

# Dynavista CAA V5 based

CAA V5 based V10.2 / V11.2 Die Structure Design October, 2011 UNIADEX, Ltd.

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# **Die Structure Design**

# Die Structure Design automates stamping die structure design.



- Complex shapes are automatically created such as sectional die and back face, etc.
- Automatic creation of parts list enables association with BOM.
- CAM automation achieved by attribute association with 2.5D/3D CAM.





V5R18

V5R19

**V5R20** 



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# **Unit Curve**

#### - Smoothly connecting two or more curves into one



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# **Create PF Offset curve**

- Creation of a curve by offsetting a profile curve on a surface which is internally created by parallel sweep of given profile curve.



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# **Sectional die**

- Sectional die shape creation by sweeping a cross section line along profile curves.



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# **Pierce placement**

-Placement of a pierce part based on its symbol

Modification of pierce type and pierce parameter are possible.



# **Pierce list**

- List display of all pierce parts belonging to the current document.

Listed information can be exported to an external file. The information can be imported into the list in order to reflect it to pierce parts.



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#### Die standard axis system (sub-coordinate based, batch evaluation)

#### <A coordinate system creation based on another sub-coordinate system>

A sub-coordinate system can be created based on not only the main coordinate system but also a specified sub-coordinate system after evaluating various conditions.



#### <Batch evaluation>

An optimum direction (rotation angle can be selected among an evaluation result list by running the Batch evaluation.



#### Rib

-A rib is created by sweeping a top surface to specified sweeping direction, where the surface is created by offsetting specified curves to both sides with the direction determined by the curve direction and sweeping direction.

-Dynavista common direction input is used.

-A curve not on a plane can be specified.



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Thickness direction is perpendicular to both curve direction and sweep direction.

| Rib       |              | ?          |
|-----------|--------------|------------|
| Curve:    | No Selection |            |
| Direction | No Selection | Reverse    |
| Thick     |              |            |
| Thick1:   | 5mm          | •          |
| Thick2:   | 5mm          | •          |
| End Po    | isition      |            |
| Туре:     | Dimension    | •          |
| Offset    | ſ            |            |
| Length:   | [10mm        | •          |
| Boundary  | No Selection |            |
| 100       | OK 1 Cancal  | 1 Decision |





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### **Inside Rib**

-Function for creating inside rib in a die structure at stamping die design. -A lattice ribs will collectively be created.



### **Rib Through**

-Creation of hole at ribs in order to reduce its weight.





-Edges of surface or any curves are available as a cutting line. (Non rectangle shape can be used.)





### **Triangle Rib**



-Triangle ribs are easily created by specifying any base position on a bottom surface, wall surface and their common boundaries. -Two or more triangle ribs can be created in one time (1 rib feature).

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### **Component placement**

Easy to place a registered standard part

**Characteristics** 

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- Placement position can be controlled by a sketch (Placement check in the same manner as a drawing) - collective placement and holing are possible



Place the part by the use of Standard parts placement command.

After placement



# Part attribute/ BOM

-Information such as part identifier, material, order information, heat treatment, etc. can be defined as part attributes.

- BOM is created using the part attributes.
- The attributes can be customized by exporting to the Excel file.



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### Part attribute (2)

#### **Performance improvement**

Cerate and edit part attribute – Improvement of import performance from Excel file -

|        |      | V8.0   | V9.5  | - | Performance      |
|--------|------|--------|-------|---|------------------|
| Result | Body | 19 sec | 8 sec | - | Improved by 58 % |
|        | Part | 16 sec | 5 sec | - | Improved by 69 % |

Part attribute list – Improvement of activation performance -

|        | V8.0   | V9.5  | - | Performance      |  |
|--------|--------|-------|---|------------------|--|
| Result | 20 sec | 8 sec | - | Improved by 60 % |  |

Environment

- Windows XP Professional x64 Edition
- CPU Pentium4 3.2GHz
- Memory 4GB



# Min/Max box

-A box is created based on a specified coordinate system so that it contains specified elements.

| MinMaxBox<br>Axis system no selection.                       | Remove Axis System | <u>? ×</u> |
|--|--------------------|------------|
| Element<br>no selection.<br>Remove<br>Calculation mode Exact |                    |            |
| Removal<br>X Dmm   | Round              |            |
| Y Dmm  | Omm                |            |
| Z Dmm  | pmm                |            |
| Color  | <br>Layers         |            |
| Transparency 0   | D OK Cancel        | Preview    |

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# **Bolt/Dowel pin placement**

- A bolt or dowel pin is selected from a catalog and its instance is placed at specified position.



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# **Axis Coincident**

- Optimum placement of parts by adjusting the parts to a base part coordinate also utilizing movement and reversal function.



# **Simple Bolt/Dowel pin placement**

-Place a circle of Tap hole symbol with machining attribute to the specified position after specifying hole size of a bolt, dowel pin or hook.

| Caling Diameter M3  Bolt Length Srim  Length under neck 1.5 rm Bolt head trick 3mm Bolt head draket FS. Srim LR division LR Rounding value Firm Lover side plane No Select | Ō   |                  |       | Child Synthe of All The Annual Annual<br>Program Data<br>Singen Table End Tap<br>Singen Table Singer<br>Circles<br>Circles<br>Tables<br>Circles<br>Tables<br>Tables<br>Tables<br>Tables<br>Tables<br>Tables<br>Tables<br>Tables<br>Tables<br>Tables<br>Tables<br>Tables<br>Tables  | Intechning Oses Hushining<br>UR Cles (JR<br>Region Rame<br>Comment<br>Hiltop (1986)  | *<br>*  |
|--|---|------------------|-------|--|--|---|
| Placement method Point O DNP Point No Select BaseLine1 No Select BaseLine2 No Select   | 0   |                  |       | Stop France Frence Fren   | de joni jin<br>k 2 Strev, Rich 2 Strev, | ۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲<br>۲ |
| OK Cancel DAPEDEC  | A I BoltCircle 1     J. DNP.1     Poistance/Measure1.1     Poistance/Measure2.1     Distance1`=-250mm     Distance2`=55mm     Poistance2`=55mm     Poistance2`=55mm     Poistance2`=55mm     Poistance2`=55mm   |                  |       | Visi Cea<br>Final Marin<br>Tainanan Rag<br>Mudanum Tainanan Ram<br>Tainan Valanan<br>Tainan Valanan<br>Bottom Cela<br>Finals Marin<br>Finals Marin | 4 Cares Fills<br>Heinen Tokrono film<br>Cares Fills<br>0 Scares Fills<br>Cares film  |   |
|  | Image: DNP 2         Image: DNP 2         Image: Distance Measure 1 2         Image: Distance Measure 2 2         Image: Distance 1 = -45mm         Image: Distance 2 = 440mm         Image: Distance 2 = 440mm         Image: Distance 2 = 440mm         Image: Distance 2 = 440mm |                  | 440mm | Feelbook   | teolor Otore   | Censt   |
| - The size of each<br>- Created circle ha  | part can be custon<br>as a machining attr   | nized.<br>ibute. |       |  |  |   |

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#### **Height dimension** - Height dimensions are calculated and temporarily displayed on three dimensional data. Height size one time display The field for a height size ブランクホルダ +Z хү平面 -Plane YZ平面 No selection Z)(平面 外部萎缩 Vector ARTSBODY -Height standard position Starting point - 🌮 х-мах -Datum point - 🖗 x-MIN No selection -Relative height H=300 (+/- Effective Directions element H= WV PartsBody/OpenBody No selection -Sign kind Compensation within a field H= ○h= 🔮 No 🔘 Yes -A small number of beams Mark 💽 🥥 Off 🔾 On 0 🔮 ок

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Cancel

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# **3D Balloon**

-A balloon is created for a specified part placed in a 3D model.



-A drawing is created from "definition plane" direction in V5 drawing function.





# **SpecTable**

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- Collective management of parameters such as dimensions or measurement values, or information such as checks and rules in one table.



### **Distance Map**

Distance from a target object to another is measured and its result is shown on the object with gradation.



- Check can be made for solid, surface, curve, point cloud and STL.

- Positive distance is shown if direction from the target object to another is same as reference direction, otherwise negative distance is shown.



Close

# **Calculate Projection Area**

Projection area of a product is calculated by specifying a solid (or a composite surface) and projection direction.

An area is calculated surrounded by outermost boundaries or outermost edges along with specified projection direction. Projected outermost curves and area will be shown as a temporary figure.



#### - High robustness (The solution is secured.)

(Dynavista uses polygons for projection. The result is securely obtained since inside or outside is judged by lattice points.)





### Thickness

Thickness of a solid is shown with a color map.



- Maximum and minimum thickness can be specified.
- Check result is saved as a feature and can be seen afterward.
- Detail condition (approximation tolerance, measurement pitch) can be specified.

Thickness result

Thin portion of a product or a die can be detected. A range can be specified by maximum and minimum values.



# **Fill Gap**

#### - A casting shape which fills a gap at standard parts placement is created.







- A shape connecting a casting structure and a base plane is created.



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# Layer table

- Operability improvement is possible by visibility control using a layer table



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# **Display control – Type ON/OFF**

Display on/off control depending on the selection in the command dialog.
 Temporary display control without modification of displayed elements.
 The dialog is always displayed even when other commands are activated.
 The command operation is allowed during editing a part file, a product file or a process file.





# **3D Note / View change**

- Creation of a text with a leader line for specified data.

Created text retains view information at the time of creation.



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# **Machining attribute**

- Machining attribute is copied to a hole shape by adding the attribute to a cut solid and by executing Collective hole generation command.

Consideration of association with 2.5D CAM. Items can be customized such as addition of items and non display of an item.



#### **Machining attribute check** - Machining attributes of planes where parts touch each other are checked, and the result is reported as a list. Check Machining AttributeSet ? 🗙 Target Part: Part1 🕝 Include "Cast" parts as target OK Cancel Machining attribute is not defined Part instances where no machining attribute is set will be displayed as a list. Check Machining AttributeSet ? X







| CheckMachiningAttributeResetColor        | ? 🛛 |
|--|-----|
| Date: 2007/05/21 16:25:57<br>Result: ING |     |
| Part name<br>Part2<br>Part3<br>Part4     |     |
|  |     |
|  |     |



Close

#### **Machining attribute – Finish mark and Coarseness**

Display improvement by finish type (symbol, coarseness) (V8.1 -)



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### **Simplified machining attribute**

Machining attribute can be created and edited without regard to its type and portion.





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# **Machining attribute Set From Color**

Automatically setting Machining attributes according to corresponding face colors (RGB) by pairing a face color and a machining attribute in a customizing file.

Support general machining attribute only (Simplified machining attribute is out of support).

Effective in the case of importing data from other systems.

Colored face

Face with machining attribute





| Attr. Type | Portion          | Nr. of step | Step | Category | R   | G   | В   |
|------------|------------------|-------------|------|----------|-----|-----|-----|
| Hole       | Тар              | 1           | 1    | Wall     | 255 | 0   | 0   |
| Hole       | Тар              | 1           | 1    | Bottom   | 255 | 0   | 120 |
| Hole       | Tap, Socket hole | 1           | 1    | Wall     | 255 | 120 | 0   |
| Hole       | Tap, Socket hole | 1           | 1    | Bottom   | 255 | 120 | 120 |
| Hole       | Tap, Socket hole | 1           | 1    | Wall     | 255 | 120 | 220 |
| Hole       | Tap, Socket hole | 1           | 1    | Bottom   | 255 | 120 | 255 |
| Pocket     | Bottom of die    | 1           | 1    | Wall     | 255 | 255 | 0   |
| Pocket     | Bottom of die    | 1           | 1    | Bottom   | 255 | 255 | 120 |
| Surface    | Product surface  | 1           | 1    | -        | 255 | 255 | 0   |

Customization file



### **Boundary addition**

A boundary curve is added to a face in a surface by specifying a boundary curve to be added (constant parameter curve/curve on a surface) and a surface. The divided faces where an edge is added inherit attributes attached to the original face.







No curves are added at lapping range of the boundary and added curved. (The boundary is prioritized.) If an end point of the lapping range and the added curve are separated, the end point and a non-lapping range of the added curve will be connected by a line.



# **Design check analysis**

To analyse whether any checks in a specified product are corectly executed. The result is shown in a list.



- If one or more NG or non-executed checks exist among target check features in the target part or product, they are displayed in the result dialog.

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### **Synchronizing Attributes**

Machining attributes of copy ("as Result with link") are synchronized to the destination.



+ No change will occur by executing this commnad if figures are created other than copy or copied other than "as result with link" (AsResultWithLink).



### **Difference Check**

#### Check difference between two shapes and display it for ease of view.



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# **Hole list**

Hole list is exported to an Excel file by specifying a plate in a die model after hole creation.



- The list can be exported by specifying machining direction and machining base point (base position + movement).



# **Color** map



#### **Related command**

- POST (CONTOUR)
  Depth Measurement
  Die standard axis system
  Distance along surface



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### **Press standard parts**

#### Standard parts (parts catalogue from makers) are equipped.

| Category for catalogue | Registered parts   |
|------------------------|--|
| Small parts            | Side pin set, locating key, Back up key, Stroke end block, Washer for stripper bolt and coil spring, Stripper bolt with external screw,<br>Stripper bolt with bush, Stripper bolt with internal screw, Magnet cobalt, Magnet alnico, Press-in magnet, Circular distance plate,<br>square distance plate, Blank holder stopper bolt, Angle stay, Die clamp washer, Cushion pin, Lifter cushion pin for transfer, Lifter<br>guide bush, Plate lifter pin, Lifter plate stopper |
| Material guide lifter  | Nest guide, Rough guide, Material guide roller set, material lifter, Sheet lifter, Material transfer lifter unit, Curl code hook, Transfer attachment, Skid bracket set, Location pin, Input detection switch, Magnet lifter pin, Spring plunger - light load, Spring plunger - heavy load, Spring plunger - extra-heavy load, Spring plunger - nylon nose, Spring plunger - slope, Ball plunger   |
| Holder guide post set  | Guide post, Guide holder, Oil-less guide bush, Plane guide bush, Ball guide bush, Plane guide post set   |
| Die guide parts        | Guide post, Oil-less guide bush, Stroke end block distance guide ring, Oil-less heal guide plate, Heal guide plate   |
| Oil-less slide plate   | Oil-less slide plate, Oil-less thin slide plate  |
| Cam related parts      | Cam stopper, Cam forced returning block, Cam forced returning follower, Cam stroke plate – 15 types, Cam stroke plate 30, Cam side block, Cam slide plate, Cam side plate, Cam returning unit, Cam upper plate   |
| Spring                 | Urethane without hole - heavy load, Square urethane – heavy load, Urethane – heavy load, Urethane with counter sunk hole, Economy urethane, Urethane torus - bending. Urethane stripper, Low backlash urethane, Low backlash urethane with counter sunk hole hole  |
| Lifter related parts   | Urethane without hole - heavy load, Square urethane – heavy load, Urethane - heavy load, Urethane with counter sunk hole,<br>Economy urethane, Urethane torus - bending, Urethane stripper, Low backlash urethane, Low backlash urethane with counter sunk<br>hole   |

\* Now major part are registered except for piercing tools from Misumi (pierce, button die and retainer), JIS pats (bolt, dwell pin)





# Dynavista CAA V5 based

http://www.unisys.co.jp/e/dynavista/

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