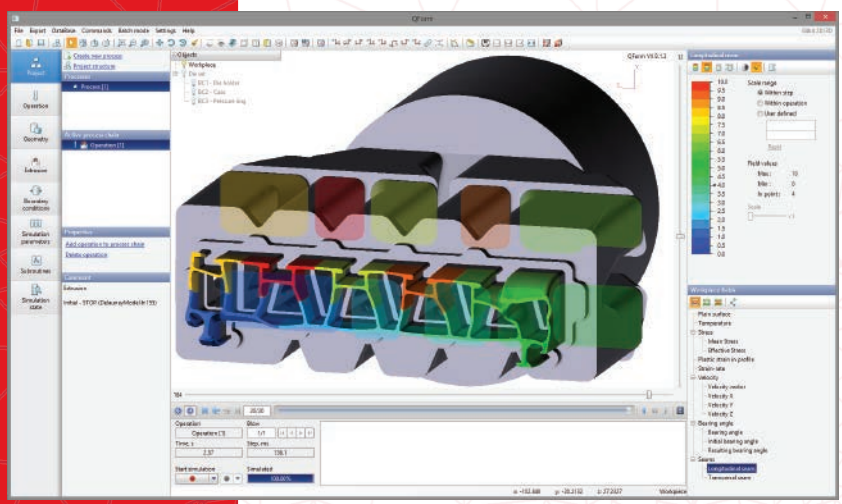
SOFTWARE FOR DESIGN AND OPTIMIZATION OF PROFILE EXTRUSION PROCESSES

QFORM VX

New QForm VX is the only program available that integrates die design and numerical simulation of metal profile extrusion processes.

The QForm VX extrusion simulation program has a new architecture, data structure and interface and introduces novel simulation methods that achieve the best performance and accuracy in the industry. QForm VX combined with QExDD program provide quick and easy die design integrated seamlessly with simulation.



Material from different feeding channels is indicated by colors on this distorted tip. Weld seams are located where the colors meet

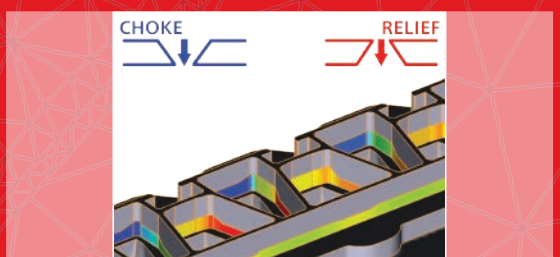
WHAT MAKES QFORM VX UNIQUE?

QForm VX is the only extrusion simulation program that calculates material flow fully coupled with the temperature and elastic-plastic deformation of the dies. It is well known that die deformation can have a significant impact on the material flow. QForm VX takes into consideration the displacement and distortion of tool surfaces, especially in the bearing area and simulates the material flow through this deformed shape of the die orifice. This exclusive feature of QForm VX provides the most accurate simulation of extrusion processes even for the most complicated die designs.

Numerous industrial cases have shown that die deformation can cause choke and relief zones in some parts of an initially straight bearing that cause drastic changes to the material flow pattern. Only a fully coupled simulation by QForm VX guarantees accurate results in such cases.

The practical industrial knowledge of leading die makers combined with the highly sophisticated computational methods have resulted in a unique program that virtually eliminates the need for die corrections, reduces product development cycles, minimizes costs and improves product quality.

Simulation results with rigid die (left) and deformable die (right) compared to actual profile front tip



Bearing surface inclination due to die deformation

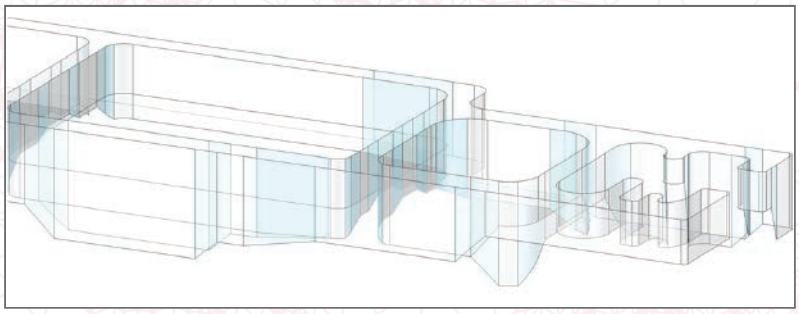
AUTOMATED DIE DESIGN INTEGRATED WITH SIMULATION

QExDD

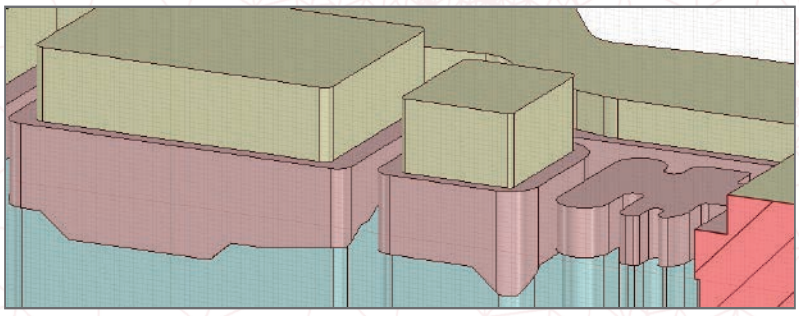
QForm Extrusion Die Designer

QForm VX achieves maximum performance when used together with the program QForm Extrusion Die Designer. QExDD is an automated system for generating 3D designs of dies, mandrels and other parts of the tooling set for extrusion of hollow and solid profiles. This system speeds up the design procedure several times by helping to create a solid model of a tooling set step-by-step using special parametric design tools. It also provides the highest quality solid models that can be used for simulation in QForm VX and then after virtual correction and verification used for CNC machining. This integration of die design and simulation completely revolutionizes the development of extrusion dies.

QExDD provides automatic conversion of standard 2D drawings of the base geometry into 3D bodies. All routine steps of 3D model creation are automated, even for very complex relief geometry, which significantly reduces the time required for die design.

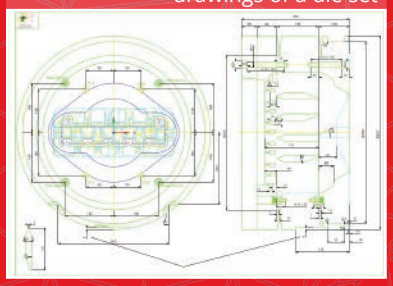


A special bearing design module automatically creates bearings in less than a minute. The parametric bearing designs are automatically converted into solid features to be used for simulation and CNC machining.

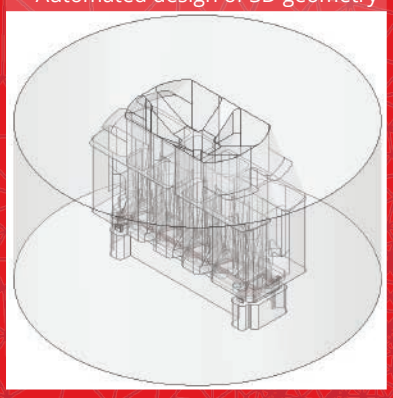


The finite element mesh used for simulation in QForm VX is automatically generated in the solid model of the die set created by QExDD. Finite element mesh parameters are specified automatically by the program so the user only needs to input basic process parameters like temperature and material of billet, die temperature values, ram speed, friction conditions etc.

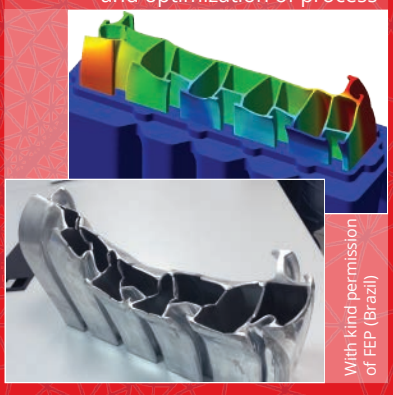
2D drawing
Create or import drawings of a die set



3D model
Automated design of 3D geometry



Simulation and optimization
The most accurate simulation and optimization of process



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