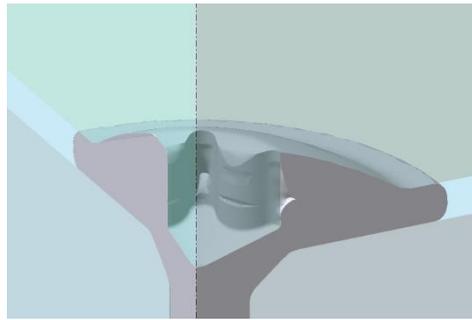


## QForm 7: forging competitive advantages

*20+ years of implementation of several generations of our programs in the forging, extrusion and fasteners manufacturing industries have clearly proved high economic efficiency of simulation. Such efficiency is based on several outstanding features of QForm 2D/3D:*

- Very short introduction time to any forging manufacturing chain.
- Easy-to-learn, easy-to-use due to its outstanding user-friendliness,
- High accuracy and robustness of the simulation.
- Short simulation time
- Fast and highly qualified engineering support locally in the UK.



*Torx head forging: real part photo (left) and simulation (right) showing exactly the same defects of material flow.*

**Typical ways of saving and fast return of investment are the following:**

### **Production cost estimation:**

Before production even starts you can begin to save money. Proper estimation of the manufacturing expenses provides firm background for the offer proposed to the customer in terms of accurate estimation of required equipment capabilities, material use and necessary development time.

## **Tooling cost savings**

When developing the tooling set, several variants of the die design are usually required before the final die configuration is found. Eliminating such iterations can not only save the cost but also reduce time to the market. Another way of tooling saving is extending of tools life due to tool design optimisation and implementing the most suitable tool materials.

Using the simulation we can cut down 2'000-3'000 pounds per tool set depending on its size and complexity. In case of big dies for forging of crankshafts and axle beams the effect can be much bigger.

## **Reducing production line downtime**

The use of simulation reduces the number of trial forgings on production line that in turn shortens its downtime. Again its economic efficiency very much depends on the production capacity of the line but typically the gain of operating time may reach up to 5 to 8% with respective cost savings. .

## **Material saving**

This saving is more articulated when forging relatively expensive titanium and nickel alloys though even with quality steels it can be quite significant. Typical weight saving as a result of simulation varies from 5 to 10% and depending on the material cost it saves up to 35'000 pounds per line in case of mass product in aerospace or automotive industry.

The brief analysis above does not cover all aspects of the simulation profitability but shows that the collective savings by using our software is considerable. We also have to mention increase of human capital because the simulation provides much faster skill improvement of the staff and easier introducing new generations of die designers and workers.