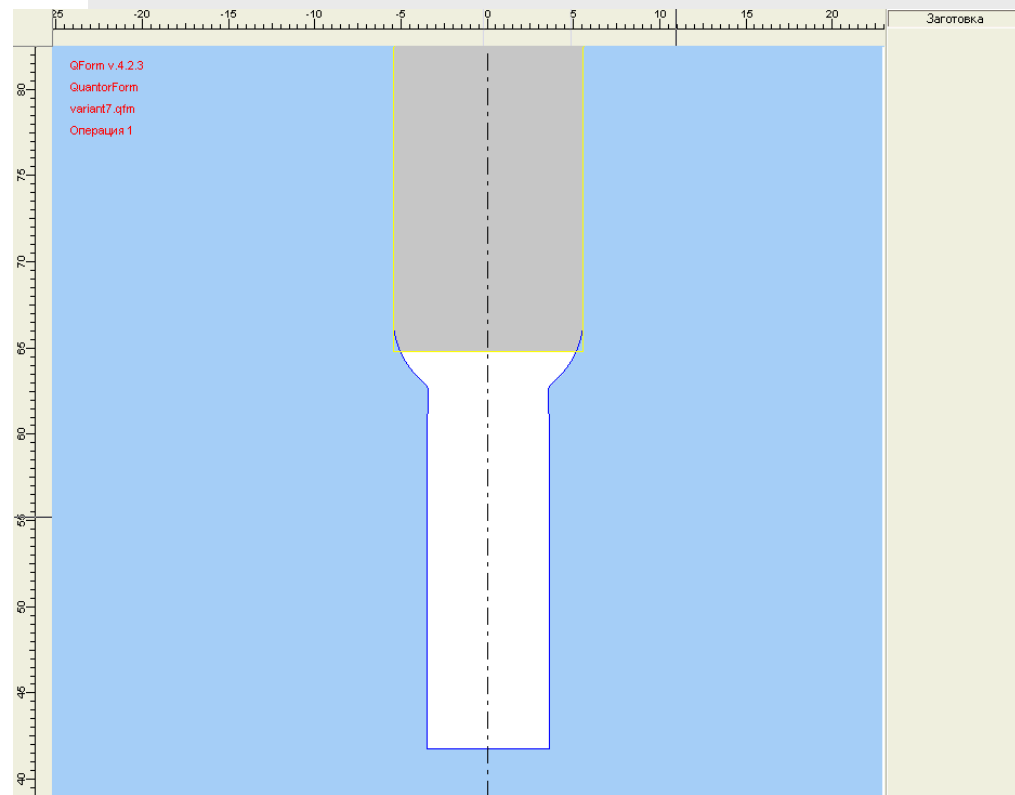
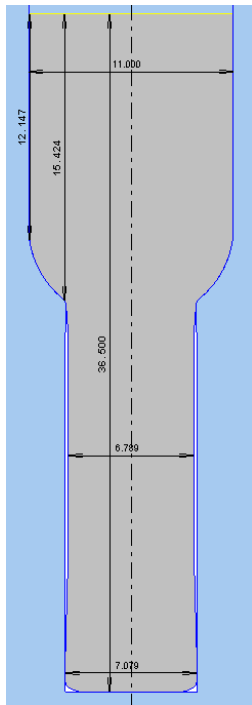
4 operations: 2D and 3D simulation

The die design as a drawing for 2D simulation of the 1st blow

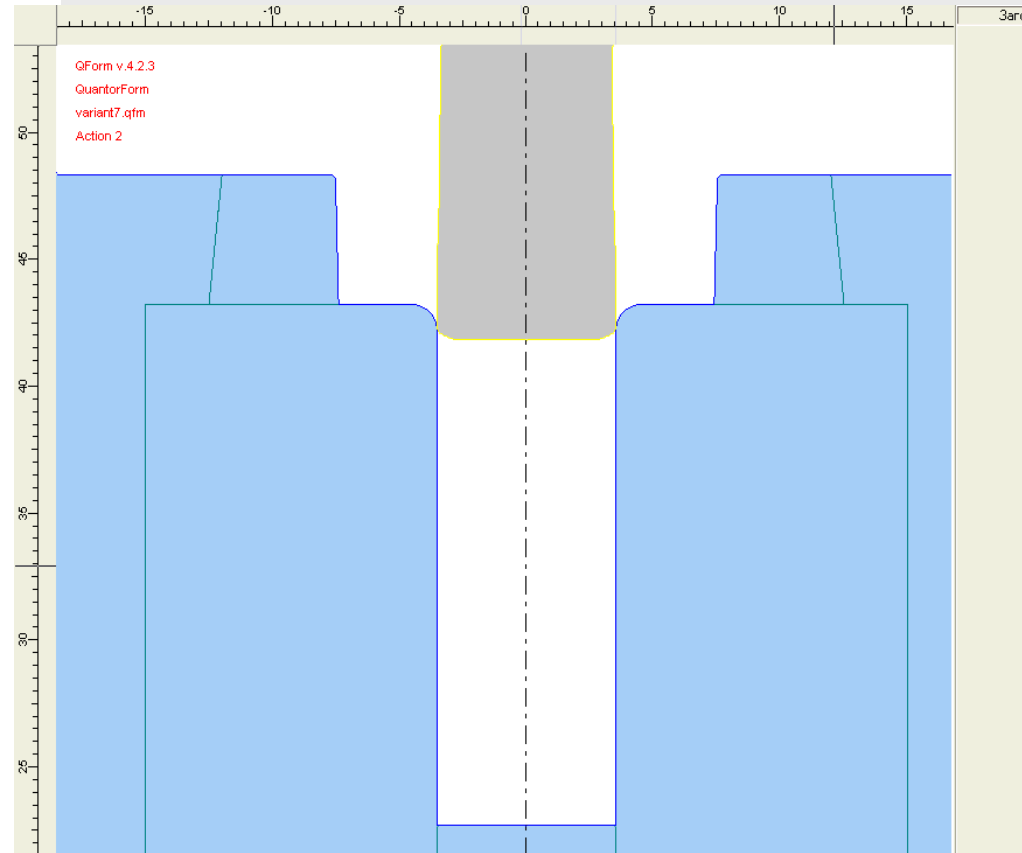
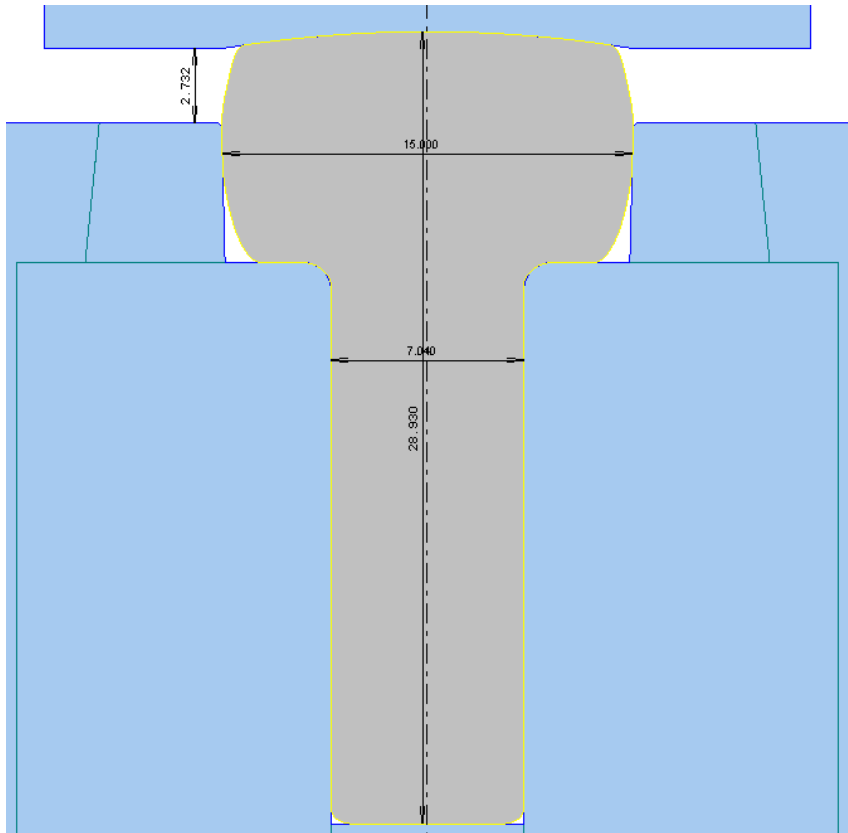
Assembly die design is shown



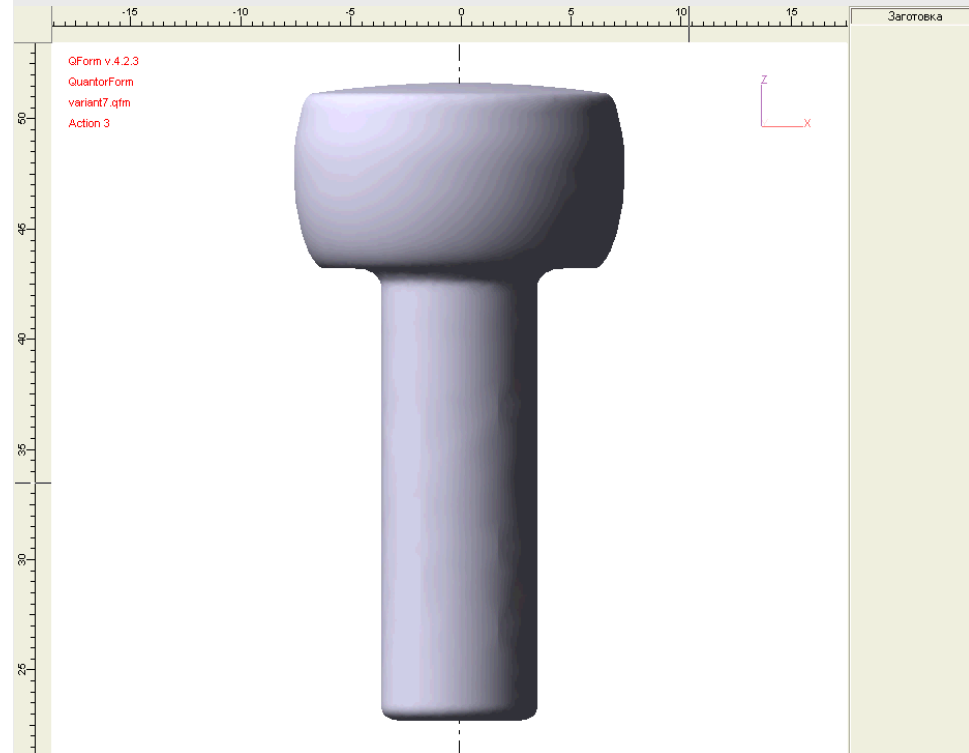
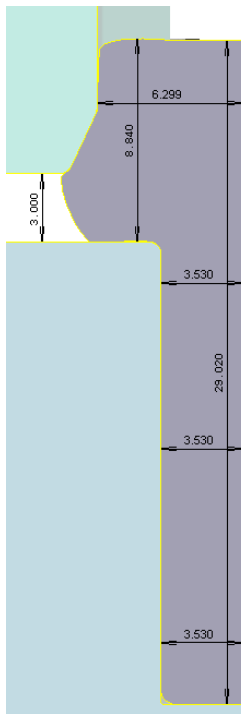
2D simulation of the first operation



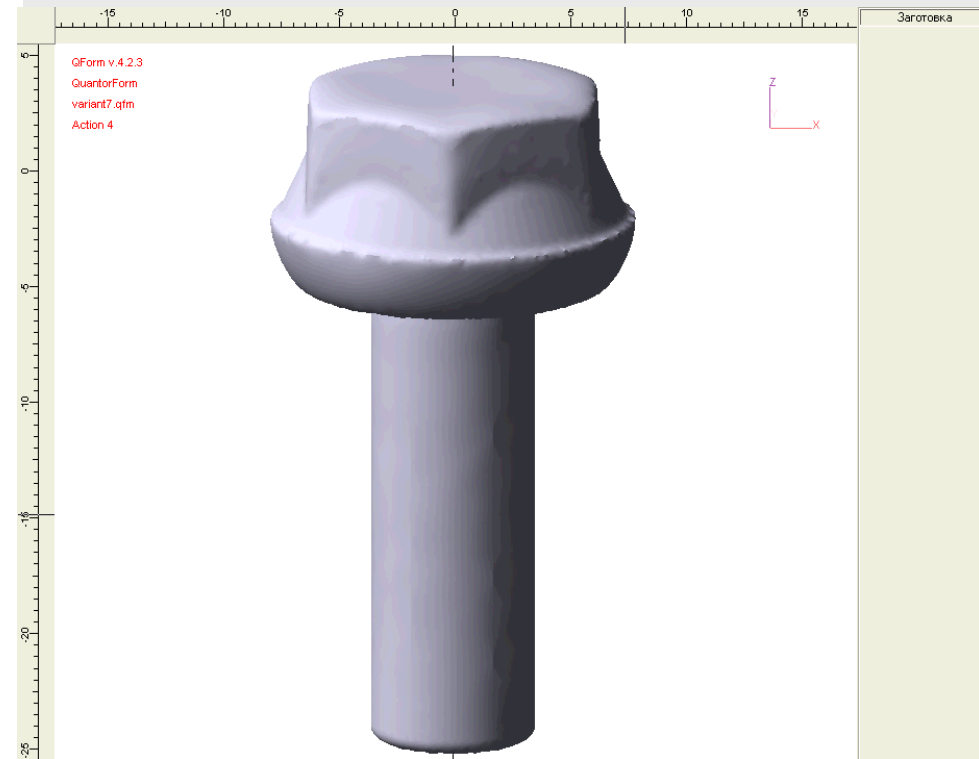
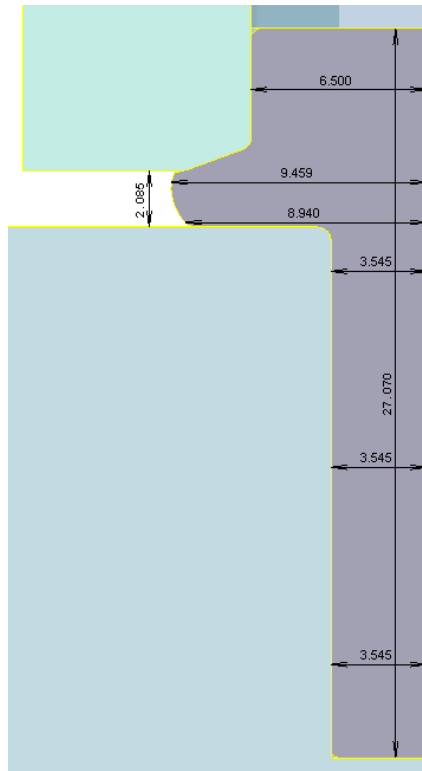
2D simulation of the 2nd operation



3D simulation of the 3rd operation

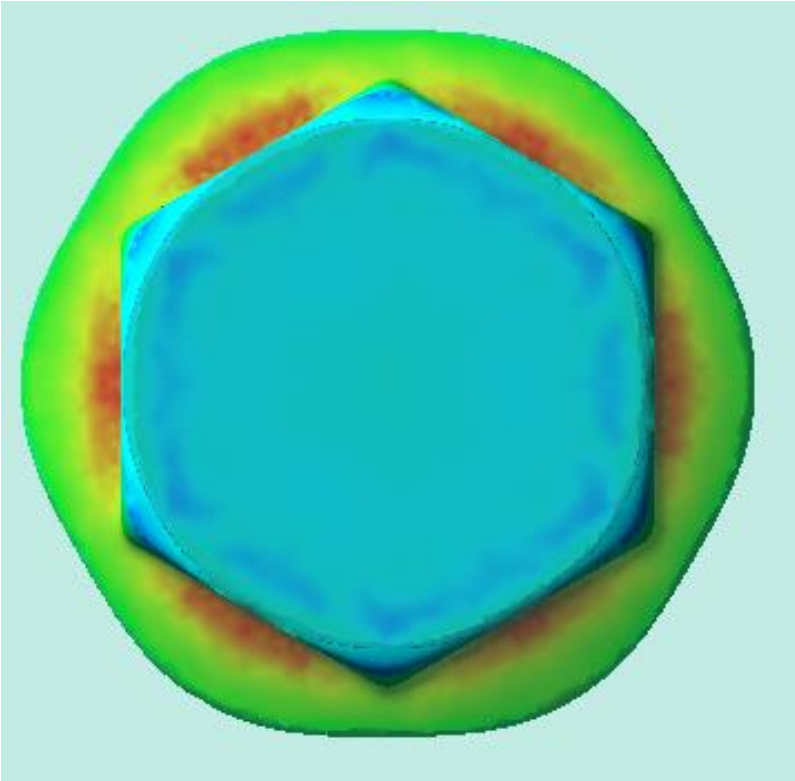


3D simulation of the 4th operation



Final shape of the bolt head depending on setting of operations

Incorrect setting of the positions
Not round shape of the head



Proper setting of the positions
Round shape

