CADALYST LABS REVIEWS

First Looks: Striker Systems' Die Professional

Software for stamping dies

by Pat Davis

Die Professional is a collection of six products from Striker Systems-SS-DESIGN, SS-UNFOLD, SS-STRIP, SS-DIE DESIGN, SS-WIRE, and SS-DRAW FORM-that together help you develop stamping dies. Die Professional is an AutoCAD add-on.

SS-DESIGN ($750) provides the basic interface to all Striker Systems products. It's included with the purchase of any Die Professional module and can also be purchased separately.

SS-UNFOLD ($1,495) is a 2D and 3D wire-frame sheet-metal unfolding program that creates flat models using straight line or arc bend representation. You can use SS-UNFOLD in conjunction with SS-STRIP DESIGN to refold the part to create a 3D progressive strip layout. SS-DESIGN and SS-UNFOLD modules were reviewed previously in the January 2002 Fab Professional First Look review, p. 44.

Die Professional

Stamping die program

pros: Reliable; easy to use; impressive tool set.
cons: None significant.
price: $3,995 (bundle SS-DESIGN, SS-UNFOLD, SS-DRAW FORM, SS-STRIP DESIGN, AutoDetail, and AutoBOM)

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Material strips

SS-STRIP ($995) provides tools to create a progression model of the material strip (figure 1). It orients the part on the strip that offers optimum material use and then adds all necessary piercing, blanking, and forming operations.

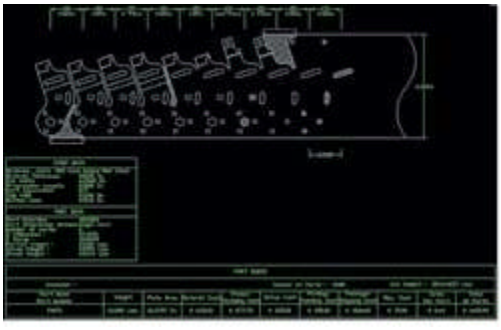

Figure 1. Die Professional's SS-STRIP design

You can place multiple unique parts in a single strip layout with several layout options. Once you add parts, SS-STRIP provides an option that automatically calculates each degree of part rotation on the material strip.

A chart shows each degree of rotation with the corresponding percentage of material use and coil width, with the optimal part

module automatically generates progressive strip details.

rotation highlighted. A number of options and constraints can be applied to the material strip. For example, you can assign a constraint to warn you when a coil width is exceeded or when a part bend falls within a designated angle of material grain.

Once you define the part layout, a Quick View option inserts a two-part progression model of the strip. You can use this to check distances, verify the orientation of the parts, and determine if it is suitable for development of the die. The Build option inserts an intelligent two-part progression model of the strip and uses it to create punch definitions.

As you define a punch, it is assigned a progression number. SS-STRIP provides three options to define a punch. Manual Select lets you select geometry inside the build window that forms a perimeter of the punch. Auto-Punch lets you pick a point within a closed area. Multiple Rounds let you select groups of round holes to define round punches processed on the same progression.

The program assigns die-cutting clearance values to each punch, including offsets for heel, cutting, and noncutting edges. Clearance values set for the first punch automatically apply to subsequent punches. SS-STRIP provides several different punch overlap types to choose from. You use SS-DESIGN's modify commands to retrieve and edit assigned punch data. For example, the Auto-Inquire command erases a punch, defines a pilot, changes progression, creates punch overlaps, and modifies edge clearance values.

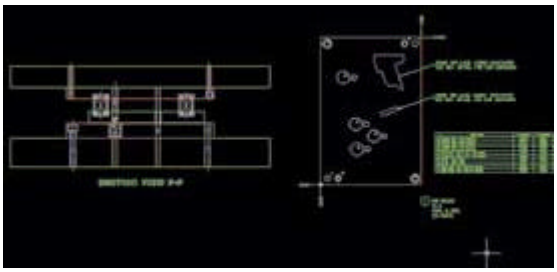

Figure 2. Section and detail drawings generated from an intelligent die model.

SS-STRIP's Progression/Activity dialog box lists all progressions for the strip, the activity occurring on a selected progression, and a graphic of the selected activity. When you select a different progression number, the list changes accordingly. You can redefine and move punches to another progression, delete and add progressions, and select strip layout direction and layer mapping tools.

Flat parts created with SS-UNFOLD can share intelligence with SS-STRIP. To create a fold, the Foldup command calculates all the geometry in the progression strip layout. You then select the desired bend line and specify bend angle, material flow, and direction.

SS-STRIP also offers an autodimensioning tool that can recreate and dimension each strip with a description of each progression, strip width, and progression length.

Finally, SS-STRIP's basic Part and Tool Estimator can create a basic part quote, including general billing information, platting area, part weight, and material. Strip information provides data on shearing and forming tonnage. The program displays the formulas, and you can adjust the multiplier value variables.

Intelligent stamping dies

SS-Die Design ($2,495) provides tools to develop stamping dies with intelligent components such as punches, springs, die blocks, and holes. These intelligent objects define themselves and their relationships to other objects in the drawing (figure 2, p. 50). You can use existing AutoCAD geometry that contains slug holes, such as a strip layout, and automatically create tool steel plates based on various components selected.

You can also insert predefined components from the component library, which includes a fairly extensive assortment of intelligent components such as punches, die blocks, fasteners, springs, and holes. Each component type uses a dialog interface where you select the desired component specification. You can easily create new components or modify existing ones to suit your requirements.

Another way to create die components is to use the Auto-Block command. With Auto-Block, you select the desired component such as a die block from the component definition dialog box and then start the Auto-Block routine. Auto-Block automatically places component sizes based on the offset listed and from objects selected onscreen. You simply select the area on the strip layout and create the die block.

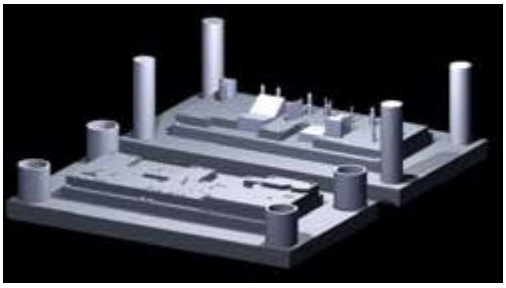

Figure 3. Die Professional can create solid models from conventional 2D die and punch drawings.

You can create die sets by selecting from a list of predefined die sets, defining a custom die set, or using the Auto-Select routine that allows the software to select from the die set library based on the working length and width of the established die block layout. Die set intelligence is completely editable. You can quickly modify post length or automatically add a stripper.

The Auto-Punch routine can define punches. A dialog interface prompts for punch type, point type, matrix type, keyed type, head type, point length, punch engagement, and whether or not to include an ejector. You then select slug holes on the strip layout, and the routine automatically adds punches.

You can store user-defined components in the die user library with multiple views and information for BOM (bill of materials) purposes.

The Auto-BOM routine uses the intelligence of the die drawings to create a complete BOM. The parameters that control BOM output can be assigned and stored in the BOM style library. I found it very simple to add or remove components and dynamically manipulate reference balloons. The Auto-BOM also automatically resequences the BOM to incorporate revisions. There are also many output options and report filters.

The program automatically creates ACIS solid models (figure 3, p. 53) of the entire die block or any subset of components.

Calculate and generate

SS-DRAW FORM ($995) is a deep-draw development system designed to calculate the required flat blanks and generate 3D models or 2D drawings for rectangular or cylin- drical deep-drawn parts. SS-DRAW FORM was the only Die Professional module that didn't ship with tutorials. However, the Help

system was more than sufficient to get me up and running.

To create a cylindrical shell, SS-DRAW FORM provides a dialog box with nine different shapes to choose from. You can reverse attachment direction or flip the construction direction of shapes to construct virtually any type of cylindrical shell. As you select segments, they appear in the preview image showing their attachment to the previously selected segment.

Once you define a basic shape for the cylindrical shell, you assign dimensional information to the segments. The segments are color-coded to show the current segment, segments without dimensional information, and fully defined segments. The program automatically calculates dimensions based on dimensions of other segments or input values.

SS-DRAW FORM provides multiple options for dimensioning segments. For example, you can use the inside or outside diameter or radius to define a radius segment. A preview image of the shell updates as you assign dimensional values.

You can create finished parts as a 2D profile, 3D wire frame, or solid model. The created geometry includes the estimated starting flat blank, a 2D section view, or a 3D wire frame or solid model.

The rectangular drawn shell routine provides a dialog interface to create straight-sided rectangular shells with or without flanges and tapered-sided rectangular shells with or without flanges. The dialog box displays a simple graphic image of the desired rectangular shell with labels indicating the required dimensions. You can create finished parts as either 2D profiles or 3D wire frames. The created geometry includes the estimated starting flat blank.

SS-DRAW FORM also includes a routine to calculate extruded hole development. You specify the draw diameter, extrusion height, and material thickness, and it calculates the pierced hole size with a 2D flat profile of the extruded hole and a plan view of the pierced hole.

In a dialog box for reduction calculations, you specify new shell parameters or load previously saved shells from the part library. The dialog box helps calculate the reduction list to determine the estimated starting blank size as well as the number of draw operations required and the material reduction expected per draw operation.

Calculations for reduction are based on a material flow table that defines the percentage of expected reduction for each operation. The material thickness and the angle of the punch used in the draw operation determine this value.

EDM programming

SS-WIRE ($2,995 2-axis, $3,995 4-axis) provides a set of routines for two- and four-axis EDM (electrical discharge machining) programming directly within AutoCAD. Its dialog box helps you set all the burning parameters, including die, punch or open cut, cut direction, desired lead-in and lead-out, and special conditions such as stop and repass options. You can store settings in a user library for later use. Once you establish the burning parameters, you specify the zero point where the wire machine head is at the start of the program.

You can use the Auto-cut feature to select the parameters of the first cut. It prompts you to select the object such as a punch hole or slot on the path to

burn. The burn parameter dialog displays so you can make changes. You then select the profile entry point, followed by the profile exit point. SS-WIRE then generates the tool path on the drawing.

Generating NC code is a matter of simply clicking a button. If you've been using a third-party application outside AutoCAD to create tool paths, you'll appreciate how easy this is.

Help files

For support, I relied extensively on the program's Help system. It provides concise explanations of how to use particular tools, but little discussion of concepts. In addition to the tutorials and Help system, Striker Systems offers training onsite or at a training center, as well as other support options.

More to cover

There is much more to Die Professional than space permits me to cover. If you currently use AutoCAD to create stamping dies, Die Professional quickly pays for itself with increased productivity.

All in all, Die Professional is an essential combination of tools for those who need to create stamping dies simply, quickly, and above all else, accurately. It is an excellent product with many unique, fine-tuned tools.

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