Die Making

The modular CAD/CAM/CAE system for die design & manufacture
Die Making
- VISI Progress (Unfolding & strip design)
- VISI Progress (Tool design)
- VISI Blank (Blank development)
- VISI Blank (Flange unfolding)

Construction
- VISI 2D CAD
- VISI 3D Surface Modelling
- VISI 3D Solid Modelling
  Standard interfaces include:
  - STEP
  - IGES
  - VDA
  - Parasolid
  - DWG, DXF
  - Solid Works
  - Solid Edge
  - Inventor
- VISI Advanced Modelling

Interfaces
- Catia read
- Catia write
- NX read
- PTC read
- JT Open read & write
- SAT read & write
The end-to-end solution for the design and manufacture of progressive & stamping dies. VISI supports all parts of the tool making process, from model analysis and unfolding, blank development, strip design and 3D tool construction. This industry specific technology makes VISI the only end-to-end CAD/CAM solution unique to the toolmaking industry.

**Mould Making**
- VISI Flow
- VISI Analysis
- VISI Electrode
- VISI Mould

**Additional Modules**
- VISI PDM
- VISI Viewer

**NC Programming**
- Milling & Drilling:
  - VISI Machining 2.5-Axis
  - VISI Machining 3-Axis
  - VISI Machining 5-Axis
  - VISI Compass Technology
- Erosion:
  - VISI PEPS-Wire (Wire EDM)
  - VISI EDM (Sink Erosion)
VISI MODELLING

2D and 3D CAD

VISI Modelling provides a robust and powerful solid and surface modelling platform based around the industry standard Parasolid® kernel. Combined with Vero’s surface technology, model analysis and 2D design, VISI Modelling offers complete flexibility to construct, edit or repair the most complex 3D data.

2D Construction
- Extensive construction techniques
- All geometries such as points, lines, circles, splines, profiles
- Trimming, moving, scaling, rotating and mirroring of elements
- Form and position tolerances, surface specifications
- Full dimensioning / measuring functions

3D Solid Modelling
- Dynamic Direct Modelling
- Simple generation of solids
- Feature manager
- Part thickness analysis
- Model kinematics
- Exploded view
- Drawing creation
- Bill of materials

3D Surface Modelling
- Hybrid solid and surface modelling kernel
- Closure of surface set to solid model
- Comprehensive repair functions
- Creation of complex surface geometry
- Multiple surface types such as ruled, sweep, draft, drape, lofted, pipe, drive & shape, capping, fillet, parting plane, and tangential.

CAD Interfaces
For the import and export of CAD data, the following interfaces are available:
- STEP
- IGES
- VDA-FS
- PARASOLID
- DWG, DXF
- STL
- Solid Works
- Solid Edge
- PTC
- Catia
- JT Open
- NX
- SAT

Advanced Modelling
Advanced modelling is a set of tools that enable the existing model topology to be changed without compromising model integrity or curvature consistency. For example, it can be the easiest way to introduce spring-back compensation into the press tool.
VISI PROGRESS

Part Processing & Strip Layout

VISI Progress provides industry focussed technology for the design of progressive dies and press tools - from model analysis and quoting, part unfolding and blank development through to 3D die design and manufacture. Deep drawing, linear and non-linear unfolding and flange development are all managed with a hybrid algorithm based on a combination of analytic and FEM solvers.

- Calculation of the neutral fibre with fixed or variable values or from extensive material databases
- Processing of constant or variable bend radii
- Automatic skin extraction from solid model
- Feature management for ribs, bosses, and coining
- Automatic or step-by-step unfolding
- Spring-back compensation

Starting with a developed blank, it is easy to design a 3D strip layout. Automatic blank alignment, rotation and optimisation help plan a more efficient strip. Punch design becomes more effective with the use of the 2D strip plan, which also provides a familiar working environment for designers used to working in 2D.

- Automatic creation of the strip layout
- Part nesting and multiple layout variations for strip design optimisation
- Automatic recognition of cutting punch contours
- Easy definition of bending stages via drag-and-drop
- Percentage of material usage, bending & shearing stress calculations
- Simulation of entire strip with all stamp and bending operations
- Dedicated application for cylindrical drawing
- Strip report documentation as HTML, TXT or CSV

FLANGE

Complex Bend Development

Flange unfolding is the ideal tool to complement the standard unfolding capabilities of VISI Progress. Based on FEM technology, this utility allows the creation of intermediary unfolding stages for complex parts via tangent, constant length or user-defined binder surfaces.

- Linear and non-linear flange unfolding
- Creation of construction geometry such as trimming curves, linear binder segments and isoparametric curves for flange curve building
- Graphical representation of material thinning
- Animation of the forming action
- Edge mapping to maintain feature definitions

Drag-and-drop positioning of punch and bend locations

3D strip layout with punching & bending operations
Tool Design

The 3D strip is the basis of the tool design. Plate sizes will automatically adapt to the strip length, and flexible CAD tools along with industry standard component catalogues ensure that the tool layout is quick and efficient. Each assembly can be stored as a tooling template, or alternatively a template can be chosen from a list of common tool standards. The tool assembly will typically include all the critical data required for correct operation of the press tool, including press stroke, strip stroke, punch height and tool stroke information.

Standard Catalogue Components
- Screws, dowels, grubs
- Pillars & bushes
- Punches
- Springs
- Element assemblies

3D Tool Design
- Standard 3D tool designs
- Template driven user-defined tool designs
- Parametric user elements
- Punch creation with automatic slug clearance holes for all plates of the tool assembly
- Support for die plate inserts
- Tool cavities with corner relief pockets
- Automatic view creation, fixed and stepped section views, hole charts, and B.O.M
- Kinematic study of tooling action with physical properties and collision checking
- Automatic allocation of CAM attributes for feature processing (Compass technology)
**VISI BLANK**

**Rapid Blank Development**

Based on FEM technology, VISI Blank is a solution for the development of 2D blank shapes from complex 3D models. VISI Blank is designed for estimators, engineers, sheet metal product designers and tool and die makers to optimise the development of sheet metal components and provide valuable analysis of material behaviour during the forming process.

Virtually any 3D form can be flattened into a developed blank to ensure that the optimum amount of stock material is used for production thus reducing supplementary manufacturing or finishing operations. Generally the form can be produced within a few minutes and has a proven accuracy of being within 1% of the finished component.

- Reduction of development time & material costs
- Avoidance of trial tooling during the prove-out stage
- High degree of accuracy

**Model Preparation & Calculation**

- Mid-plane mesh generation from surface or solid model
- Automatic hole filling
- Auto-tipping to define the best stamping direction
- Develop blank onto binder surface or Z-level strip plane
- Edge constraints to lock material deformation along peripheral edges
- Material database – populated by common materials

**Display Results**

- Material weight, blank area/ perimeter, min/max thinning %, and flange stress
- Colour coded graphical analysis of material thinning and gathering
- Animation of the forming action
- Imprinting of curve lines to maintain trim features
- HTML report for project documentation

**Graphical analysis of material thinning and gathering**

**VISI Blank**

- File Name: D:/Mac/WorkDir/F18_Hybrid_Bank_Animation.WF
- Material: 1020 F4PZG (0.011 inches)
- Tensile Strength: 38 kips/in²
- Minimum Flange Thickness: 0.040 inches
- Minimum Flange Thickness: 0.040 inches
- Maximum Flange Thickness: 0.050 inches
- Blank Area: 113.677 inches²
- Blank Perimeter: 133.277 inches
- Blank: 15.18 inches
- Blank Length: 14.546 inches
- Blank Width: 14.546 inches
- Weight: 1.05 lbs
- Maximum Tensile: 41.4 %
- Minimum Tensile: 2.29 %
- Fretz Stress: 2001 LBF
VISI
Software for improved efficiency

VISI is acknowledged as the leading CAD/CAM software solution for the Mould & Die industries.

VISI offers a unique combination of fully integrated wireframe, surface and solid modelling technology, comprehensive 2D, 3D and 5-axis machining strategies with dedicated high speed routines.

Industry specific applications for plastic injection tool design including material flow analysis and progressive die design with step-by-step unfolding provide the toolmaker with unsurpassed levels of productivity.

With its comprehensive range of CAD interfaces, VISI eliminates the links between varying software suppliers and the solid-to-surface or CAD-to-CAM geometry conversions required by traditional systems.

- Industry focussed technology
- Efficient and practical solutions
- Single environment for design & manufacture

“\nWe are very happy with VISI, as the software works in the same way as a toolmaker thinks. That makes VISI easy to learn and quick to integrate. “

Manfred Deifel, head of toolmaking at Rafi GmbH & Co. KG

VERO SOFTWARE
We speak your language

Vero Software is a world leader in CAD/CAM software with a proven track record of reliable product delivery. Vero develops and distributes software for aiding the design and manufacturing processes, providing solutions for the tooling, production engineering, sheet metal, metal fabrication, stone and woodworking industries. Despite the diversity of application, these solutions have one thing in common: they all address the rising challenges of achieving manufacturing efficiencies and bring huge value to the operations where they are deployed.

The company has direct offices in the UK, Germany, Italy, France, Japan, USA, Netherlands, China, Korea, Spain and India supplying products to more than 45 countries through its wholly owned subsidiaries and global reseller network.

Part of Hexagon

Vero Software is part of Hexagon, a leading global provider of design, measurement and visualisation technologies that enable customers to design, measure and position objects, and process and present data.

For more information, please do not hesitate to get in touch