

# DYNAFORM 5.8.1

## Release Notes 10/2011

### Major improvements

1. Streamlined the BSE interface.
2. In the DFE module, the user can now parametrically build the die face for a symmetrical part.
3. Added new product change replacement functionality. The user can easily retain the current die face design and drop in new product design surfaces.
4. Added the ability to support a user defined 'Geometry Drawbead' and 'Line Bead Conversion Library'
5. The INC solver now supports trim operations.
6. In "AutoSetup", added the standard nitrogen cylinder force curve library for binder control.

### Newly Implemented Capabilities, Features and Functions in the BSE Module

1. Added a new BSE project interface, which allows the user to set unit, material density and sheet type before analysis and calculation.
2. Added the 'Auto Mesh' option in the "Preparation Import" dialog to mesh the CAD model immediately after it is imported.
3. In the "Generate Middle Surface" function within the "Preparation" menu, the program now automatically adds the middle surface layer to the current tool. It also removes other layers from the current tool after the middle surface is generated.
4. Added the ability to add the top and bottom surface layers of the part to the current tool and remove other layers in the current tool after the "Separate Surface" function in the "Preparation" menu.
5. The "MSTEP" mesh is now set as the default in the "Preparation" menu's "Surface Mesh" function.
6. Added a "Symmetry" function, which automatically checks the symmetry, based on the defined symmetry plane.
7. Added a new function for automatically adjusting the stamping direction in "Tipping", called "Element Normal". The average normal for the selected mesh is applied as the stamping direction.
8. Improved the "Double Attach", "Inner Fill" "Boundary Smooth" and "Sidestep" functions. Refer to the DFE module for descriptions.
9. The "MSTEP", "Outline" and "Nesting" functions are now integrated into one dialog box arranged in tabs, allowing the user to easily switch among these functions.
10. "Draw" and "Trim Line" in "MSTEP" are now separated, allowing the user to configure them individually.
11. Improved the "Generate Outline" function in "MSTEP".

12. Added the "Select All Parts" option in "Define Sheet Material" of BSE, allowing the user to define the material property for all the selected parts.
13. Added the ability to define the "Boundary Condition", by region, for "MSTEP" outlines.
14. Streamlined the "Nesting" interface.
15. Added the 'Free' option so the user can manually adjust the blank.
16. Added the 'In One Row' option in the "Constraints" menu for "Two-Pair" and "Mirror" to display the nesting results in one row.
17. After adjusting the step under "Draw nesting type", the trim line now automatically returns to the original position after finishing the operation in "Calculate 3D".
18. Added the "Plate" nesting function, allowing the user to constrain the nesting result through the definition of blank length and width.
19. Removed the "Batch MSTEP" and "Batch Nesting" functions.

### **Newly Implemented Capabilities, Features and Functions in DFE Module**

1. Added the 'Auto Mesh' option in the "Preparation Import" dialog to mesh the CAD model immediately after it is imported.
2. Added the "Replace" function. When importing a modified product, the program will automatically mesh the product, position it with the tipping result of the original product, and automatically update the addendum.
3. In "Generate Middle Surface" function in the "Preparation" menu, the program will automatically add the middle surface layer to the current tool and remove other layers from the current tool after the middle surface is generated.
4. After using the "Separate Surface" function in the "Preparation" menu, the user can now add the top or bottom surface layers of the part to the current tool and remove other layers in the current tool.
5. Improved the "Fillet Mesh" function.
6. Improved symmetry check in "Symmetry". The program will automatically check whether the part is symmetrical about the defined symmetry plane.
7. Added the "DFE Tipping Before Symmetry" option in "Default Config". If 'Yes' is selected, the "Tipping" dialogue in the "Preparation" menu is automatically placed before "Symmetry". This allows the user to adjust the stamping direction of the product first and define the symmetry after.
8. Added a new function for automatically adjusting the stamping direction in "Tipping", called "Mesh Normal". The average normal for the selected elements is applied as the stamping direction.
9. Improved the "Inner Fill" interface to realize the parameterization.
10. Added the ability to symmetrically create "Inner Fill" at both sides of the symmetry plane simultaneously for "Symmetry Part" and "Double-Attached Half/Full Input". Added the ability to define and/or edit the inner fill area which crosses the symmetry plane.
11. Improved the "Boundary Smooth" interface to realize the parameterization. Added the ability to smooth the boundary of the hole.
12. Added the ability to create and edit "Boundary Smooth" for "Symmetry Part" and

- 13. Added the ability to create and edit the "Boundary Smooth" for the "Cross Symmetry Plane".
- 14. Added the ability to edit the control line of "Double Fill" for the "Double-Attached" function.
- 15. Improved the "Sidestep" dialogue. It now allows the creation of sidestep on the inner boundary.
- 16. Added the ability to create and edit sidestep on the symmetric boundary simultaneously for "Symmetry Part" and "Double-Attached Half/Full Input". Added the ability to create and edit sidestep for the "Cross Symmetry Plane".
- 17. Added an 'Update' button in the "Boundary Fill" function. The "Update" button turns to red, prompting the user to click this button to update all the boundary fill features while adding or deleting a feature, changing the product position, or replacing the product.
- 18. Added the ability to create the binder surface and mesh simultaneously.
- 19. Improved the "Part on Binder" function, automatically moving the binder close to the flange region of the part.
- 20. Added a "Draw Depth" option in "Binder" dialog box.
- 21. Added the ability to symmetrically create and edit the 'Addendum' and 'Profile' for "Symmetry Part" and "Double-Attached Half/Full Input".
- 22. Added the "Binder Trim" button in the "Addendum Definition" dialogue, for streamlined access.
- 23. Added "MSTEP" in "Trim Line" and improved the "Edition" function for the trim line.
- 24. Added an 'AutoSetup' button in the "Addendum Definition" dialogue, for streamlined access.
- 25. Added the ability to automatically assign the generated die faces to each of the forming tools.

### **Newly Enhanced Capabilities, Features and Functions Supporting AutoSetup in the Formability Module**

- 1. Quick link from "DFE" to "AutoSetup".
- 2. In "AutoSetup", added the standard nitrogen cylinder force curve for binder control.
- 3. Enhanced the "Auto Position" function to correspond with "Element Normal" versus tool travel direction. If the user has defined and positioned the tool, the user has the ability to move the added part when adding the part to a tool in the tool position.
- 4. Added the ability to save relative position between blank and tools.
- 5. Added the ability to calculate the minimal time step of ten elements and to calculate the average time step of the blank.
- 6. Added "Show Current Tool Only" option to display tools for current stage.
- 7. Added the ability to output the springback nodal constraint information to the index file, for the "Springback Constraints" display during post-processing.
- 8. Added the "Auto-Position Blank" function, which automatically rotates to contact the tool.
- 9. Added the "Spring Definition" function for 'Binder Hold' and 'Pad Hold' in "Force".
- 10. Added a "Stretch Forming" function:
  - a) Added three types of definitions for "Stretch Forming": "Transversal Wrap Forming", "Transversal Bullnose Forming" and "Longitudinal Stretch Forming".
  - b) Added the ability to switch between millimeters and inches for the length.

11. Added the ability to support local compensation in the “Springback Compensation” function.

### **Newly added features and functions for INC Solver**

1. Added the ability to support tailor welded blank forming settings.
2. Added the ability to support the trim line procedure.
3. Added the ability to specify single CPU or multiple CPUs for calculation.

### **New features for Blank Generator**

1. Provides two methods for meshing: “Blank Mesh” and “Part Mesh”.
2. Ability to adjust the node number in “Part Mesh”.
3. Added the ability to import the blank surface.
4. Added the ability to import the blank outline.
5. Replaced the “Blank Generator” with the one used in “Quick Setup” and “User Setup”.

### **Additional Features and Functions for Job Submitter**

1. Added a job summary. The user now has the ability to import a d3hsp of the current directory in the Pre- and Post-Processor and output a summary of detailed information, including ‘normal termination’, ‘total CPU time’, ‘element/nodes information’, ‘error message in the error termination’, etc.
2. Added the ‘Submit’ command. The user can now view the current commands at the bottom of the procedure interface.
3. Added a ‘right-click’ menu option for “Job”.
4. Added an online help guide, accessible by pressing F1.

### **Enhanced and Improved Pre-Processing Capabilities**

1. Adopted the new "Curve Editor" in the "Element Trimming" and "Element Lancing" functions.
2. Added the "Mapping Solid" function in “User Setup”. The user can now automatically map the result file, without adaptive mesh, to the mapping solid.
3. Added the "Expand" function in “Model Check” and “Model Repair”, allowing the user to automatically expand the boundary of the selected part and fill it according to the extension value.
4. Added the "Auto Fill" function in “Model Check” and “Model Repair”, allowing the user to remove unnecessary holes.
5. Added the option to define the formula in the “Curve Definition” dialog box.
6. Added the option to select the ‘Beam’ for definition of the “Line Beads”.
7. Added the "Draw Bead Shape Library" to share data between ‘Line Beads’ and ‘Geometry Beads’.
8. Added the ability to copy information from the prompt area, such as the angle, length, etc.

9. Added the ability to check the trim line before the "Trim Element/Surface" operation.
10. Automatically utilizes LS-DYNA for the springback analysis.
11. Added the ability to output the springback nodal constraint information to an index file to display springback constraint information during post-processing.
12. In the "Split Element" function, the 'Generate Constraint' option is automatically opened and added in the "DYNAFORM Configuration".
13. Enhanced the "Auto Plate Normal" function.
14. Adopted the new "Curve Editor" in the "Element Trimming" and "Element Lancing" functions.
15. Added a new method for meshing according to the boundary, allowing the user to add or delete the seed nodes.
16. Added a shortcut key "W" to change the background color from the current color to white. The user can use the shortcut key again to change it back.
17. Automatically detects the modules for which the user has a license. If the user does not have a license for a specific module, the module name in the top navigation bar for the corresponding module is grayed out, deactivating the drop down menu.
18. Added a "Recent Files" submenu from the "File" menu to list recently accessed files.

### **Newly Implemented Capabilities, Features and Function of Post-processing (eta/Post)**

1. Added the 'Show by Incremental Distance' option in the "Edge Movement" function.
2. Added the 'Show Test Region' option to show the two test region display modes: 'Show by Elements' and 'Show by Region Boundary'. Default is 'Region Boundary'. Added 'Export Contour Line' option.
3. The initial select element mode in "Stoning" can be set as 'Freehand' and enables the user to retain the previous 'Select Mode' when re-entering 'Select Element' the next time.
4. Implemented new 'Curvature' algorithm to update the user interface.
5. Added the ability to support keyword \*BOUNDARY\_SPC\_NODE\_DF.
6. Added the option to 'Display Nodal Constraint'.
7. Added the ability to support the new format of D3PLOT\_DF (multiple line description for a step) for display in the graphic window.
8. Changed the names of 'Select 1st Frame' and 'Select 2nd Frame' to 'Select Reference Frame' and 'Select Current Frame' respectively in the "Springback Distance" interface.
9. Updated the file dialog to Windows style.

### **Supported Version of LS-DYNA**

1. There are two types of card formats in DF 5.8.1: LS-DYNA971 R3.2 and R5.x. This enables the user to set the version of the default solver in DF 5.8.1. The default card format is R5.x. The method for changing the solver version is to select 'Option'/'Edit Default Config' and select 'Setup'/'General' in the opened dialog box to select the card format to be output.