

## eta/DYNAFORM 5.8 Release Notes (December 2010)

### **PLEASE NOTE THE FOLLOWING:**

eta/DYNAFORM 5.8 (DF 5.8) is released with various new capabilities, features, functions and enhancements for the BSE, DFE and Formability modules. The INC Solver bundled with DFE module was first delivered to selected markets for trial purposes, and is now available to the global market within DF 5.8.

Please see a list of available materials regarding this release below.

To download DF 5.8 and other materials, please login/register at [www.dynaform.com](http://www.dynaform.com) (or alternately, <http://eta.com/index.php/software/dynaform>).

For license and installation concerns, please email [key@eta.com](mailto:key@eta.com).

For technical support, please email [support@eta.com](mailto:support@eta.com).

### **Available Materials Regarding eta/DYNAFORM 5.8:**

1. The Release Notes.
2. A PowerPoint presentation of new and enhanced capabilities, features and functions.
3. A one-page INC Solver data sheet.
4. A PowerPoint presentation outlining key features of the INC Solver.
5. An updated User's Manual, also available from the Help menu.
6. A DFE Tutorial Manual consisting of seven (7) application cases.

### **Pricing:**

A DF 5.8 price list is now available for distributors. There is an additional line item for the INC Solver, which is an add-on item for existing DYNAFORM and DFE users.

The DFE module will include the INC Solver in a bundled package price.

The INC Solver is priced per 4-Core CPU. For example, if the computer system has an 8-Core CPU, the price is doubled.

**Licensing:**

A DF 5.8 license key will activate the INC Solver plus all other licenses within existing DYNAFORM 5.7.x. All licensing procedures and practices are the same as previous versions. The user should copy the “eta.lic” file to the DF installation directory.

**Available Platform:**

DF 5.8 is available for all previously supported UNIX, Linux and Windows platforms. The INC Solver is only available on Windows platform, including Windows XP and Windows 7.

It is highly recommended that DFE's Job Submitter be used in conjunction with the INC Solver application. It is possible to use the pre-/post-processor in UNIX and Linux system, then run the INC Solver in Windows. Please make a special request for such application.

It is also highly recommended that Intel multiple-core computing platform be used for the INC Solver application.

**Installation:**

The installation procedure is identical to DYNAFORM 5.7.X with the consideration of INC Solver to be installed on Windows platform.

The user is advised to install CADTranslator 2.2 and NXTranslator 2.0 (optional) after the DF 5.8 installation is complete. It is important to upgrade older versions of the CADTranslator to ensure accurate geometry import and export, and to use the standardized DF 5.8 configuration file locations. Note that all configuration files for DF5.8 will be located in an appropriate subdirectory of “Documents/ETA/~”. (ie. Documents/ETA/Dynaform5.8/; Documents/ETA/CADTranslator2.2/; Documents/ETA/JobSubmitter3.0/; Documents/ETA/PostProcessor1.8.1/)

Server and floating licenses are available on request. It is possible to install the INC solver as a standalone code. To do this, please use the input file produced by DF 5.8 for an execution without ETA's Job Submitter.

**Newly Implemented Capabilities, Features and Functions in BSE Module**

1. A new BSE Preparation graphic user interface (GUI) has been added, providing geometry and mesh tools within the BSE interface, and streamlining process flow.
2. A new “Outline” function has been added to create and modify the outline produced by

MSTEP.

3. The Blank Nesting will automatically use the outline generated in MSTEP or through use of the Outline function.
4. Moved the "Formability Report" function to the MSTEP GUI.
5. Moved the "Blank Size Estimate" function to BSE submenu; Moved the "BSE Report" function to the Blank Size Estimate GUI.
6. The filter criterion for blank outline definition in Nesting has been modified to use a smaller angle tolerance (5 degrees).
7. Added "Calculate Bridge" and "Create Blank Outline" functions to the Result tab of the Blank Nesting GUI.
8. Added "Feed Scrap" to the Nesting Setup tab to allow the user to define and include feed scrap in blank utilization calculations.
9. Added "No. of outline" option to the Nesting Results tab, allowing the user to select how many copies of the nested profiles to show in the results display.
10. Added "Combine" option to allow the user to translate and/or rotate both the master and the slave blanks together when manually positioning. This is active for Two-up, Two-pair and Mirror nesting.
11. When performing Multi-blank Nesting, each profile will be labeled with a discrete Blank ID number when manually adjusting position.
12. An "Auto Tipping" option has been added to the MSTEP GUI to automatically tip the sheet metal part prior to blank size estimation.
13. The stability of the MSTEP solver has been improved to better address a larger set of part geometry conditions.
14. Feature line and weld line generation methods have been improved to more easily work with symmetric and double-attached geometries.
15. Added JAMA format IGES output capability. This is set in the <dynaformdefault.config> file.
16. A Displacement Convergence MSTEP control parameter setting has been added to the <dynaformdefault.config> file.
17. The real-time display of MSTEP solver information, shown in the DOS terminal window, has been simplified.
18. MSTEP supports the definition of Single Point Constraints in reference to a local coordinate system.
19. The accuracy of product weight calculation in the Nesting report has been improved by incorporating the MSTEP thickness result.

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

1. Functional Tool Preparation GUI for DFE. The functions of line, surface, element and node are combined with Model Check/Repair functions in an integrated preparation interface for DFE, providing a more convenient and streamlined method for user modification of surface

and mesh data, improving process flow.

2. The Tipping Result record has been augmented to allow the user to edit the result values.
3. The editing function for Binder control lines has been improved. The user can copy the Die part section line from the 2D section window, and assign the Binder section line to match.
4. The “Part on binder” tab has an added Fit Side Step option to extend Side Step mesh to meet the binder mesh.
5. The “Addendum” GUI has been redesigned to simplify the input of profile parameters.
6. The DFE Modification tool set has had a element Morph function added, enabling the user to generate morphed elements within defined regional shapes by adding control curves and/or control points.
7. A new “Embossment” function has been added, allowing the user to create an embossment (a special bead) on existing mesh by specifying radius, depth and wall angle parameters.
8. A Trim Check function has been added to the DFE menu, which enables the user to analyze trim angle, shear angle and scrap size by defining trim line, blank line and cut line.
9. A new explicit incremental INC Solver has been implemented in the DFE module to support rapid die face design and analysis of formability concerns.
10. A new “Curve Editor” function has been added, allowing the user to create and edit spline curve, rectangle, circle/ellipse and sector regions.

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

1. A new Tube Bending (Rotary Bending) application has been added to perform multi-stage tube bending (rotary draw bending) simulations.
2. Added new “Roller Hemming” GUI in AutoSetup to allow for hemming of separate blank mesh geometries.
3. Added a new “Blank Generator” GUI to create and prepare initial blank geometry and edit blank mesh.
4. Added a new “Tool Preparation” GUI in AutoSetup, providing access to a comprehensive set of tools to generate and modify line and surface geometry, as well as generate and modify mesh.
5. Sharing of tools between forming operations in multi-stage simulations has been improved, automatically creating a copy of mesh already assigned as a tool.
6. Activated an option to allow user to set and customize the contact between tools.
7. Expanded MAT\_24 (\*MAT\_PIECEWISE\_LINEAR\_PLASTICITY) parameters.
8. Added an option to define constraints with (xyz) coordinates in springback stage, which map to appropriate nodal locations.
9. Added an option to define trim seed location with (xyz) coordinates, which maps to the appropriate nodal location.
10. While previewing tooling animation, an arrow will be shown indicating the direction of each

applied force, and colored the same as the tool applied to.

11. Supports the import of Unicode curve file format.
12. Supports setting initial reference positioning gap between tools as well as between tools and blank.
13. Definition of tooling geometry is supported in springback simulations.
14. Improved functionality of the Lancing trim option.
15. Added annealing stage, defined by an annealing factor.

### **Improved Springback Compensation Functions in SCP Submenu**

1. Improved the “Best Fit” function so that the user can plot the deviation between two parts before applying the Best Fit function.

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

1. Added an Explicit Incremental Solver Type - “INC Solver”.
2. Support reading of the message file for simulations which have been terminated and restarted.
3. Changed the Trim Solver name to “Utility Batch”; supports annealing and other utility processes to further improve multiple stage simulations.

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

1. Improved the “Dynain Contour” function to support plotting of thickness information for solid and T-shell elements.
2. Added an option in the Offset Element function to allow the offset elements to connect with the original mesh.
3. Improved the “Penetration Check” function so that it will take the part thickness property into account.
4. Improved the “Check Coincide Nodes” function to check for duplicated nodes in the same element.
5. Improved the “Overlap Element” function to check for duplicated elements.
6. Added an option in the Edit Default Config (Preprocess-General) window allowing the user to delete free nodes while deleting parts, elements or merging nodes.
7. Added an option to the “Project Line” function which allows the user to project line geometry onto mesh.
8. Added force information to generated Geometry Beads.
9. Added a “Shape Library” force type for Line Bead definition.

10. Drawbead model supports calculation of restraining force and uplift force.
11. Increased the character length limit for material names from 8 to 65 characters.
12. Increased the maximum number of points for a line from 500 to 5000.
13. The size of the arrow shown in the display screen when measuring the distance between points will depend on the view/zoom level not the distance.
14. Added a "Stop Time" option in the animation function to allow user to set length of the animation.
15. The show element normal function has been improved to will work with shaded model display.
16. Definition of Single Point Constraints in reference to a Local Coordinate System is allowed.
17. Added new "SuperAlloy" materials to the US material library.
18. Added more materials to the Japanese material library.
19. The Shape Library has been added, allowing the user to generate the Geometry Bead according to the analysis results of the Line Bead.
20. User's configure files such as dynaformdefault.config are moved from "My Documents" to "My Documents\ETA\Dynaform5.8".
21. Improved the speed of tool mesh. The improved speed has been up to 4 times faster than the original speed for large models.

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

1. Supports initialization of part color from index (.idx) file.
2. Supports main window resizing.
3. GUI settings will be automatically adjusted according to different solution types.
4. User modification of contour color bar font size and height scale settings is supported.
5. The animation frame controller size has been increased to allow for showing of more states.
6. Added startup configuration in the <etapost.config> file to control initial state and tool display settings.
7. Added a min/max configuration in the <etapost.config> file for thinning, major and minor strains.
8. Added a springback distance function to check and contour plot numeric springback values.
9. Added the ability to Save and/or Recall section cut settings.
10. Improved the tool wear function to use dynamic parameter control for wear coefficient and hardness. These parameters will be dynamically calculated using the calculated wear depth and the user defined wear depth level. The user may also graph time history curve for wear result, wear coefficient and hardness. The wear result can be calculated and displayed by element approximation as well as at nodal location. Multistage simulations are capable of calculating and displaying total wear result through an improved work procedure.
11. Added a Curvature function to analyze changes to part curvature.
12. Added "Celsius" and "Kelvin" scale options for thermal results display.

13. Added a MAX layer option to FLD display (in addition to TOP, MIDDLE and BOTTOM). This will automatically select the thickness strain layer with the largest magnitude for display.
14. Location of the eta/Post configuration file has been changed from 'My Documents' to 'My Documents\ETA\PostProcessor1.8.1'.

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

1. There are two types of card format in DF 5.8: LS-DYNA971 R3.2 and R5. It enables the user to set the version of the default solver in DF 5.8, and the default card format is R5.x. The method for changing the solver version is to click **Option -> Edit Default Config** and then click **Setup -> General** in the opened dialog box to select the card format to be output for **Version of LS-DYNA input deck**.