

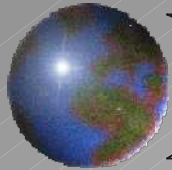
Dynavista

CAA V5 based
V10.2 / V11.2

Mold Design

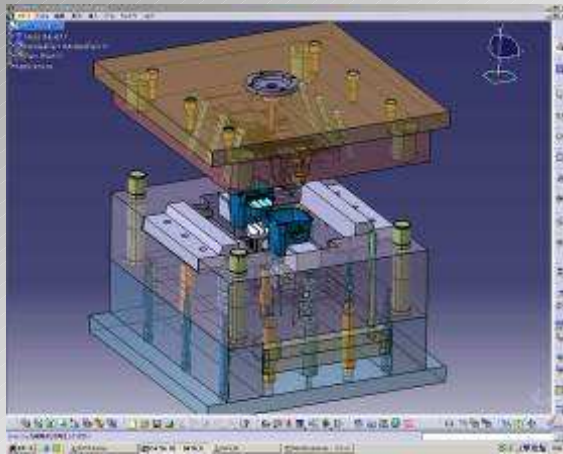
October, 2011

UNIADEX, Ltd.



Mold Design

MoldDesign automates mold die design.



- Functionality covering both from small to large mold parts.
- Hybrid design of 2D and 3D design method.
- Various standard parts featuring information useful for manufacturing and procurement.
- Automatic creation of parts list enables association with BOM.
- CAM automation achieved by attribute association with 2.5D/3D CAM.



V5R18



V5R19



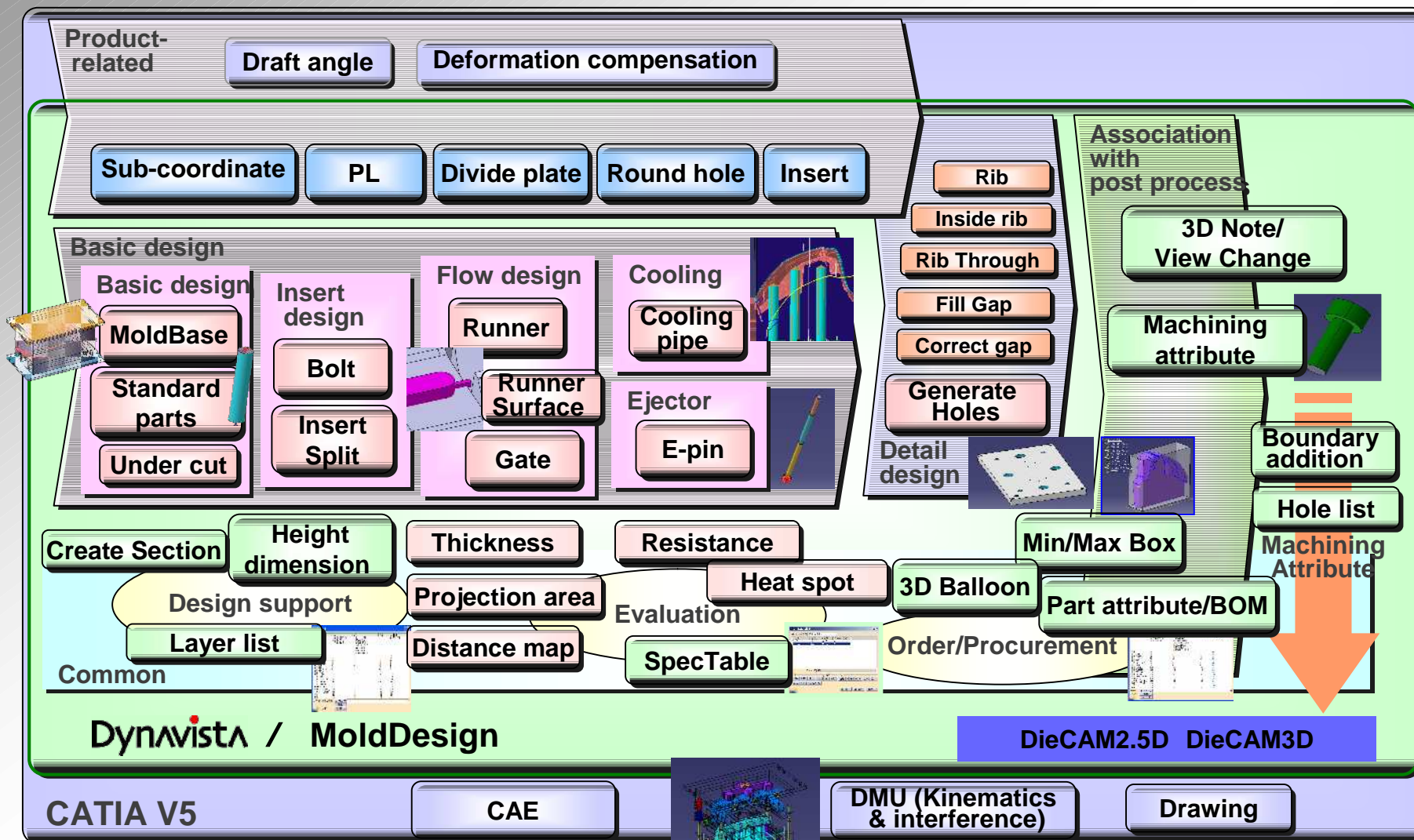
V5R20

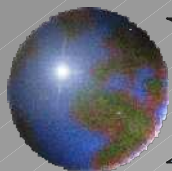


V5 prerequisites: MD2 (or HD2)



Mold Design command





Mold Design command list

Category	Command
Basic design	Guide pin, Guide bush, Return pin, Locate ring, Ejector guide pin, Ejector guide bush, Support pillar, Stop pin, Spacer ring, Parting lock, Support pin, Stop bolt, Puller bolt, Loose core, Guide rail, Loose core stop block, Angular pin, Mold base, Collective hole creation, Min/Max Box.
Insert design	Flat head bolt with hexagonal hole, Screw plug, Dowel pin, Eye bolt, Spring, Insert stopper, Bolt with hexagonal hole (head base), Bolt with hexagonal hole (tap base), Insert split, Delete insert split, Casting design (Rib, Rib through, Inner rib, Gap block, Fill gap)
Flow design	Sprue bush, Sprue bush guide, Runner lock pin, Pin point gate bush, Runner, Gate
Cooling design	Hose nipple, Taper screw plug, Cooling joint, Cooling pipe, Cooling pipe list, Cooling pipe check
Ejector design	Stepped ejector pin, Square ejector pin, Shoulder bolt, Ejector rod, Ejector pin (standard), Ejector pin (user defined), Loose core placement, Slide placement, Under cut list
Modeling	PL, PL surface, Divide plate
3D-CAM	Addition of surface machining attribute, Boundary addition
2.5D-CAM	Hole machining attribute setting/editing, Pocket machining attribute setting/editing, Delete machining attribute, Color set machining attribute, Round hole, Hole list
Evaluation/ Design support	Spec Table, Layer list (Layer group), Distance map, Projection area, Thickness check
Design info.	Layer list, Type ON/OFF, Current selection set
Standard part.	(Round hole)
BOM	Part attribute setting/editing, Delete part attribute, Part attribute list, Parts list
Drawing	3D note, External name definition/change, Height dimension, Change view, Erase temporary figure

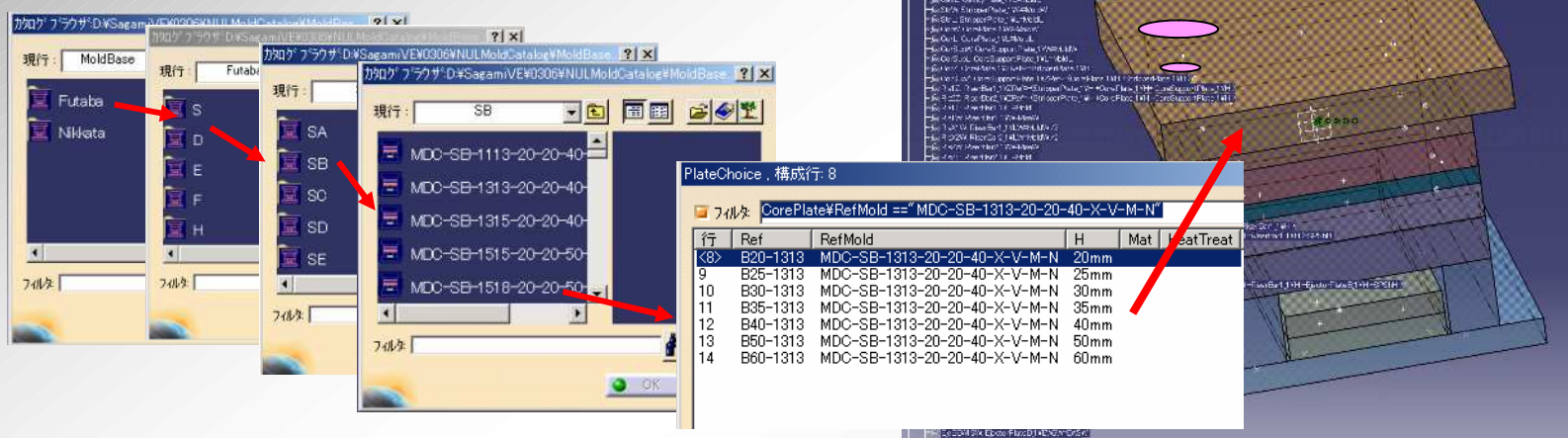




Mold base

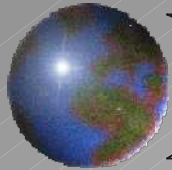
- Futaba and Nikkata bases are supported.
- Improvement such as base point position, etc.
- User bases are supported in the same manner.

Part is placed (From to plate) and all holes are collectively created.



Maker	Series	MTD	Dynavista
Futaba	S	SC	SA, SB, SG, SD, SE, SF
	D,E	-	DA, DB, DC, DD, DE, DF, EA, EB, EG
	F,G	GA	FA, FG, FE, FF
	H	-	HA, HB, HG, HD
Nikkata	S	-	SA, SAX, SB, SBX, SG, SGX
	P	-	PA, PAX, PAY, PAXY, PB, PBX, PBY, PBXY
	K	-	KAY, KBY
	H	-	HAY, HBXY, HBY, HBXY



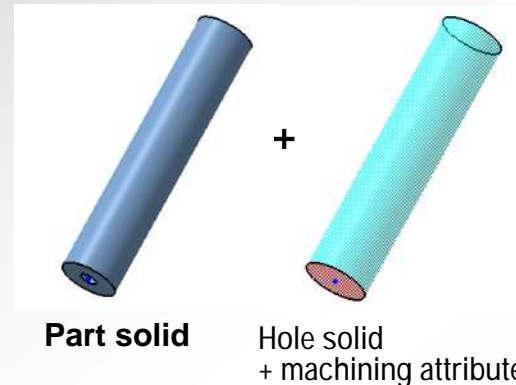


Standard parts

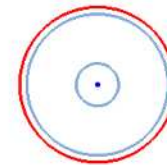
- Standard parts from major Japanese makers such as Misumi, Futaba, etc. are prepared.
- They include not only part solids and hole solids but symbols for supporting 2D like design.
- Part attributes and machining attributes are already defined.
- User defined parts can be handled as the same manner.



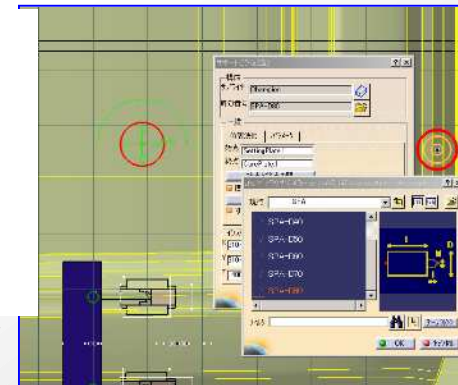
=



+



Symbol for
2D design



Basic design	Guide pin, Guide bush, Return pin, Locate ring, Ejector guide pin, Ejector guide bush, Support pillar, Stop pin, Spacer ring, Parting lock, Support pin, Stop bolt, Puller bolt, Loose core, Guide rail, Loose core stop lock, Angular pin
Insert design	Bolt with hexagonal hole, Flat head bolt with hexagonal hole, Screw plug, Dowel pin, Eye bolt, Spring, Insert stopper
Flow design	Sprue bush, Sprue bush guide, Runner lock pin, Pin point gate bush
Cooling design	Hose nipple, Taper screw plug, Cooling joint
Ejector design	Ejector pin, Stepped ejector pin, Square ejector pin, Shoulder bolt, Ejector rod

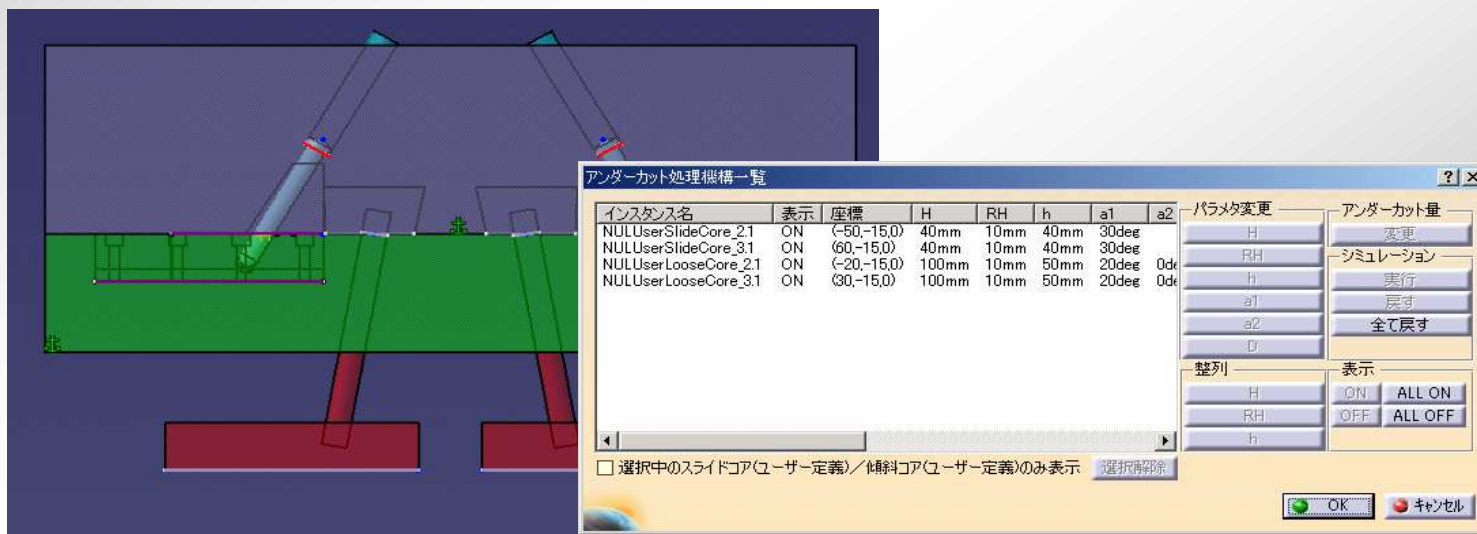


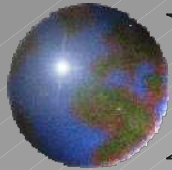


Under Cut List (User component)

- A list of Slide core (User defined) and Loose core (User defined) placed under the top product is shown.
- Length of them are collectively re-calculated.
- Display status of them can be changed.
- By the use of simulation, collision can be visually checked,

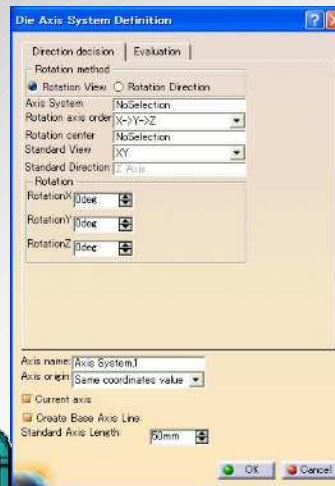
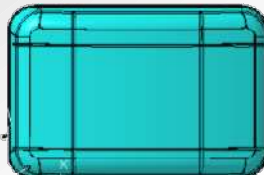
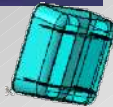
* The slide core and loose core shall be created on specific rules in order to be handled by this command.



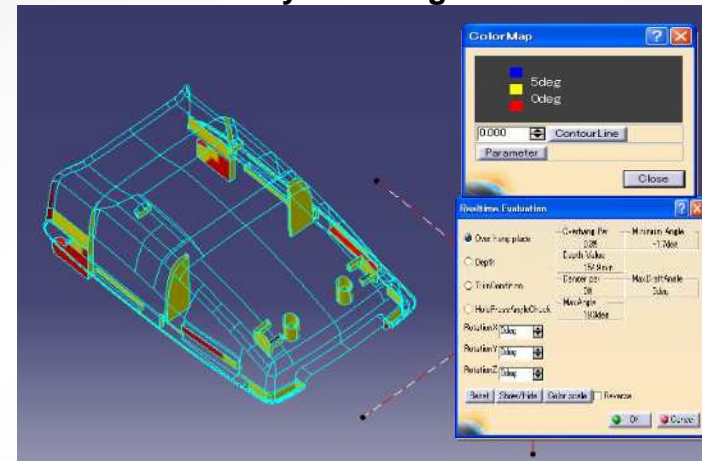


Die standard axis system

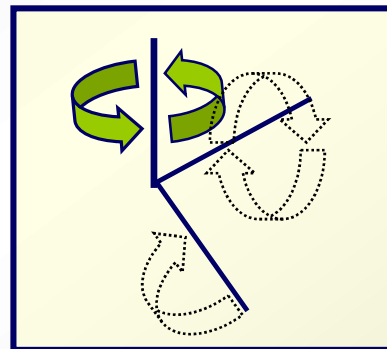
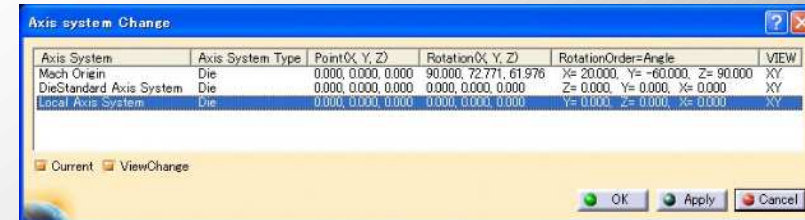
A coordinate system is defined including die opening direction by varying the angle in real time manner.



Coordinate definition by checking back draft and depth



Rotation information can be checked by switching coordinate





PL / Divide Plate

Parting scenario of Dynavista

(Product model)



(1) PL creation



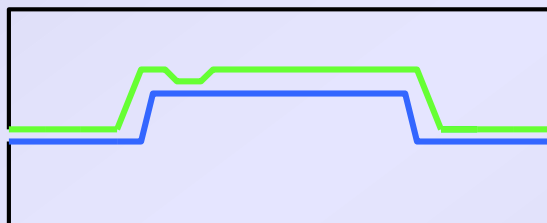
(2) PL surface creation



(3) Divide plate

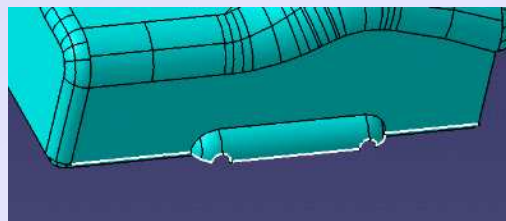


(Cavity and core placement, parting)



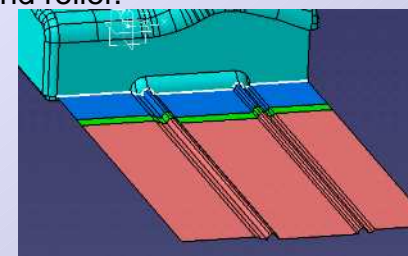
Create Parting Line

- PLs are automatically searched by giving the start and the end boundary curve.



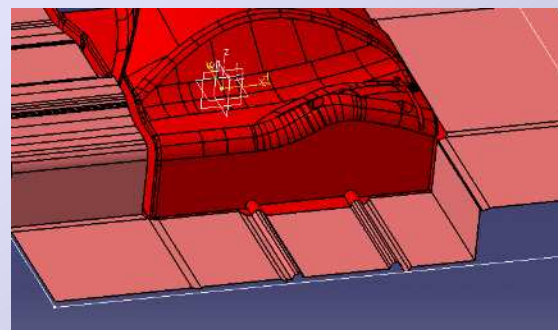
Create PL Surface

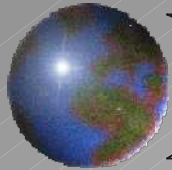
- The surface is automatically created by giving the start and end boundary curves and the direction.
- Three types of surfaces – Hit, adjustment and relief.
- Draft angle along the dismount direction.
- Two guide swept surface creation
- Trimming by parallel swept surface



Divide Plate

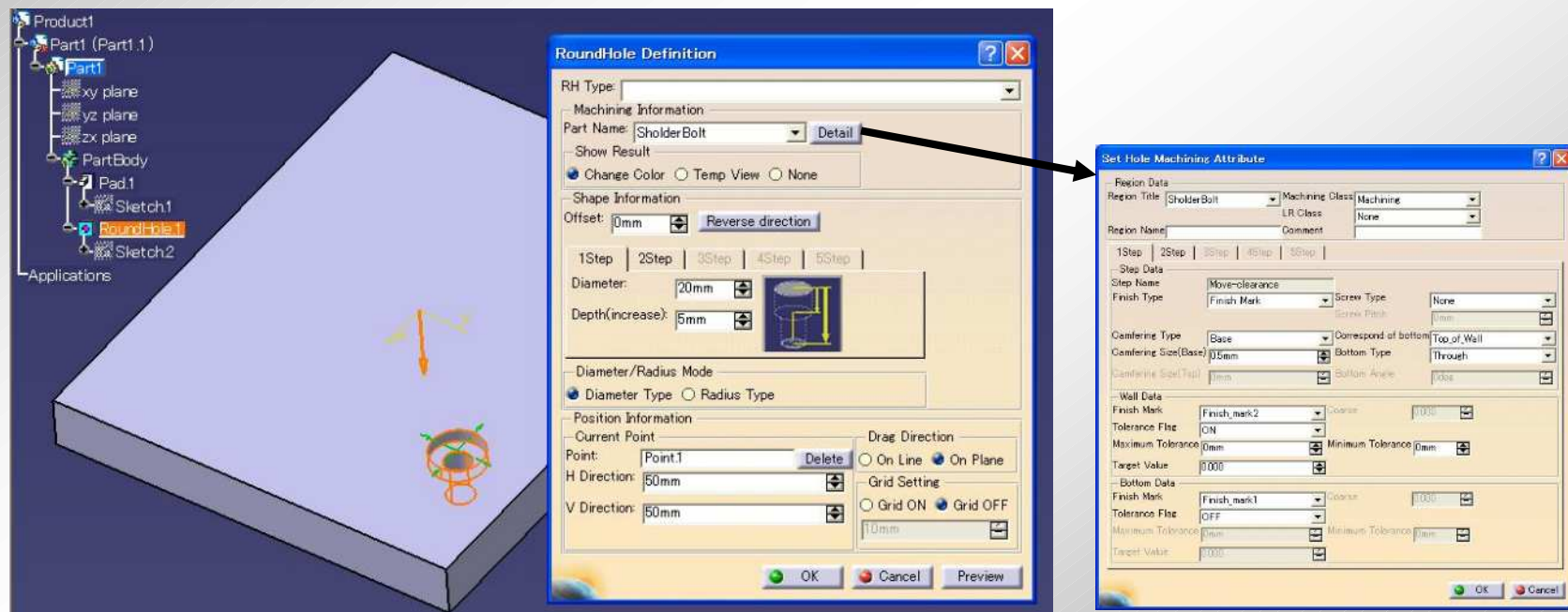
- Cut the product by the PL.
- Surfaces both cavity and core sides.

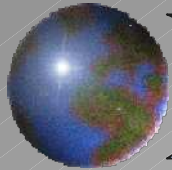




Round hole

- Steps can be set up to 5.
- Two or more holes can be created by one command.
- Machining attribute can be added at the creation.

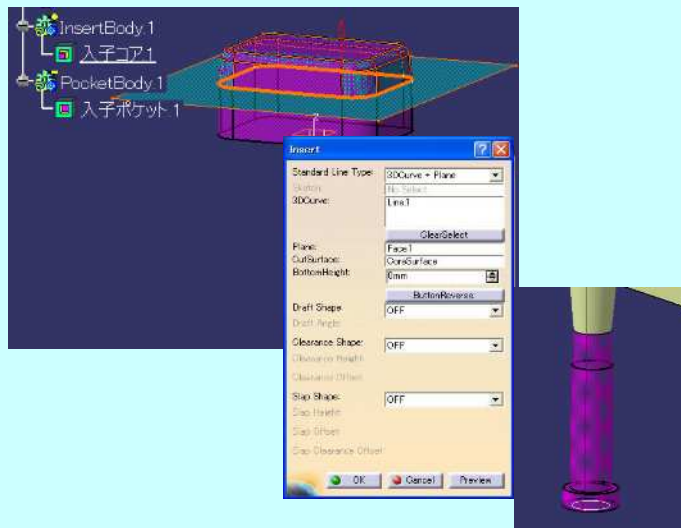




Insert core / Insert splitting

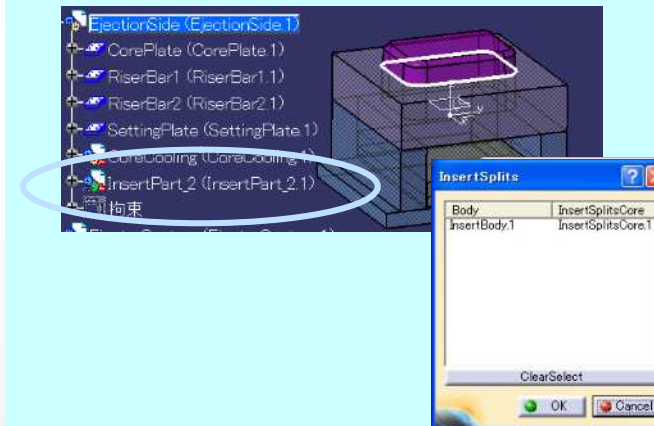
■ Insert core

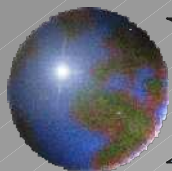
- Both insert core and insert pocket features can be created and edited.
- Executed in the target part
- Machining attributes are added.
- Draft, evade and flange shapes are defined at this time.



■ Insert splitting

- A core part is created and placed.
- The hole is created on the target part.
- A part attribute is added.



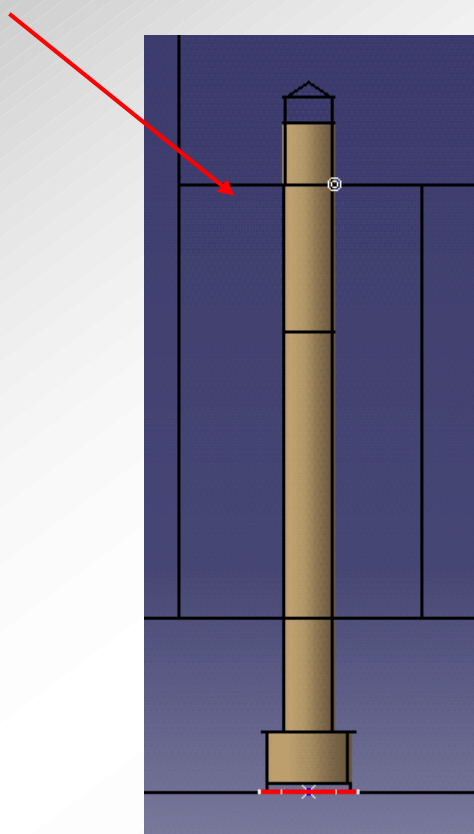


Bolt

Two types of standards covering the difference of the design policy

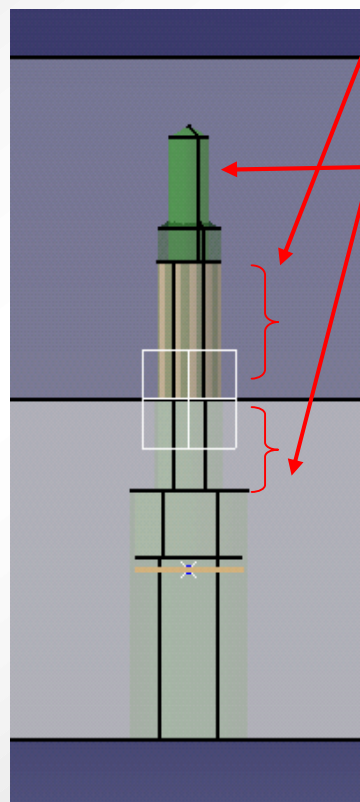
Head based

(1) Automatic definition of bolt length



Tap based

- (1) Automatic definition of overlap amount by the type of material
- (2) Bolt length is defined by specifying placement plane or the length under neck
- (3) Prepared hole shapes can be correctly defined also.
- (4) They can freely be customized by the users.

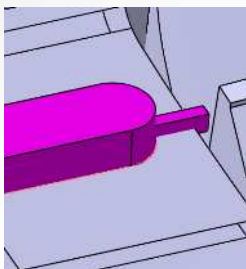
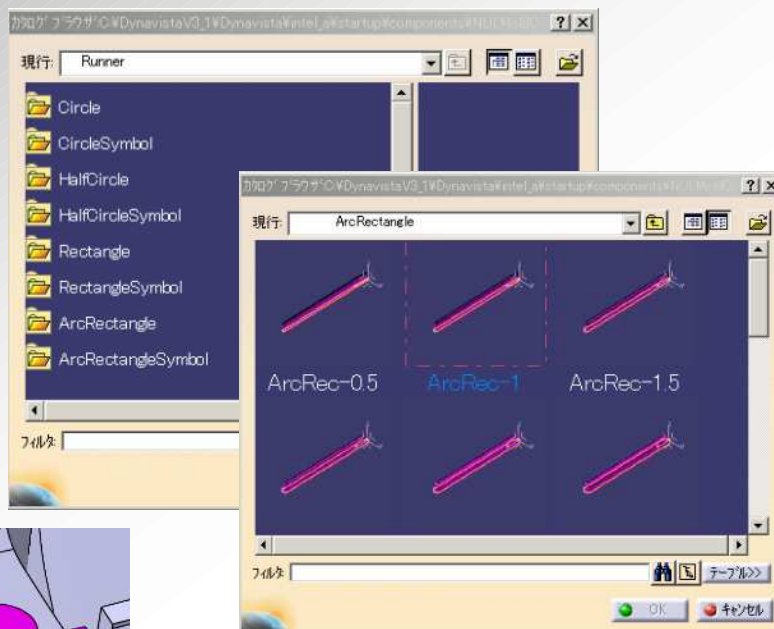




Runner and Gate

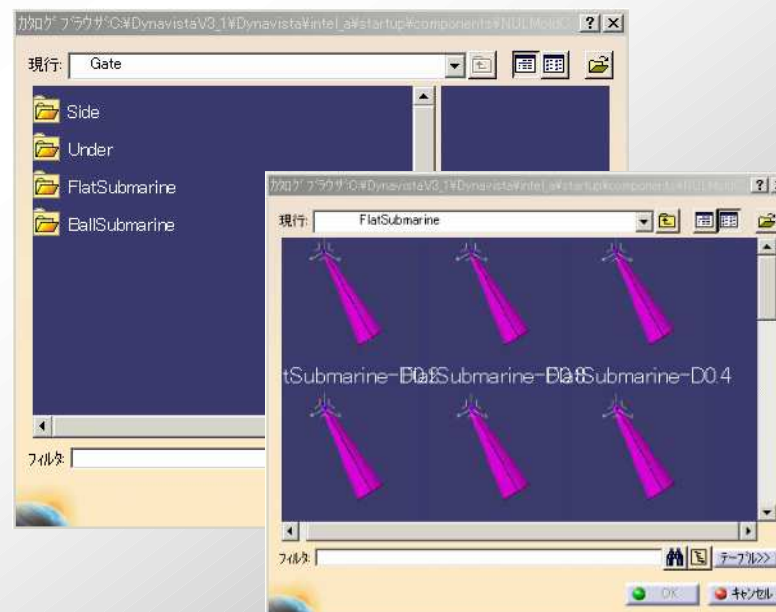
Runner

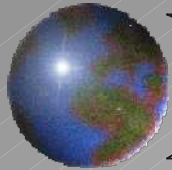
- 4 types – circle, semi-circle, barrel and trapezoid
- 2 types of placements – actual shape and cross section shape only



Gate

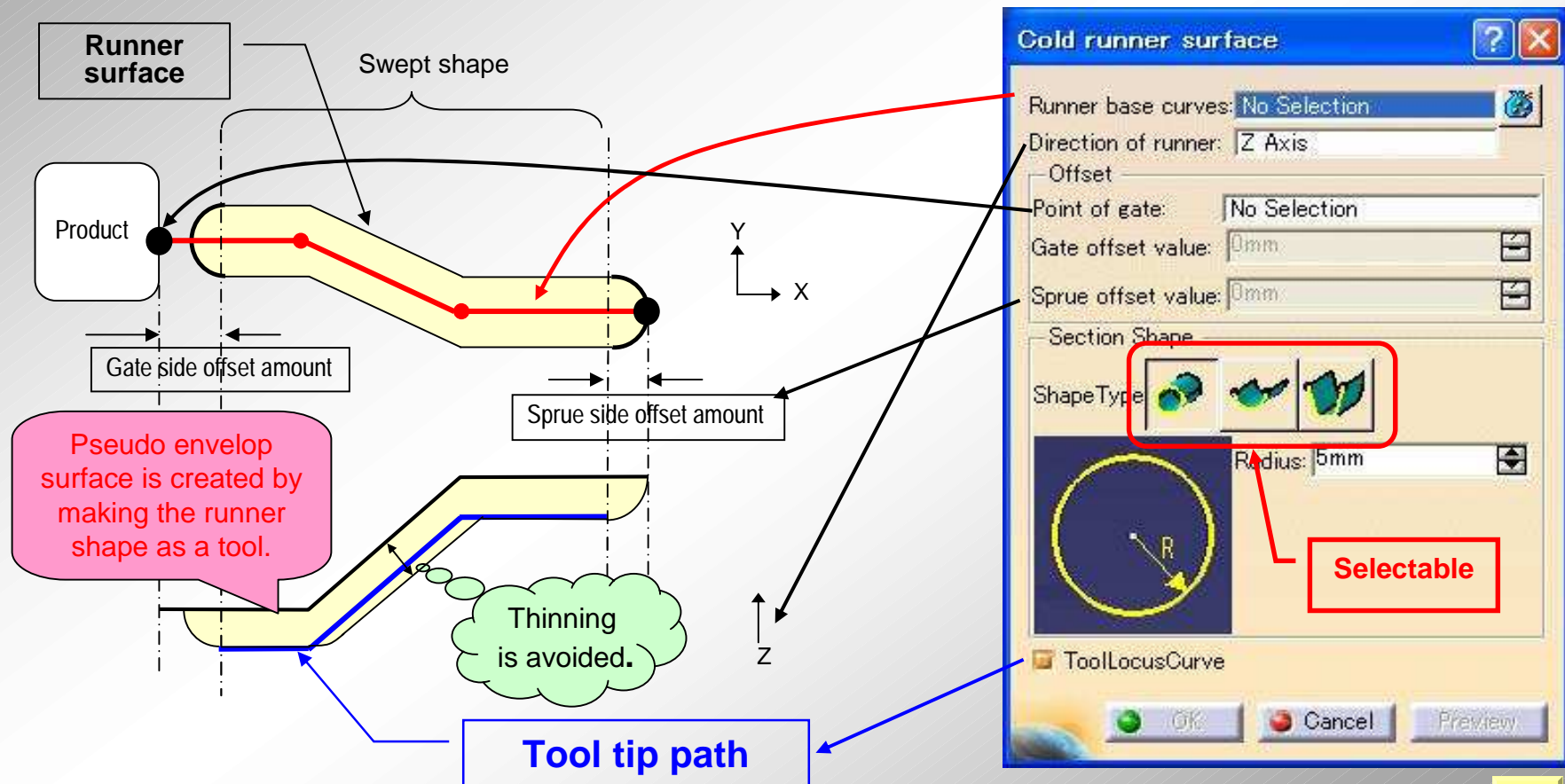
- 4 types – side, under, submarine (flat and ball)





Surface runner

A surface and tool tip path are created by cross section of sweeping circle, semi-circle or trapezoid shape along runner base curve.

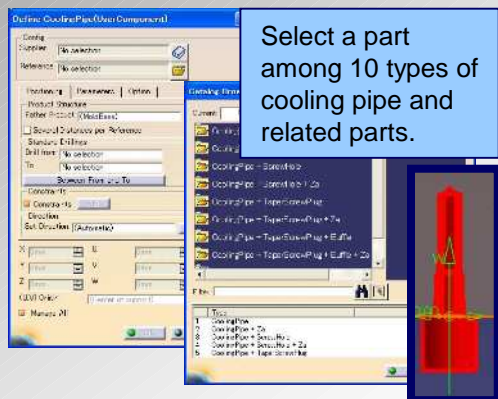




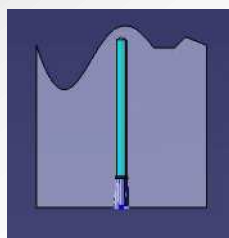
Cooling pipe

Placement of 10 types of cooling pipe and related parts, and adjustment of its position and length
The command for cooling pipe circuit check is prepared. ▶

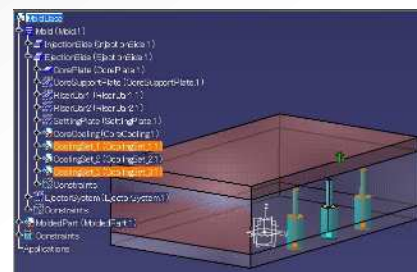
Cooling pipe placement



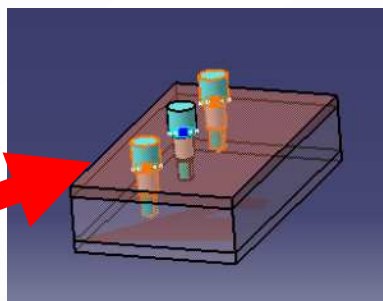
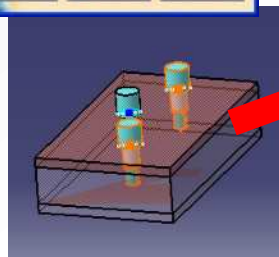
Cooling pipe length can be automatically adjusted.



Cooling pipe list

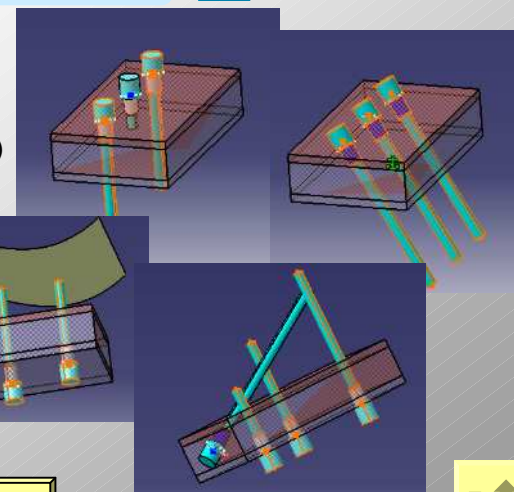


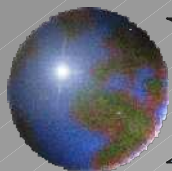
Adjustment of position



Length Adjustment

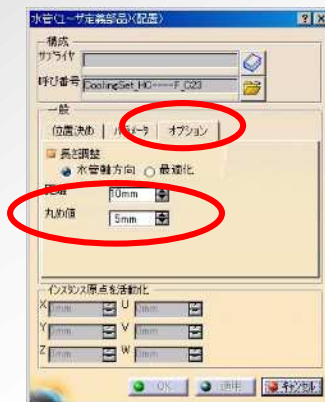
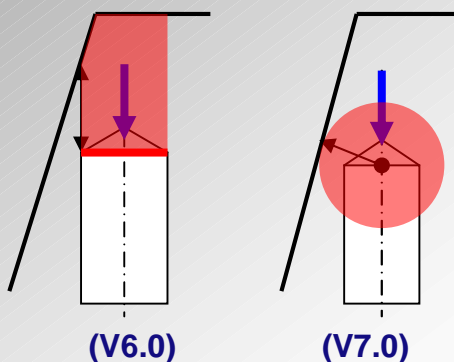
1. Length (L parameter)
2. Direction and length
3. Surface (Product surf.)
4. Cooling pipe (connected)



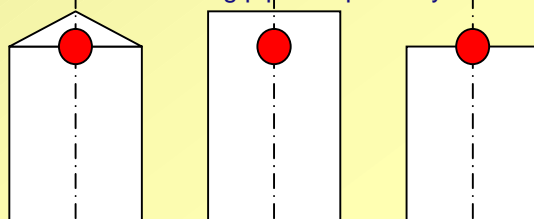


Cooling pipe - length adjustment

The use of sphere is newly available in addition to the use of Z direction height for the calculation of cooling pipe length.

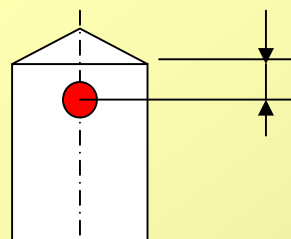


Definition of the center of sphere which is consistent with cooling pipe shape of Dynavista.



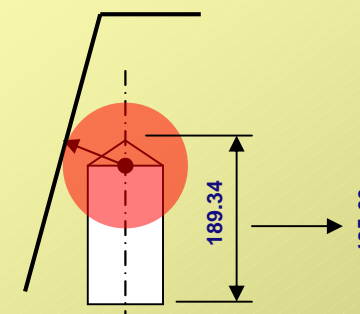
Drill top shape (Drill shoulder center) Cylinder, top basis (Drill shoulder center) Cylinder, shoulder basis (Drill shoulder center)

User customization is possible for the sphere center.



Shift value from the default can be specified.

Rounding of cooling pipe height



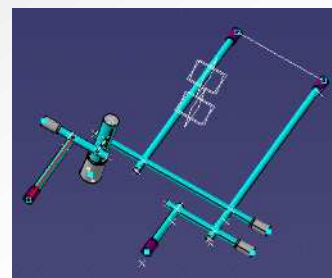
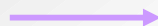
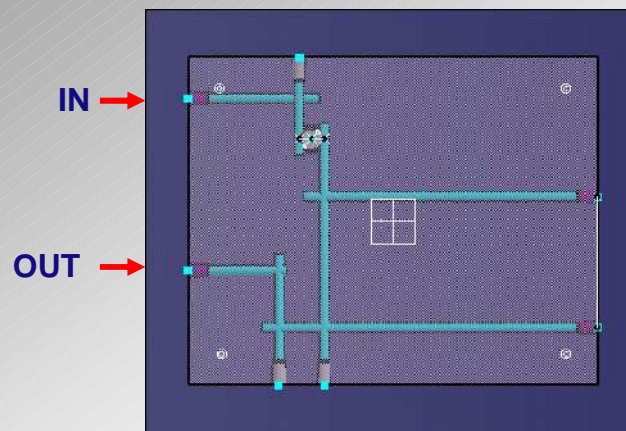
Accurate distance can be calculated including side walls for cooling pipes (fountain type).





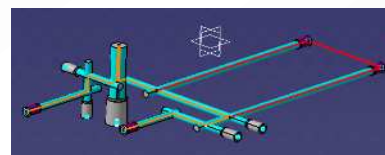
Cooling pipe check

Circuit validity is checked (displaying the circuit temporarily) by the input of cooling pipes, start point and end point.



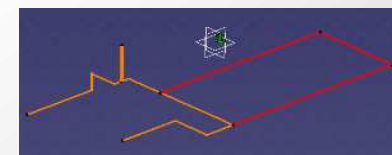
Incorrect circuit:

Red point and line display for error position.



Multiple circuits (warning):

Purple display for the shortest path, red for other valid portions



Single circuit:

Blue display



Available cooling types:

- Hole only, with screw
- With taper screw plug
- With O-ring
- Baffle type

Forced connection:

Connection of outer piping, shifted cooling pipes is possible.

Circuit validity is checked only specifying IN, OUT. It largely improves the efficiency of cooling pipe design.



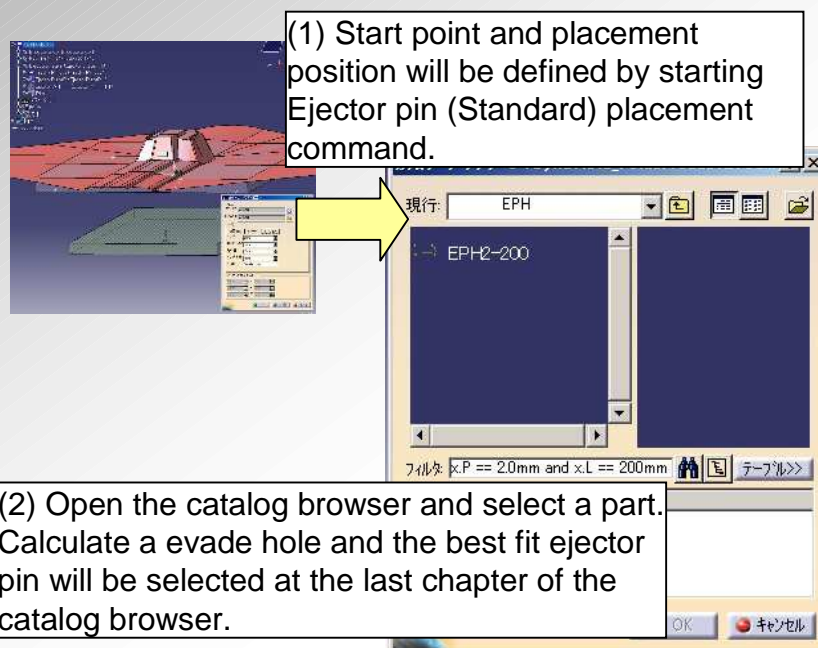


Ejector pin

Standard

The best fit ejector pin will be selected and placed by the distance from a placement point to CoreSurface.

The dimension values are automatically calculated from the top surface height of the placement point, CoreSurface and spacer block.

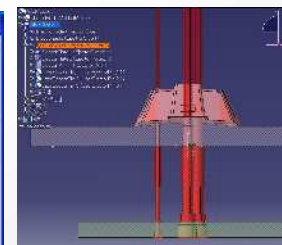
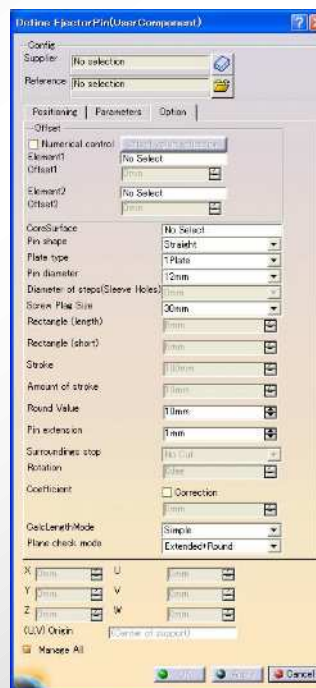


User defined

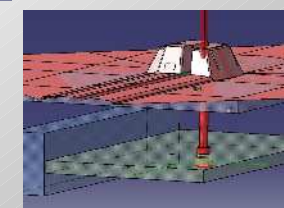
The best fit ejector pin will be selected and placed by the distance from a placement point to CoreSurface.

In the user definition, a part can be placed together with a screw plug and offset constraint can be defined.

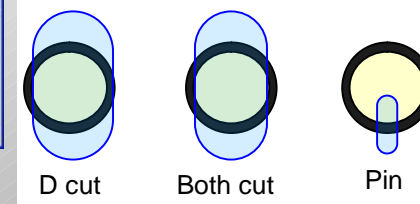
Dimension values are automatically calculated at the placement.



Offset constraint is featured, which capability is not implemented for Ejector pin (standard).



Specification of stopper is available



Length adjustment

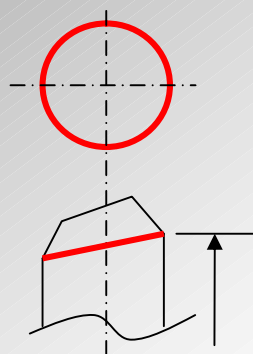




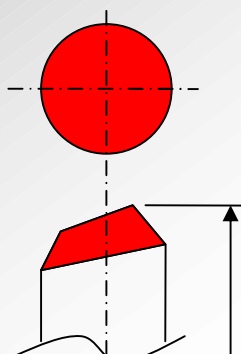
Ejector pin - length adjustment

Calculation of exact distance or rounding control can be selected for calculating ejector pin distance. This enables design of sleeve and center pin.

<Distance calculation>

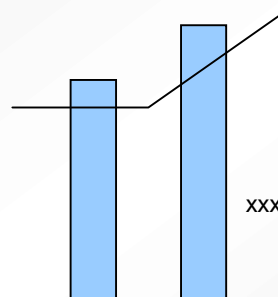


Simple

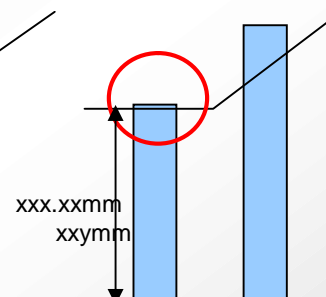


Exact

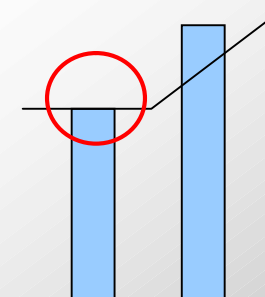
<Plane check mode>



Extension + round

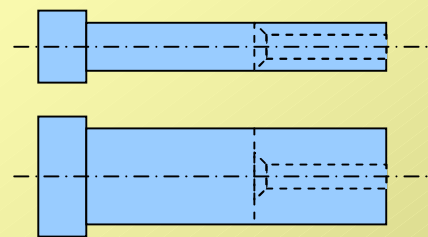
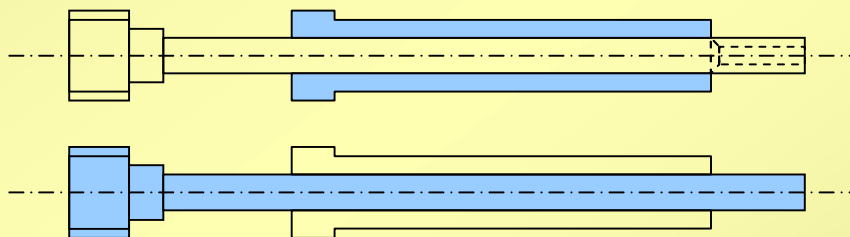


Accordance + round



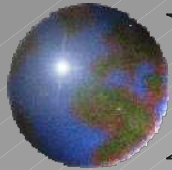
Accordance

Sleeve pins and core pins can be designed.



This enables boss related parts (sleeve, center pin or core pin) design.





Layer list

Display control for parts category and parts, symbols and holes.

Each part has

- Part (PartBody)
- Hole solid (Drill Hole, Tap Hole)
- Part symbol (2 kind of)
- Symbol for hole

Whose layers are classified to cavity, core and common parts.

From a layer number table, each

- line
- raw
- item

Display can be switched to on/off.

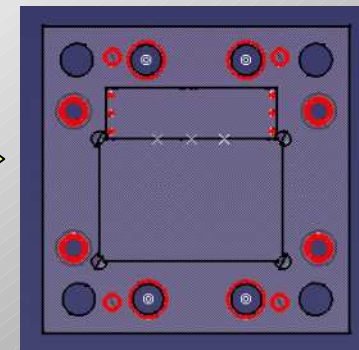
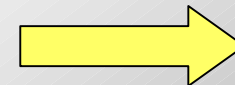
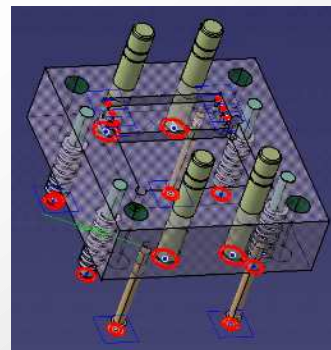
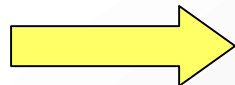
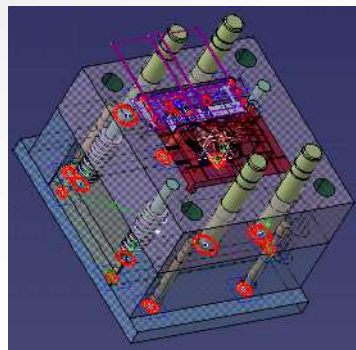
Customized by Excel

Layer list

LAYER TABLE			
ALL	CAVITY	CORE	COMMON
	11 CLAMPING PLATE	12 STRIPPER PLATE	COMMON
	12 RUNNER STRIPPER PLATE	13 CORE PLATE	SLIDE etc.
	13 CAVITY PLATE	14 BACKUP PLATE	21 SLIDE CORE
		15 SPRINGER BLOCK	
		16 REJECTOR PLATE(Upper)	
		17 REJECTOR PLATE(Lower)	
		20 SETTING PLATE	
PIECE	31	32	33
COMPONENT(Solid)	41	42	43
COMPONENT(Symbol)	51	52	53
COMPONENT(Symbol)	61	62	63
COMPONENT(Hole)	71	72	73
COMPONENT(Hole Symbol)	81	82	83
COMPONENT(Hole Symbol)	91	92	93
COOLING PIPE(Solid Unit)	111	112	113
COOLING PIPE(Symbol)	121	122	123
COOLING PIPE(Solid)	131	132	133
COOLING PIPE(Solid Unit)	141	142	143
RUNNER GATE(Hole)	151	152	153
RUNNER GATE(Symbol)	161	162	163
RUNNER GATE(Solid)	171	172	173
PRODUCT	181	182	183
ELECTRODE	191	192	193
PLPL-Surface	201	202	203

Layer Group

LAYER GROUP	
Group	Vis
INTERFERENCE_CHECK(PRODUCT-Injection_Side_COOLINGPIPE)	
INTERFERENCE_CHECK(PRODUCT-Ejection_Side_COOLINGPIPE)	
INTERFERENCE_CHECK(PARTS-Injection_Side_COOLINGPIPE)	
INTERFERENCE_CHECK(PARTS-Ejection_Side_COOLINGPIPE)	
INTERFERENCE_CHECK(Ejection_Side_HOLE)	
INTERFERENCE_CHECK(Ejection_Side_HOLE)	
INTERFERENCE_CHECK(Ejection_Side_AQUEDUCT)	
INTERFERENCE_CHECK(Ejection_Side_AQUEDUCT)	
DYNAMIC_INTERFERENCE_CHECK(Ejection_Side-PRODUCT)	
DYNAMIC_INTERFERENCE_CHECK(Ejection_Side-MOVABLE_PARTS)	
CAM(Ejection_Side_HOLE-Injection_Side_POCKET)	
CAM(Ejection_Side_HOLE-Ejection_Side_POCKET)	
CAM(Ejection_Side_ELECTRODE)	
CAM(Ejection_Side_ELECTRODE)	
DRAFT(ASSEMBLY_DIAGRAM)	
DRAFT(Ejection_Side_ALL_DIAGRAM)	
DRAFT(Ejection_Side_ALL_DIAGRAM)	
DRAFT(Ejection_Side_MOLD_PLATE)	
ELECTRODE	



Layer key in





Layer key in

Visibility of elements in the layer is changed by specifying layer number by key in.

Selection of specified/non-specified

ON/OFF button

Filter button

Switching to layer
table command

Layer number field

Apply input

<Characteristics>

User operation can be reduced since no mouse is used different from Layer table command.

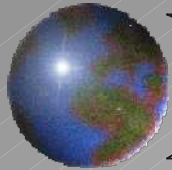
More layer operations are possible by fewer input by the use of “?” and “-” for layer input.

(1) Layer number

(2) Multiple layer numbers (separating with “,”)

(3) Range (connecting with “-”)

(4) Undefined number (“?” = all from 0 to 9)



SpecTable

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

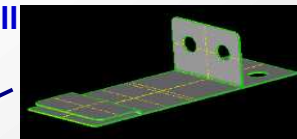
Design table like



Property sheet like



Relation to shapes
for each cell



	Distance a	Length.1	Gap	Check.1	Publish	Rule.1	Comment
Case1	50.0	10.0	1.0	OK	Design sf, A	Effective	Must be XX
Case2	60.0	15.0	1.2	NG	Design sf, A	Effective	
Case3	70.0	20.0	1.4	OK	Design sf, B	Effective	Must be YY
Case4	80.0	25.0	1.6	-	Design sf, B	Effective	
Case5	90.0	30.0	1.8	OK	Design sf, B	Ineffective	
Case6	100.0	35.0	2.0	-	Design sf, C	Ineffective	



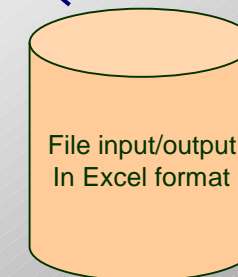
Check sheet



External reference



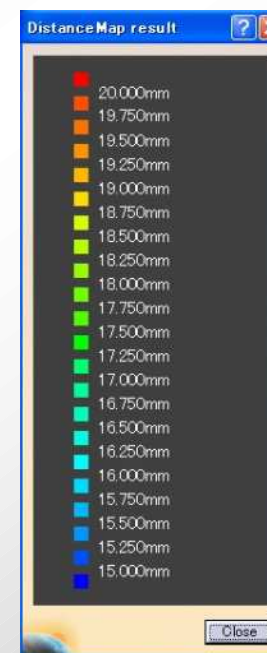
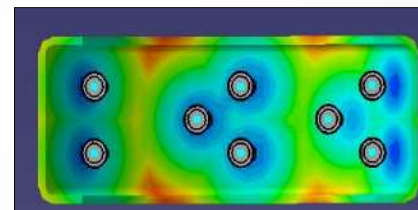
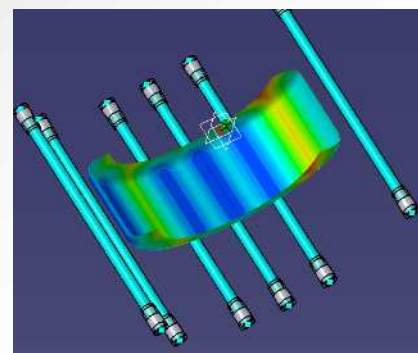
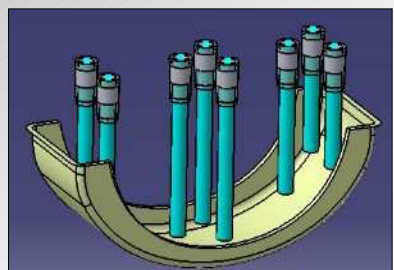
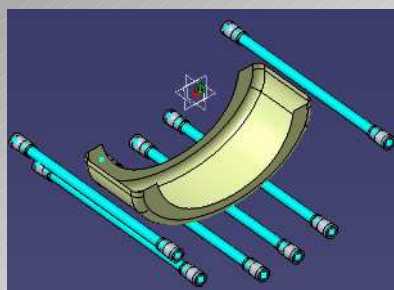
Rule control





Distance map

Distance from one target shape to another is measured and displayed in gradation.

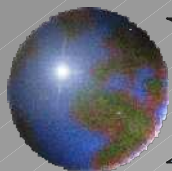


- Distance check is possible between two groups of multiple features (body, surface, curve and cloud). (cannot be performed by CATIA.)
- The result can be saved. It can be seen at any time.
- Detailed condition (Approximation tolerance, measurement point pitch) can be specified.
- Direction of “+” and “-” can be distinguished and displayed.



The distance check is available in various design cases such as products and cooling pipes, a cooling pipe and another, cooling pipes and parts, EJ pins and products, and a product and another (design change)



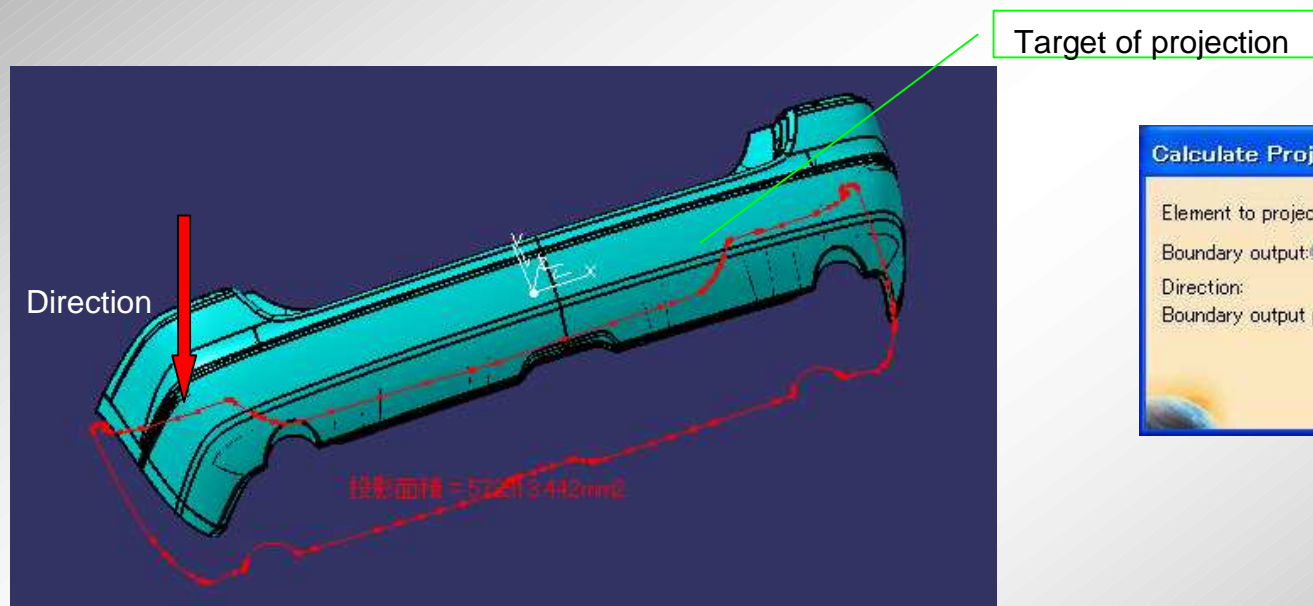


Projection area

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

Area surrounded by outermost boundary and outermost edge curves along with the specified direction.

The projected outermost curve and calculated area are temporarily displayed.



- High robustness (the result can be taken without failure)

(Although similar operation is possible by projection a reflect line in CATIA V5., the result can be taken without fail by Dynavista since it projects polygons and in-out is judged by lattice point.)

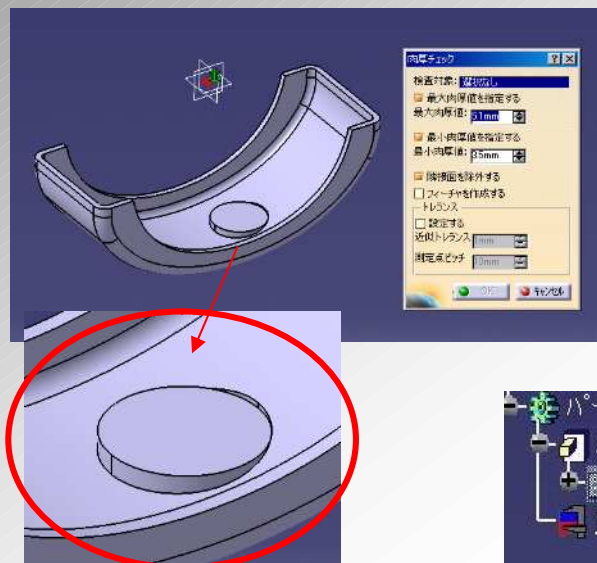
It can be used for strength calculation by the use of injection pressure (plate bending, size on slide core and number of pins), etc.





Thickness check

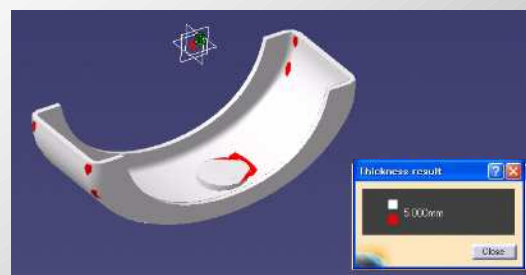
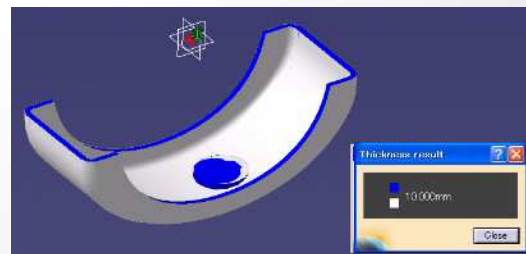
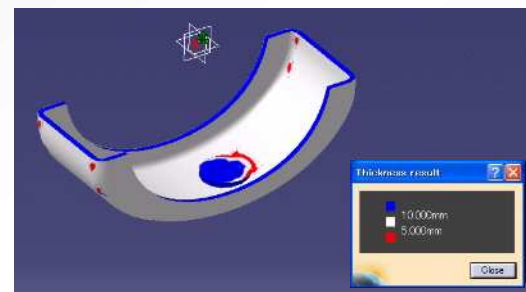
Thickness of solid or surface can be seen by colors.



Specify maximum/minimum thickness

Specify maximum thickness

Specify minimum thickness



- Maximum and/or minimum thickness are specified.
- Check result can be saved (as a feature) and be seen at any time.
- Detailed conditions (Approximation tolerance, measurement point pitch) can be specified.

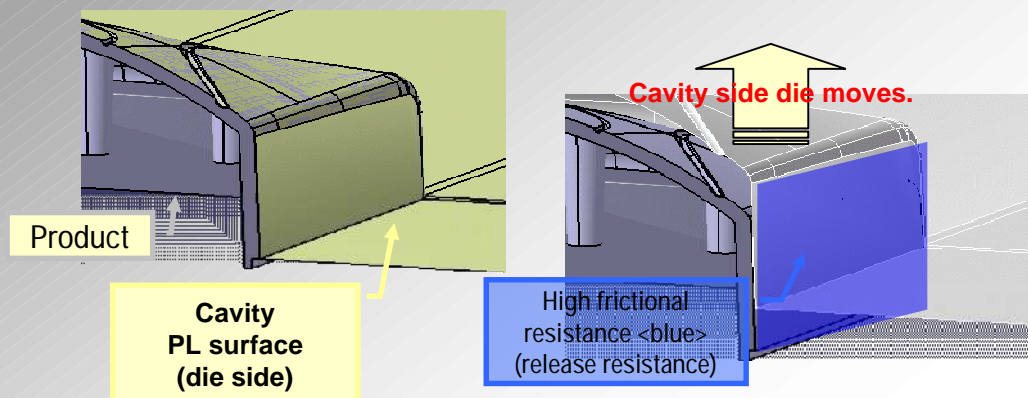
Thick or thin portion can be detected for a product or a die (useful for casting die). A range of maximum and minimum can be specified.





Release resistance

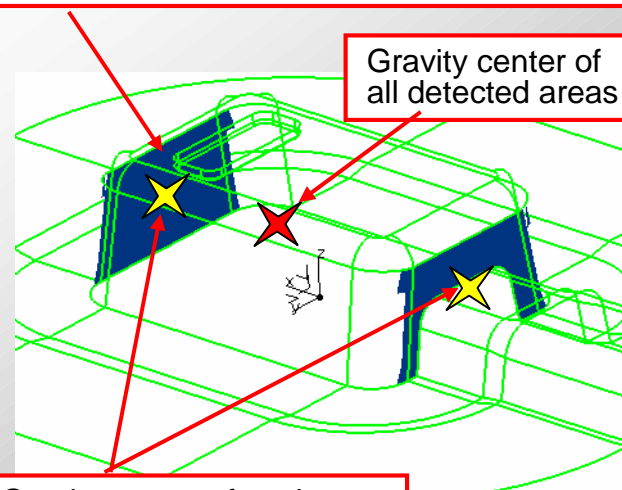
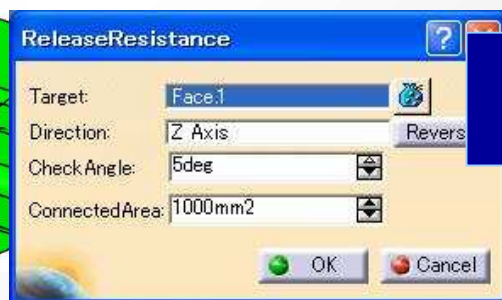
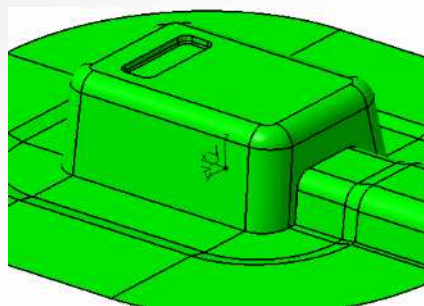
Portions where die and product cannot be easily separated by a friction resistance (release resistance) can be detected.



<Characteristic>

Release resistance areas are temporarily displayed.
Points are output for the ease of pin placement.
Gravity center of resistance area <yellow point> (one point in one area)
For high resistance areas, gravity center of all areas <red> (one point for one execution)

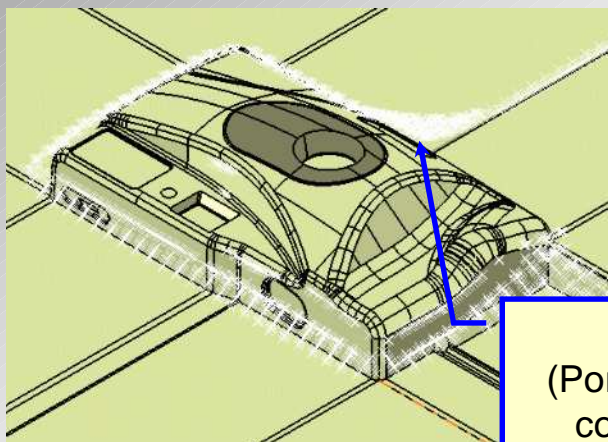
Portions less than test angle and no less than specified area are displayed





Detect heat spot

Heat spot areas can be detected in the die by specifying die splitting surface.



Heat spot
(Portion which is hard to cool down in the die)

<Characteristic>

Since heat spots are output for each section, display and output are controlled for each section.

Since points are output, they are used for following commands such as cooling pipe.

Detect HeatSpot

Target : NoSelection

Diameter : 60mm

Pitch : 1mm

Depth Check

CheckDepth : 25mm

Tolerance : 0.1mm

Axis : +Z -Z

Calculate

RegionDisplay : OFF ON

X : 200mm -200mm

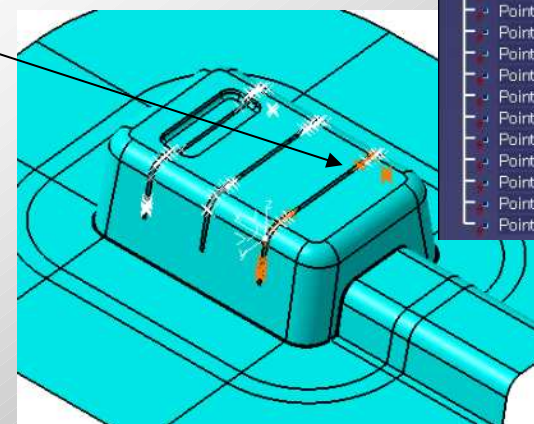
Y : 200mm -200mm

Output : All Region

OK Cancel

Dynavista Heat

- PointX(0)
- PointX(0.00248)
- PointX(3.65625)
- PointX(7.4625)
- PointX(10)
- PointY(-18.5671)
- PointY(-16.3438)
- PointY(-12.5375)
- PointY(-8.73125)
- PointY(-4.925)
- PointY(6.49375)
- PointY(10.3)
- PointY(11.8576)
- PointY(12.5458)
- PointY(14.1062)
- PointY(17.9125)

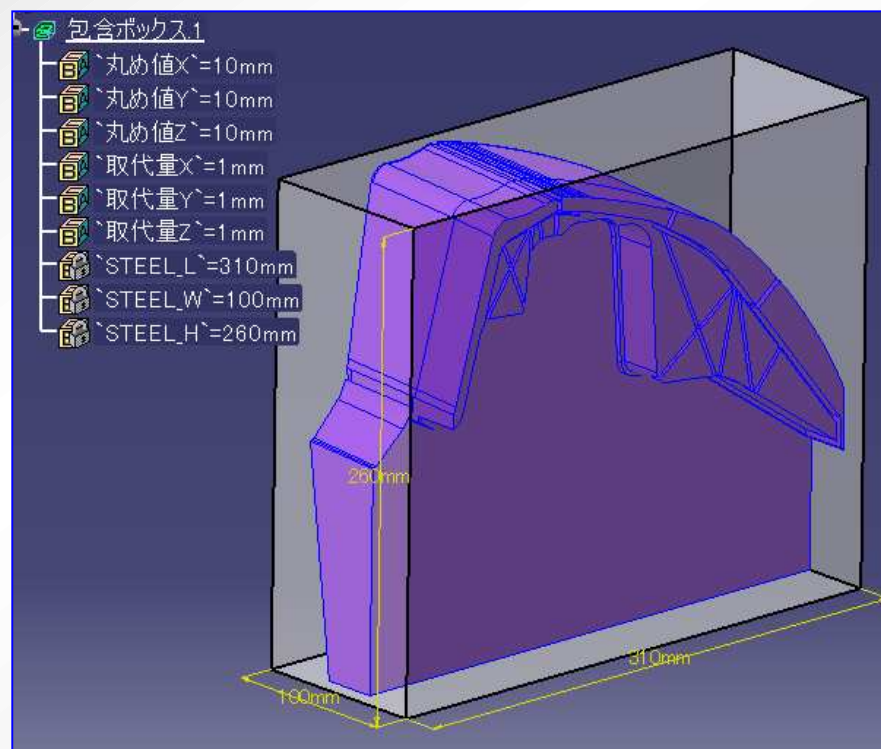




Min/Max Box

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

Layer, transparency, round value and machining stock can be defined.

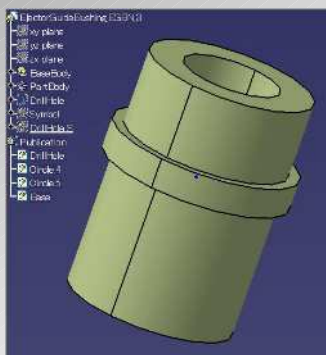




Part attribute / BOM

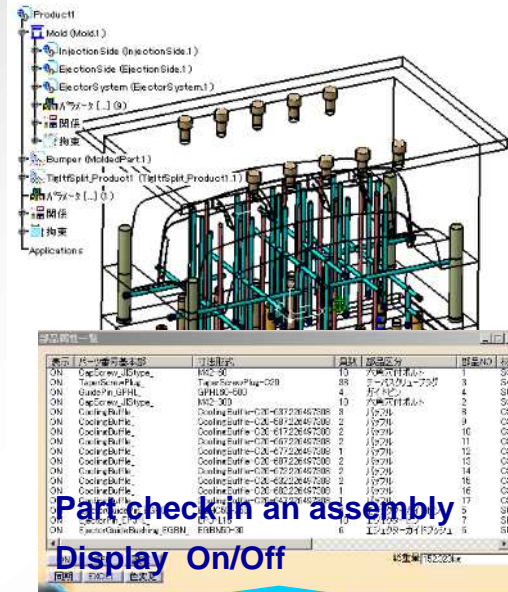
- As for part attribute, part identifier, material, order information, heat treatment and comment can be defined. The BOM is created by the use of part attribute. Part attribute can be customized.

<Part attribute>

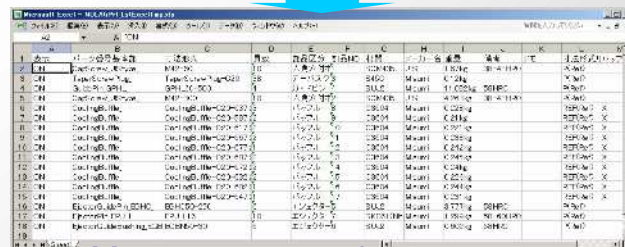


Attribute setting to each part

<Part attribute list>



Part check in an assembly
Display On/Off



Editing by the use of Excel

<BOM>

Output of selected items by customization

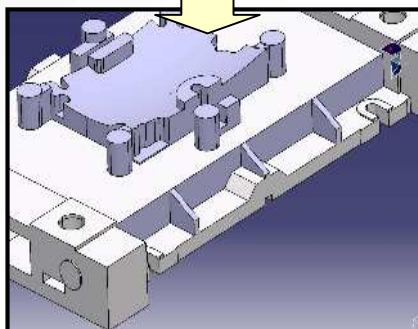
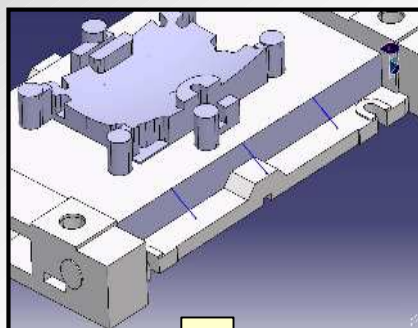
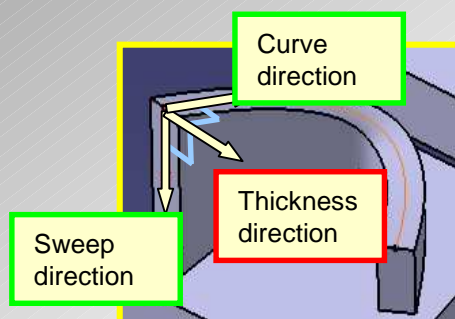




Rib

Rib

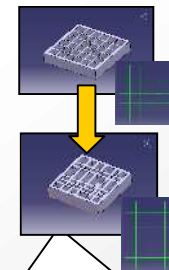
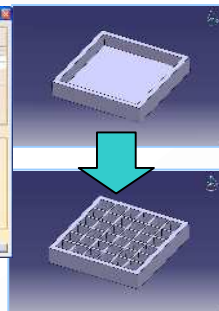
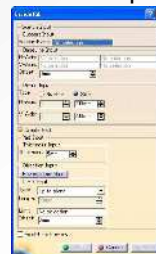
A rib is created by sweeping a top surface to specified sweeping direction, where the surface is created by offsetting specified curves to both sides with the direction determined by the curve direction and sweeping direction.



- ✦ Dynavista common direction input Dynavista is used.
- ✦ A curve not on a surface can be specified.

Inside rib

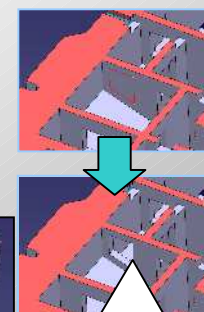
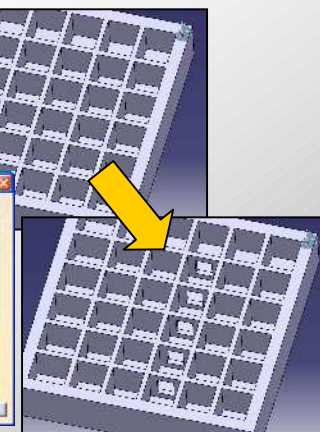
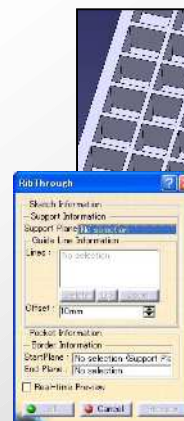
Ribs are created inside of the mold die structure (inside rib)
Lattice shaped ribs are collectively created.



Distance and thickness are easily changed by the use of sketch

Rib through

Casting holes are created for the reduction of weight



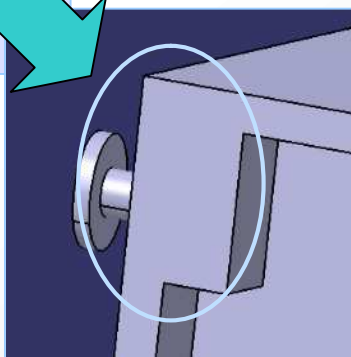
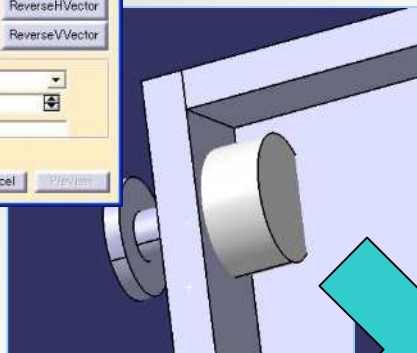
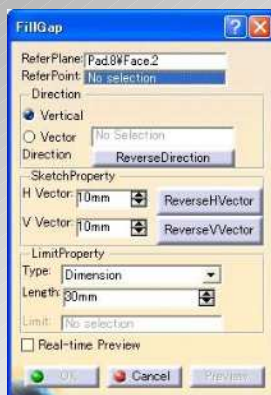
Surface edge or any curve is used for the rib through curve (no rectangle shape is available)



Casting modeling support

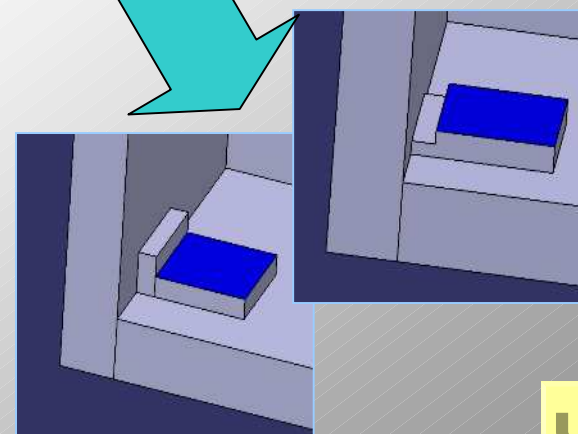
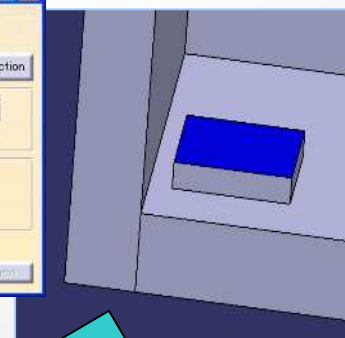
Fill gap

Gaps created by standard part placement are filled.



Correct gap

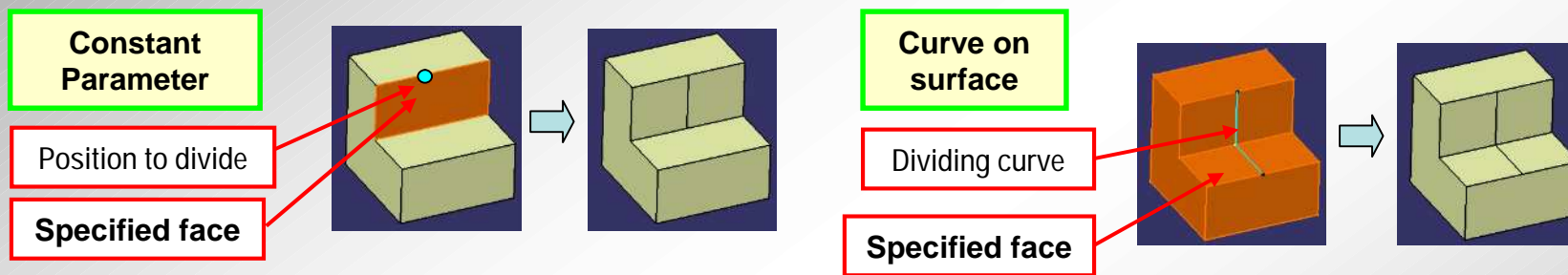
Connection shape is created between casting structure and flat surface.





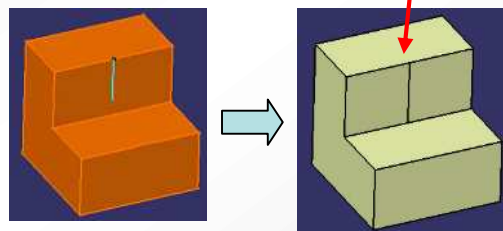
Boundary addition

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.



In case that a dividing curve is short and face is not divided into two or more areas.

Edge is added after extending the curve tangentially.



Used for separating a portion as another component surface.

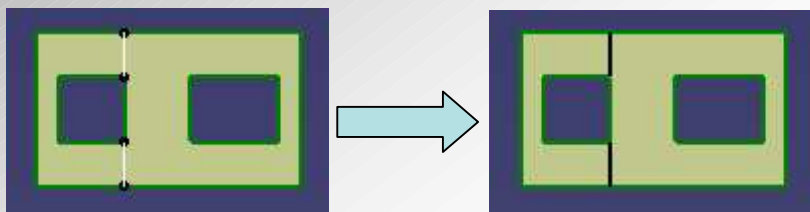




Boundary addition (2)

Input of two or more curves

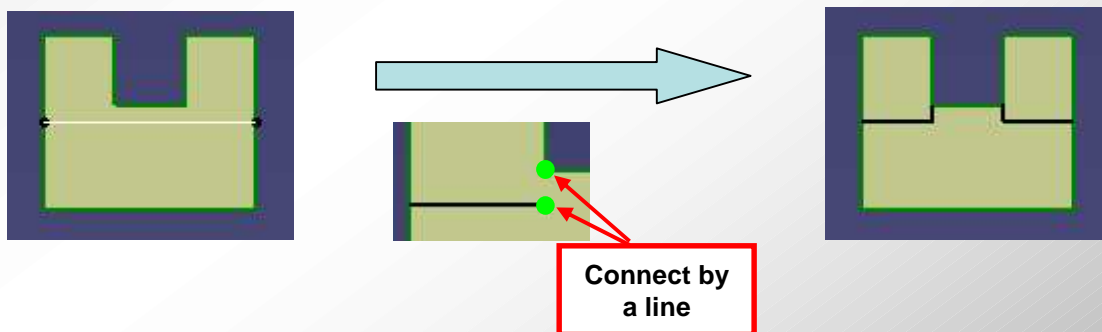
Two or more curves can be specified in one operation.



Range where boundary curves and added curves are lapping.

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.

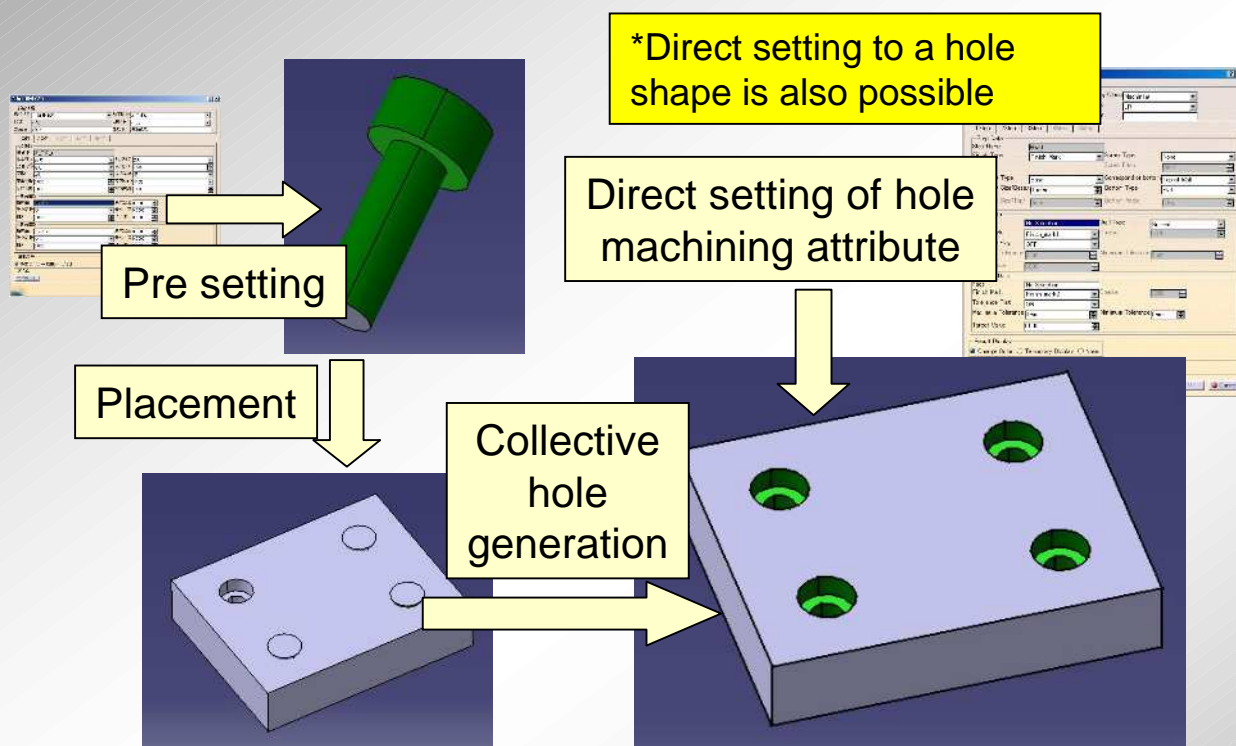




Final hole generation and Machining attribute

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

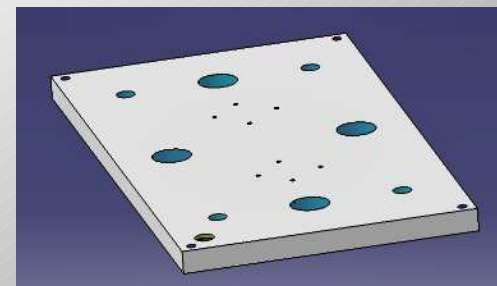
Consideration of association with 2.5D CAM. Items can be customized such as addition of items and non display of an item.



- Color display of the machining attribute

Color display by following class

- drill
- tap
- planar surface (fine1)
- planar surface (fine2)
- planar surface (fine3)
- Reaming (fine1)
- Reaming (fine2)
- Reaming (fine3)
- Cooling pipe

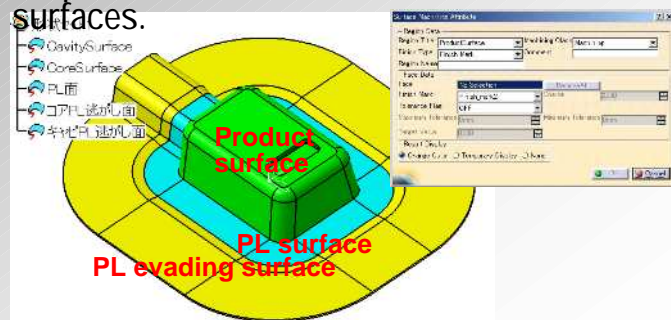




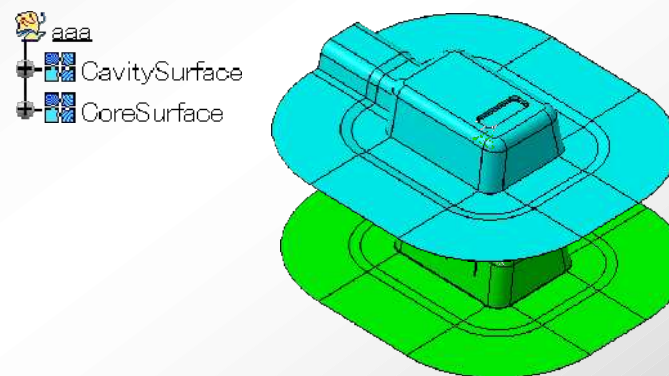
Color change by machining attribute

If surface machining attributes are added during surface operations, color can be changed for faces of product surfaces, PL surfaces and PL evade surface after solid division.

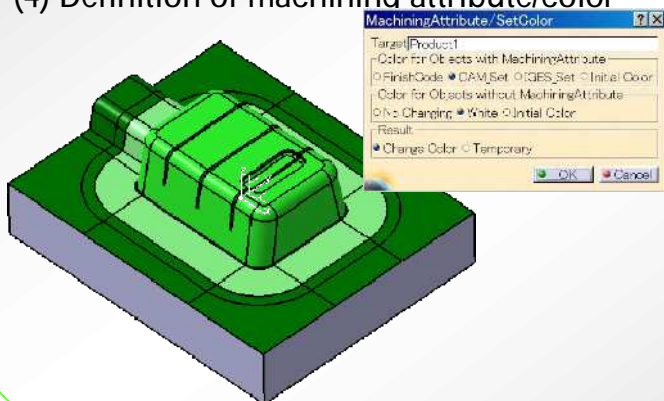
(1) Definition of surface machining attributes for product surfaces, PL surfaces and evade surfaces.



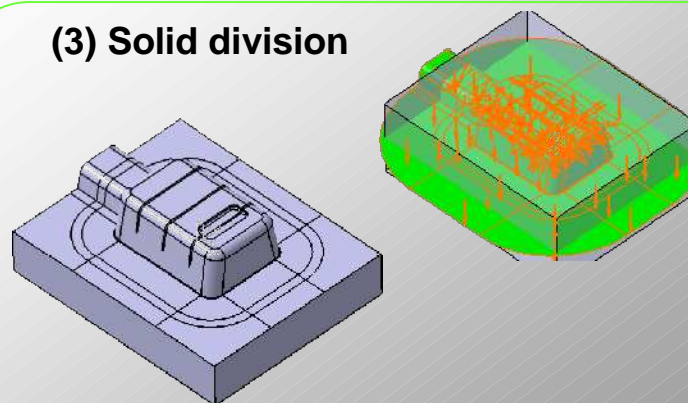
(2) Joining of each unit for solid division

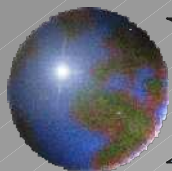


(4) Definition of machining attribute/color



(3) Solid division

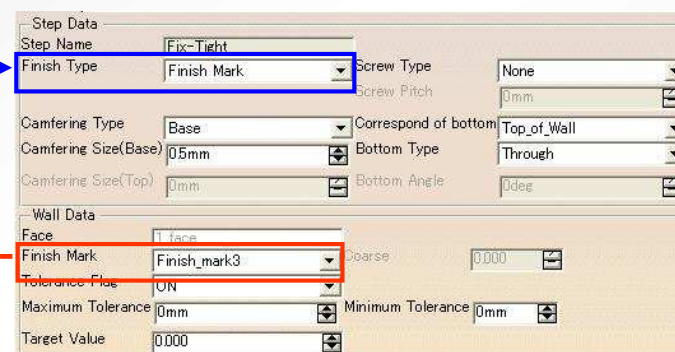
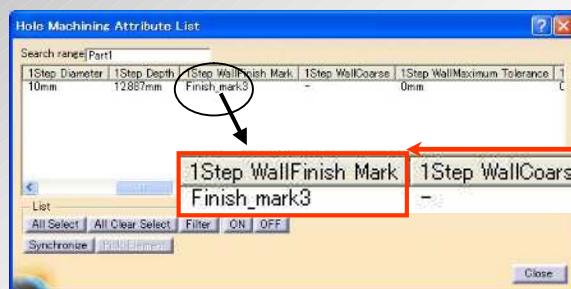




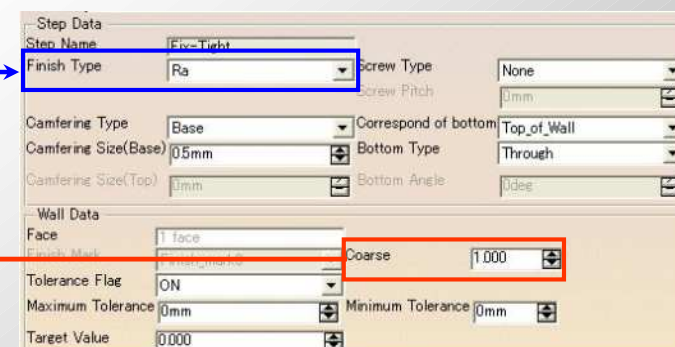
Machining attribute – Finish mark and Coarseness

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

- If “Finish Type” is “Finish Mark”,
“Finish Mark”: the value and
“Coarse”: “-” is displayed.



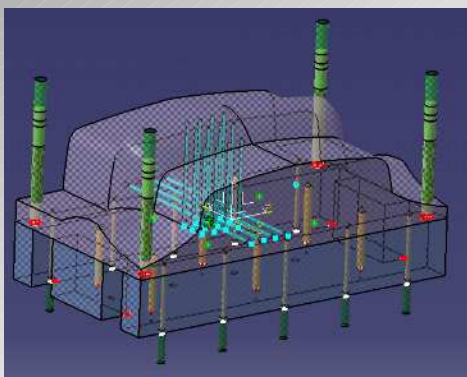
- If “Finish Type” is Ra/Ry/Rz,
“Finish Mark”: “-”, and
“Coarse”: “Finish Type + Coarse” is displayed.





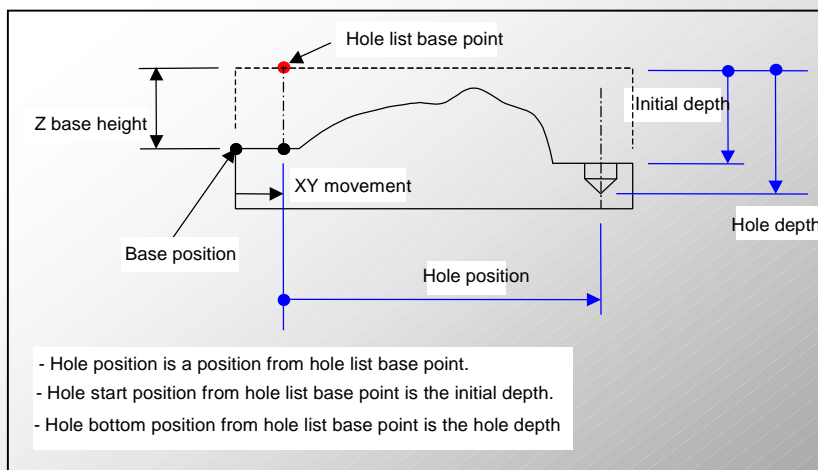
Hole list

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



加工対象名:CorePlate 穴加工方向:+Z 方向ベクトル(0,0,1) 反転処理:なし 穴リスト基準点座標値(248,148,0)									
通し番号	穴番号	部品名	穴中心座標値X	穴中心座標値Y	初期深さ	段名称	穴径	穴深さ	〈穴リスト出力フラグONの項目〉
1	CP1	水管	149.85	66.98	0	水管スクリュー(ネジ)	16	27	
2	CP1	水管	149.85	66.98	0	水管スクリュー(下穴)	15	30	
3	CP1	水管	149.85	66.98	0	水管本体	12	56	
4	CP2	水管	376.97	167.61	0	水管本体	12	56	

Output can be made by specifying machining direction, machining base point (base position + movement) for the plate.





3D drawing

3D Note

An annotation is created by key-in at any pick location.

External name definition

Create a leader line with an external name.

Height dimension

A height dimension is created as a temporary text figure from the base height.

It will be erased by “Erase temporary figures” command or Dynavista termination.

Change of external name

Change the external name or the annotation created by “External name” command.

It can be changed to any feature name or any text string.

Change of view

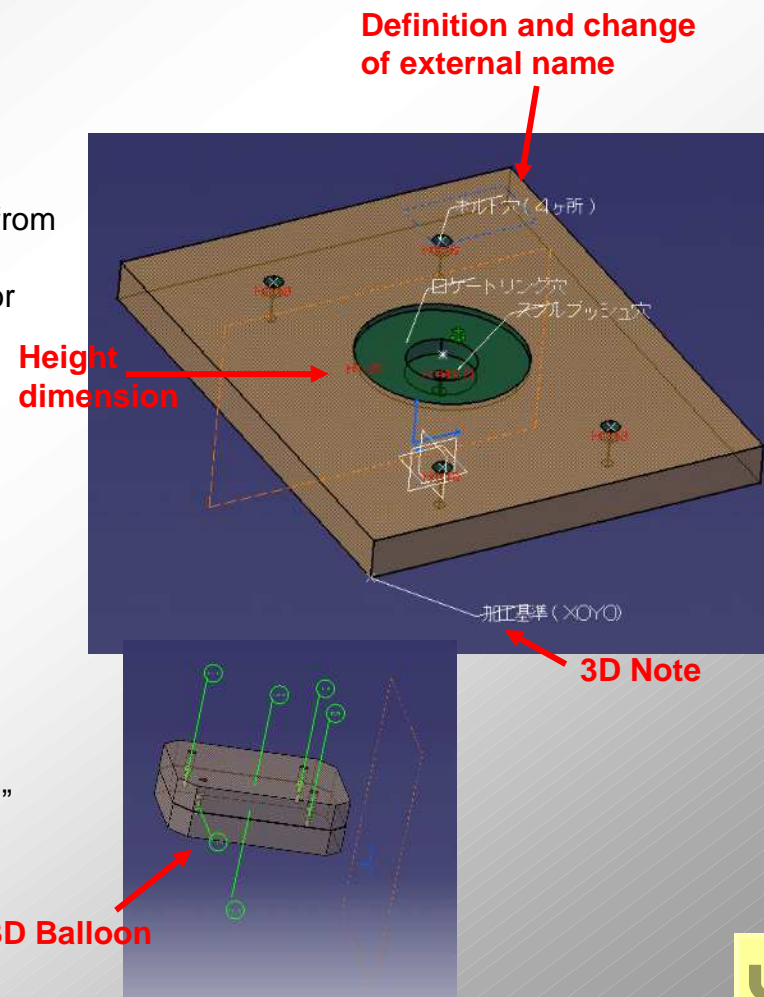
Restore current view to the view of leader line with text at its creation time.

Removal of temporary figures

Erase the temporary figures created by “Height dimension” command, etc.

3D Balloon

Part number of part attribute is created as 3D note.





Dynavista common convenient tools

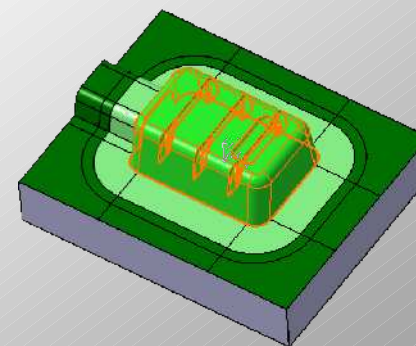
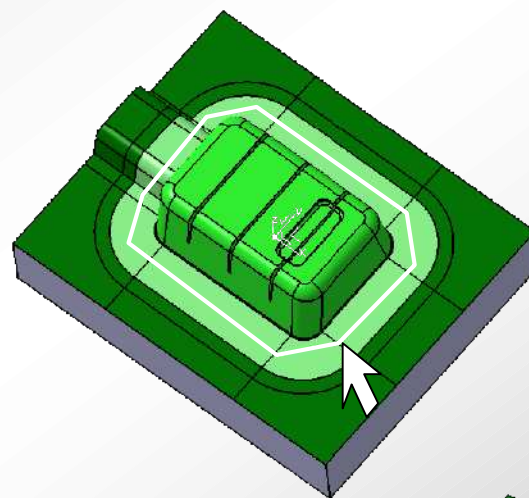
Type ON/OFF

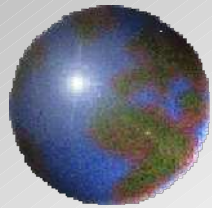
Display control for each element type.
Can be returned to the original display
because of a temporary display



Component face selection

Reduction of face input for machining
attribute or color change





Dynavista

CAA V5 based

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

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