NX Mach 3 Progressive Die Design

The fastest and most complete progressive die design process

fact sheet

▶ **Summary**

NX™ Progressive Die Design software delivers a state-of-the-art solution to the shrinking lead times and tighter cost controls facing manufacturers of progressive dies. By combining industry knowledge and best practices with process automation, NX Progressive Die Design streamlines the die development process, from design through to tool validation. NX Progressive Die Design is a comprehensive solution for quality die design, supporting associativity with the part design at every stage of die development and including a variety of functions specific to automotive progressive dies.

Benefits

Conduct formability analyses on complex freeform parts

Highly automated strip layout design

Comprehensive die base, insert group and standard part design

Fast and efficient design change propagation across entire process (tool design through machining)

Reduce tool design errors

Collaboration with customers and suppliers

Eliminate conventional drawings – achieve paperless processes

Effective data and process management

Decrease CNC programming time

Business challenges

Job turnaround and project time

Cost control

Waste and human error

Process connectivity between progressive die design and machining

NX Mach 3 Progressive Die Design offers a wealth of industry best practices and process solutions for:

Sheet metal part and blank design

Efficiently design both straight break and freeform sheetmetal parts using a broad set of sheetmetal features. Leverage feature recognition, bend table and direct unfolding capabilities to design pre-bends and over-bends for straight break parts.

Apply the One-step Unforming and Formability Anlaysis technology to analyze and design intermediate forms and the flattened blank shape for complex freeform parts.

Strip design and simulation

Utilize strip layout and scrap design tools to quickly prepare the strip layout. Specify the strip details and progression of design stages using a streamlined strip layout workflow. Simulate the manufacturing of the strip to ensure proper ordering of stations.

Die base, insert and assembly design

Layout the die base assembly and die inserts for forming and punching operations. Efficiently and associatively design forming and punching tools. Configure the die based on libraries of inserts, die bases and standard parts. Automatically compensate for springback in bending punches and dies. Easily customize library content without programming.
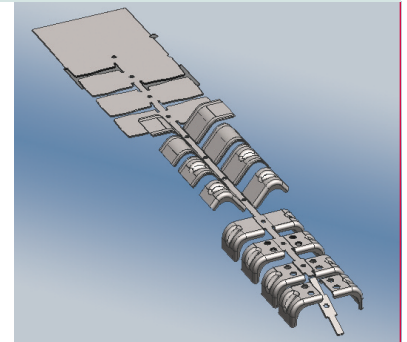
Effective blank generator, blank layout and scrap design functions automate design of the strip layout
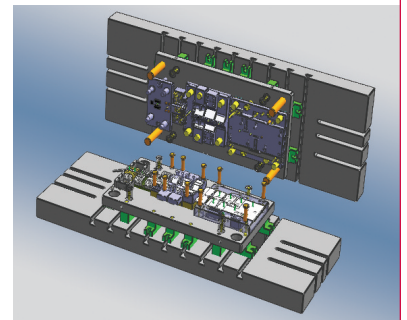
Comprehensive libraries of die bases and inserts accelerate the complete die assembly

NX **UGS**

Transforming the process of innovation

Tool validation

Validate the progressive die design within the assembly context for proper clearances and reliefs in various positional states. Calculate press force and force center. Validate material usage of strip layout.

Documentation and manufacturing information

Document the progressive die design using automated drawing creation with associative hole tables, 3D annotation and hole tolerances. 3D annotation enables paperless communication and manufacturing.

Automate manufacturing processes and operation selection via integration of NX Progressive Die Design and NX CAM.

Design change management

Graphically compare versions of designs for similarities and differences. Easily update related features, drawings, and toolpaths based on changes to the sheet metal parts, strip layout process, strip layout parameters and insert groups.

Process and data management

Enable team oriented design with multiple designers working concurrently on a single progressive die design. This approach is an extension of the traditional concept of product/tooling concurrency.

Synchronize and distribute product and process data across tool design and manufacturing teams and re-use proven design practices.

Collaboration

Streamline the collaboration process by packaging 2D drawing and 3D design information with other electronic documentation into a lightweight file that can be emailed and viewed by non-CAD participants in the design process.
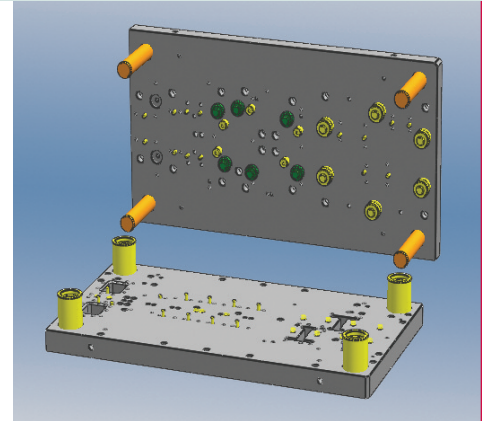

Automate the design and manufacturing of die bases using standard components with predefined manufacturing information.
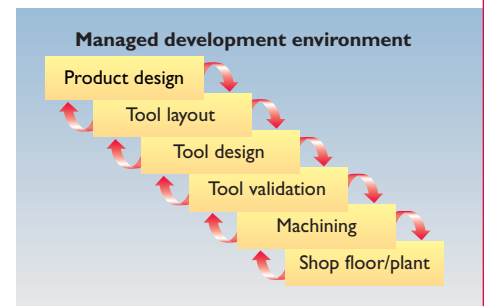
Work concurrently with team members, search, access and re-use project and process data all within the managed development environment.
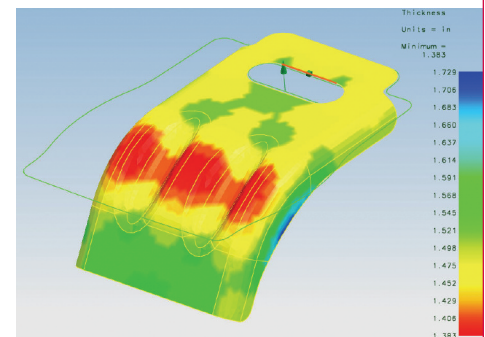
One-step Formability Analysis is based on a Finite Element Method solver that enables quick and accurate thinning, stress/strain, and springback validation. Automatically generate blank and pre-form profiles.
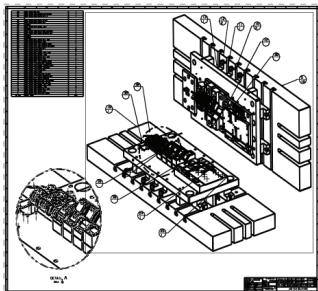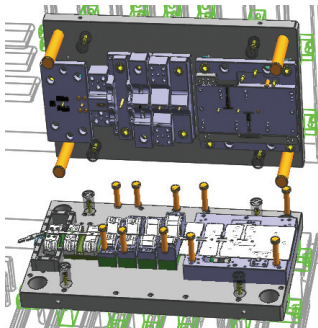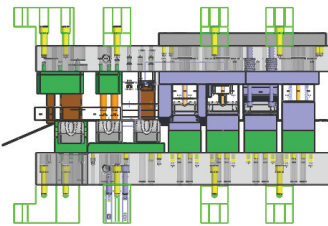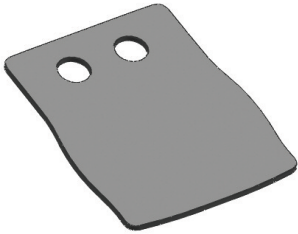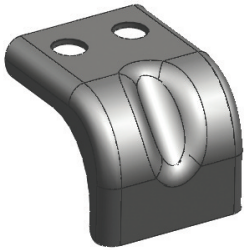
NX Mach 3 Progressive Die Design product content

Progressive die design
- Sheetmetal feature recognition and direct unfolding for straight break parts
- Unform complex freeform parts
- Blank design and layout
- Scrap design
- Strip layout design
- Insert group design (bend, blank, burr, chamfer, counter bore, countersink, curl, deburr, dimple, emboss, engrave, form, lance, lifter, mount, pierce, pilot, user defined)
- Relief and pocketing design
- Automated drawing creation and hole charting
- GD&T, 3D annotation, BOM

Standard catalog offerings
- Insert components (die accessories, punches, plates, bushes, pins, dowels, screws, springs, posts): Danly, Dayton, Hyson, Interchangeable, Unified, Strack, Superior
- Die bases: Superior, Strack, Universal
- Die base management
- Standard part management

Validation
- Press force calculation
- Material usage
- Product validation
- Formability analyses – thinning, stress, strain, and springback
- Interference checking

Part and assembly modeling
- Straight break sheet metal
- Advanced sheet metal design
- Solid and feature modeling
- Free form modeling, basic
- Free form modeling, advanced
- Assembly modeling
- Advanced assemblies
- DesignLogic
- UDF

Managed development environment
- Vaulting and version management of product and process data
- Web infrastructure for data accessibility
- 2D drawing and 3D part and assembly visualization/mark-up independent of CAD system
- Supports distributed concurrent team design

Collaboration
- Package design documents and for quoting and design review
- Web publishing

Automation
- NX Open and Knowledge Fusion Runtime package

Translators
- DXF/DWG
- IGES
- STEP AP 203 and AP 214

Note: all capabilities described above are also available within NX Mach 4 Advanced Die Manufacturing.

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