# ThinkDesign 2020 Release Notes

Many improvements have been made in version 2020.1. This document contains a list of short descriptions for each new feature, improvement and enhancement.

- Full Hybrid Modeling
- Sheet Metal
- Global Modeling and Zone Modeling
- Mating
- Surfaces
- Solids and Features
- Subdivision Solid
- Coexistence of different versions
- General Software Improvement and Better Reliability

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## Full Hybrid Modeling

ThinkDesign 2020.1 delivers some enhancements for the Full Hybrid Modeling:

- Enhanced commands
  - Sew Mesh
  - Separate Mesh
  - Split Mesh with Curves
  - Draft Analysis
  - Decimate Mesh
  - Light Contour Curve
  - Zebra
- New commands
  - Add Normals to Mesh
- Enhancement in the Options/Properties Dialog Box
  - Enhancement in the Graphics category

### Enhanced commands

**Sew Mesh** command (**Modify ➩ Mesh ➩ Sew**)
This command used for repairing mesh by closing narrow gaps has evolved for better performances and usability.

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The user interface changes:
- Preview of the modified mesh.
- Display of the minimum sew distance for a progressive and controlled operation.

**Separate mesh** command (**Insert** ⇨ **Mesh** ⇨ **Separate**)
A new option of this command enables to separate the mesh into all the disconnected shells or to extract only the selected ones.

**Split Mesh with Curves** command (**Modify** ⇨ **Mesh** ⇨ **Split with Curves**)
This command has been improved to manage more cases by removing limitation: with ThinkDesign 2020.1 the limiting curves can intersect.

**Draft Analysis** command (**Tools** ⇨ **Info** ⇨ **Analysis** ⇨ **Draft Analysis**)
Draft Analysis can be used on mesh entities.

**Decimate Mesh** command (**Modify** ⇨ **Mesh** ⇨ **Decimate**)
This command used for simplifying mesh whilst keeping the general shape has evolved for better performances, usability and integration.
The user interface changes:

- Improved selection mechanism for mesh zones.
- Preview of the modified mesh.
- Improved algorithm control with target percentage updating the preview in real-time.
- Full command modality.

**Light Contour Curve** command (**Insert** ⇨ **Curve** ⇨ **Light Contours**)
ThinkDesign 2020.1 allows to create curves of
type **Silhouette**, **Highlights** and **Isophotes** on mesh entities.
The improved Light Contours algorithm requires the normals to the mesh nodes which can be computed beforehand using **Add Normals to Mesh** command.

**Zebra** command (**Tools** ⇨ **Info** ⇨ **Zebra**)
The Zebra command now works on mesh previews in the following commands:
- 3D Printing
- Decimate Mesh
- Refine Mesh
- Repair Mesh
- Sew Mesh
- Offset Mesh
- Identify on Measured Data
- Adapt on Measured Data

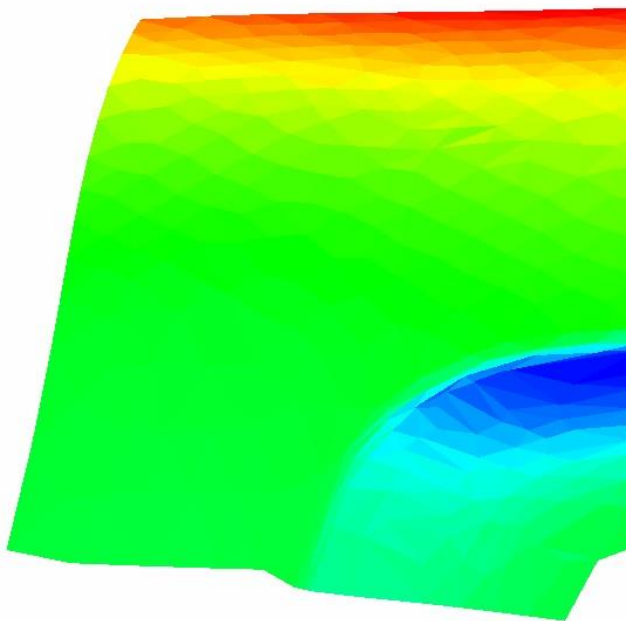*Decimate Mesh on a mesh zone showing the preview with its zebras*
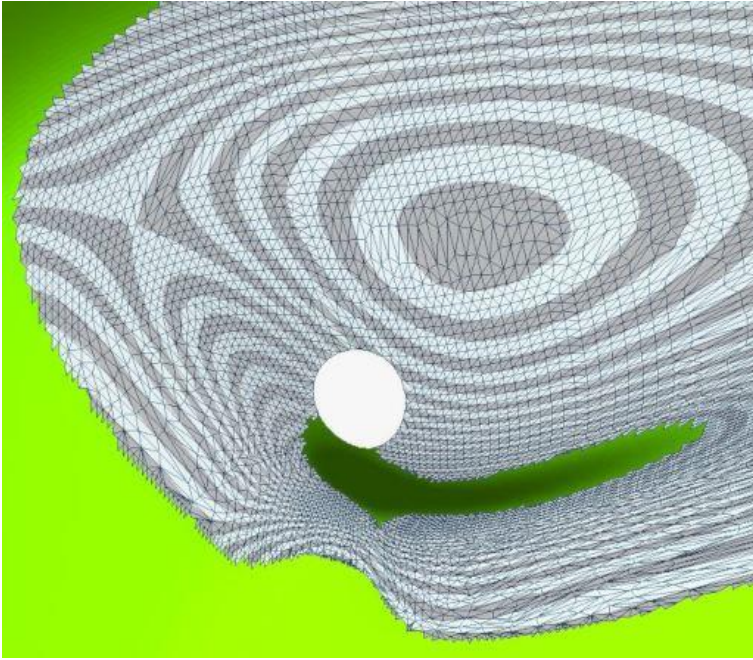


New commands

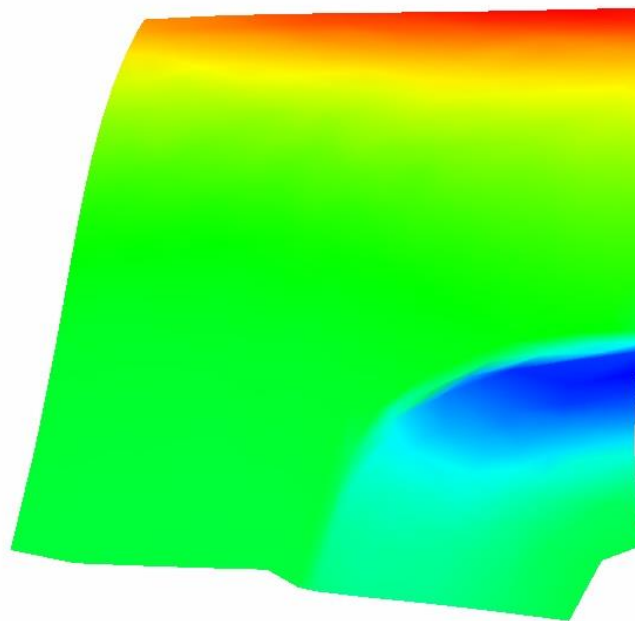**Add Normals to Mesh** command (**Modify ⇨ Mesh ⇨ Add Normals**)
This command enables the user to compute and set normals to mesh nodes.

Computing normals to the nodes has various applications, including amongst others, the smooth shading for Draft analysis on meshes.

*Draft analysis without normals to nodes*          *Draft analysis with normals to nodes*

Enhancement in the Graphics category
The new check-box **Smooth shading of meshes with normals** has been introduced.

When selected, smooth shading on triangular meshes is enabled.
When not selected, the shading on triangular meshes is flat.

Note that for triangular meshes without node normals, the shading is flat even if the check-box is selected.

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# Sheet Metal

ThinkDesign 2020.1 delivers new Union with Bend command.

**Union with Bend** command (**Insert** ➪ **Sheet Metal** ➪ **Union with Bend**)
This command is used for creating union with bend between two sheet metal solids.

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# Global Modeling and Zone Modeling Reliability

ThinkDesign 2020.1 delivers many enhancements of GSM Advanced and Zone Modeling commands by providing **Target Shape Constraints**.

A shape constraint group defines the shape modification in terms of what is the initial shape (curves or points) and the target one (sphere, cylinder, plane, line, circle, …). Shape constraint options define in which conditions (unknown, partially known or fully known) the shape is to be computed and used as matching constraints.

It is particularly useful to define constraints (of course in addition to any others existing Preserving, Matching ones) where exact target position is unknown, but a target shape is desired (Match a sphere, a cylinder…) still without constraining the full definition of this shape. Partially defining the target shape allows the global deformation to be less constrained, hence providing better results.

This is also true with the new "Rigid Motion" constraint where the initial shape (curves or points) is allowed to move in the global deformation only with a rigid motion (only translations + rotations), that is the shape of the group is preserved, but allowed to move.

*GSM deformation that pulls the bottom edge without any constraint on the hole*
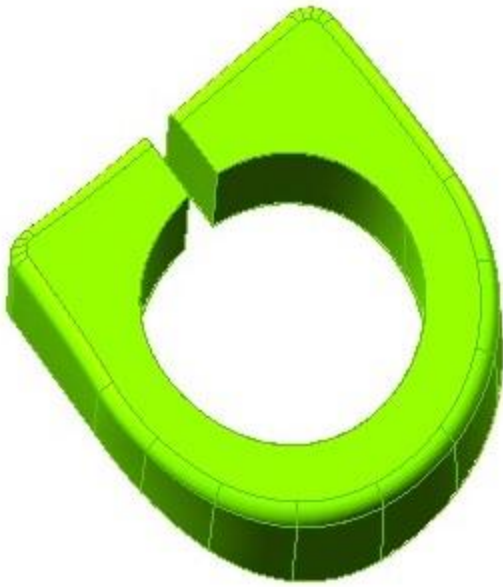
*GSM same deformation with shape constraint Match Cylinder*
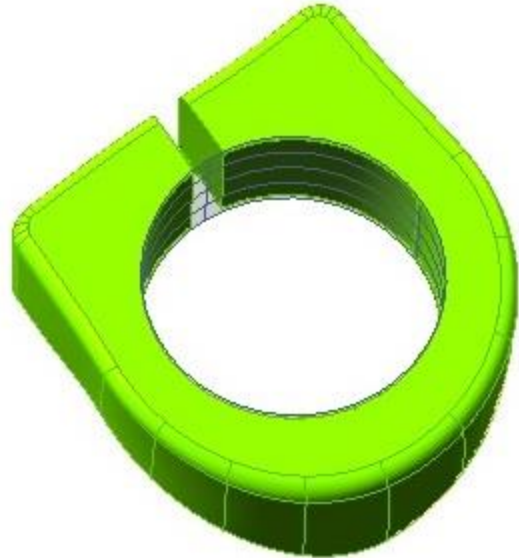
## Mating

ThinkDesign 2020.1 delivers new **Check Mating** command showing which entities are well defined, under constrained or over constrained.

**Check Mating** command (**Tools** ⇨ **Info** ⇨ **Check Mating**)

## Surfaces

The **Base Entities** drop-down list with **Keep**, **Hide** and **Modify** options is now available for the following commands: **Trim Surface with Limits**, **Split Surface** and **Untrim Surface**. It enables to specify easily what to do with the original surfaces when applying the modification.

## Solids and Features

The **Tip angle** option is available for **Threaded Blind Hole**. This allows the user to specify the required **Tip angle**.

## Subdivision Solid

ThinkDesign 2020.1 delivers new **Subdivision Solid from Sections** command. It enables to create a Subdivision solid by placing sections on entities. While entities could be a set of solids, surfaces, curves and meshes, it is particularly useful to quickly create a smooth shape from a low-quality set of data, such as a noisy mesh.

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## Coexistence of different versions

In order to manage the coexistence of different versions the old **switch** utility is replaced by the new **TDRegistration** tool.

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## General Software Improvement and Better Reliability

The source code has been accurately revised so that the program has highly improved its robustness and its reliability has been made much higher.