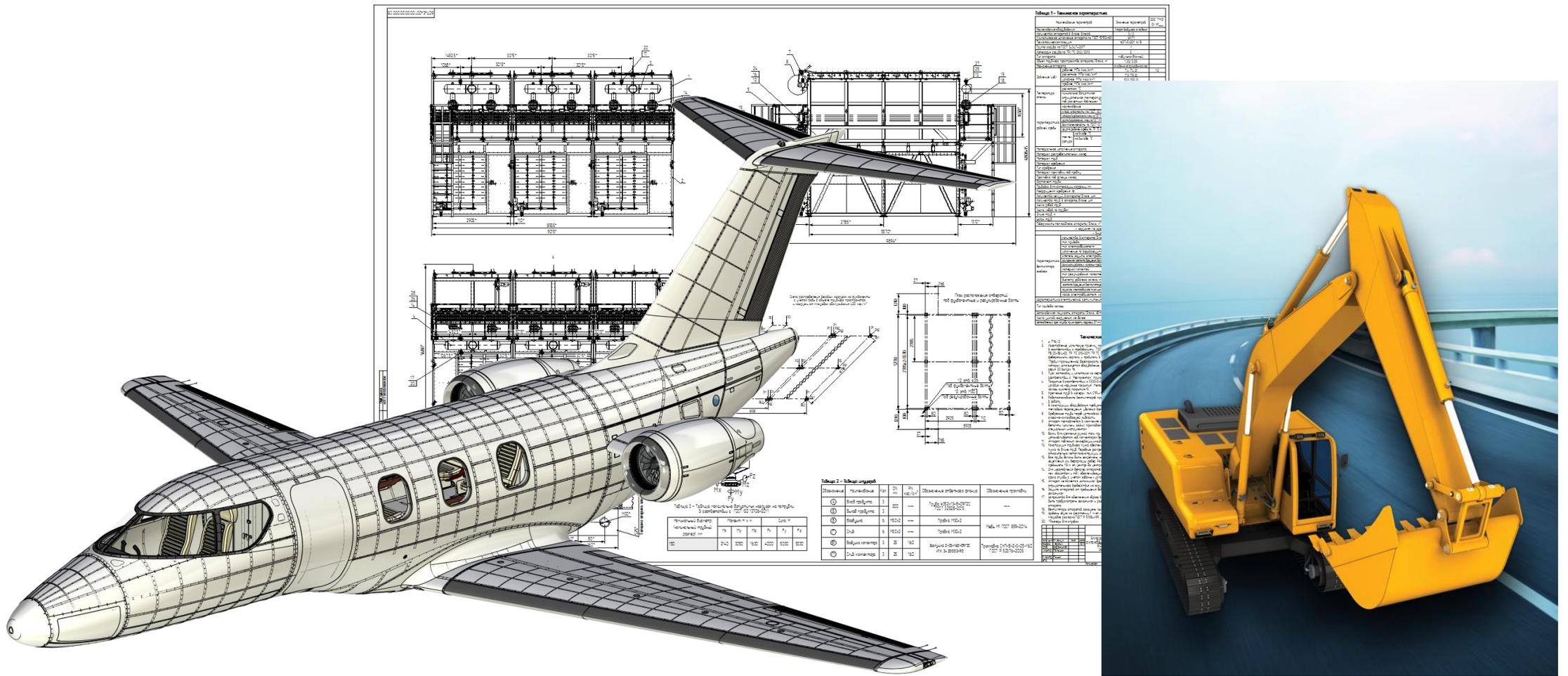


T-FLEX CAD

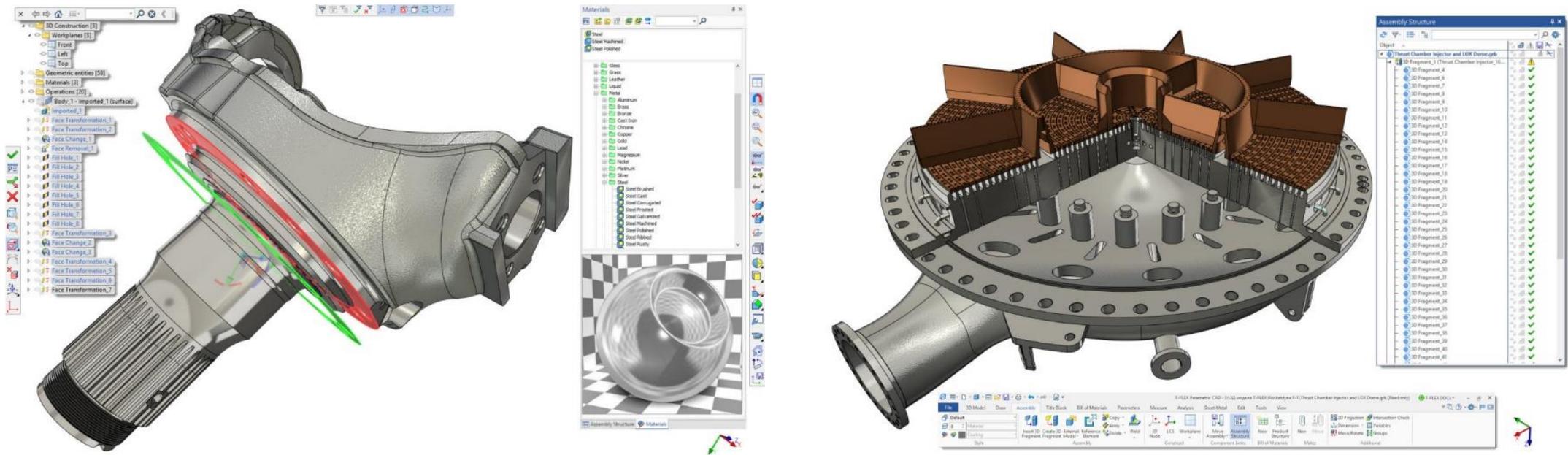


T-FLEX CAD Parametric Drawing and Design, 3D Solid Modeling



T-FLEX CAD is a full-function software system providing mechanical design professionals with the tools they need for today's complex design challenges. It unites powerful parametric 3D modeling functionality with the parametric drafting and drawing production toolset.

Modeling Tools

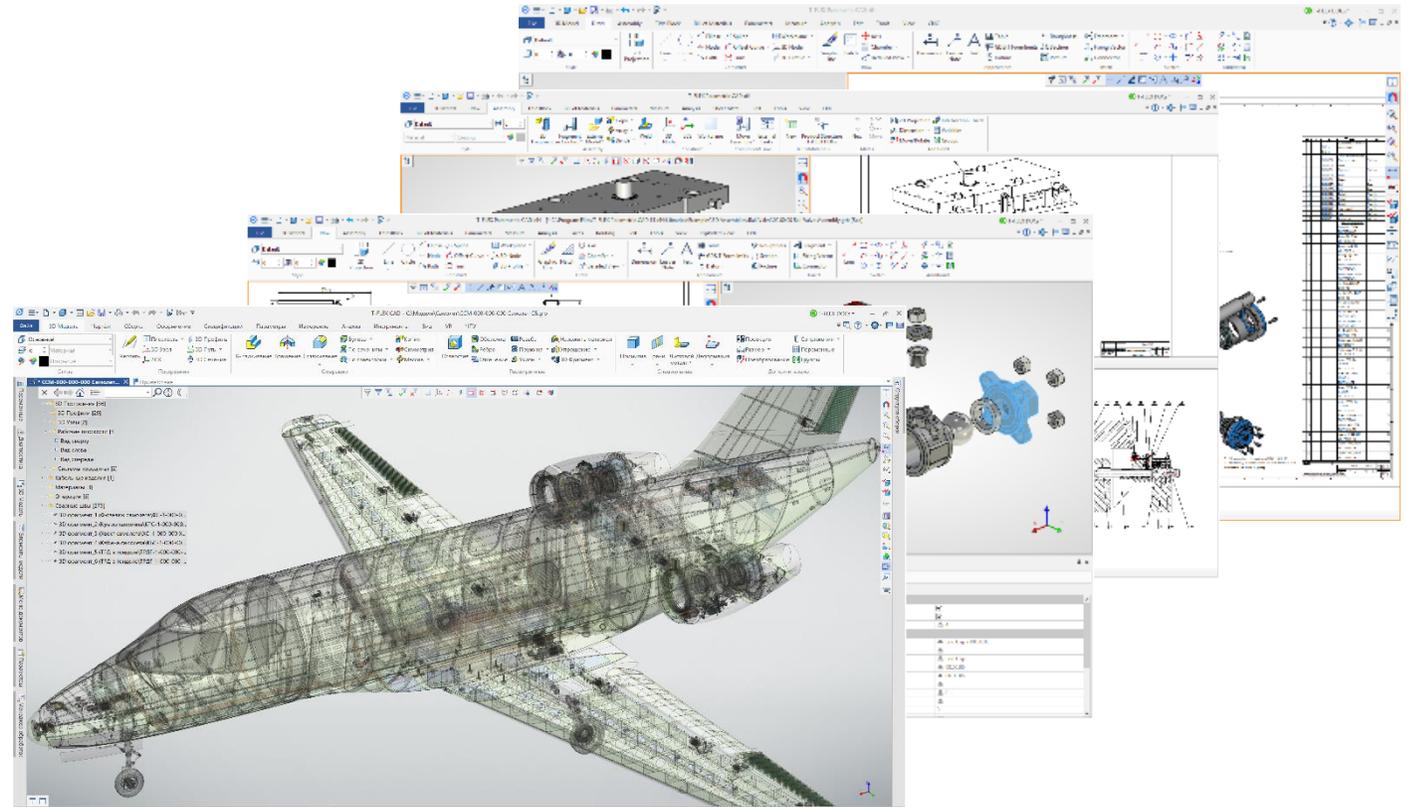


- ✓ T-FLEX CAD modeling and assembly tools enable to easily develop a full range of products, from single parts to assemblies containing thousands of components.
- ✓ Highly innovative parametric modeling tools allow designers to quickly create basic shapes and easily add common mechanical features.
- ✓ T-FLEX CAD harnesses the power of Parasolid® production - proven modeling kernel developed by Siemens PLM Software.

Design Workflow

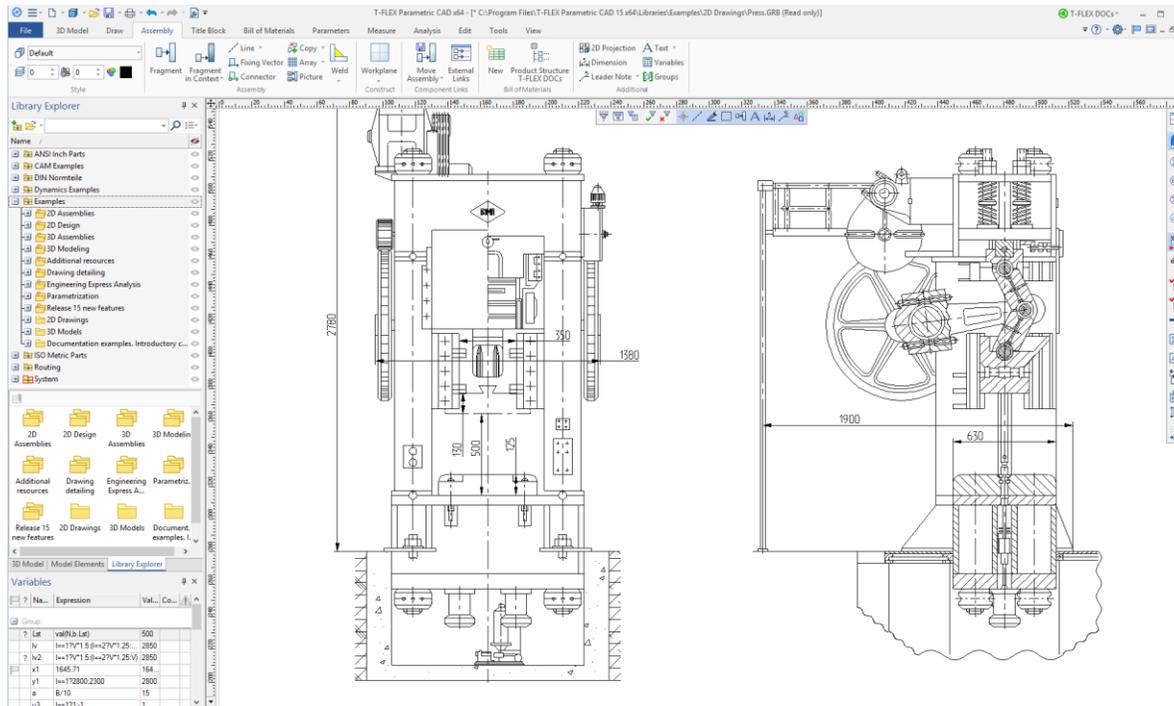
T-FLEX CAD supports a simple unified mode of operations for all types of documents and entities:

- ✓ Drawings
- ✓ Assembly drawings
- ✓ Bill of materials
- ✓ Solids
- ✓ Surfaces
- ✓ Parts
- ✓ Parts with multiple solid bodies
- ✓ Sheet metal
- ✓ Assembly models
- ✓ etc.



You use a common set of editing and data management functions on all types of geometry, streamlining workflow.

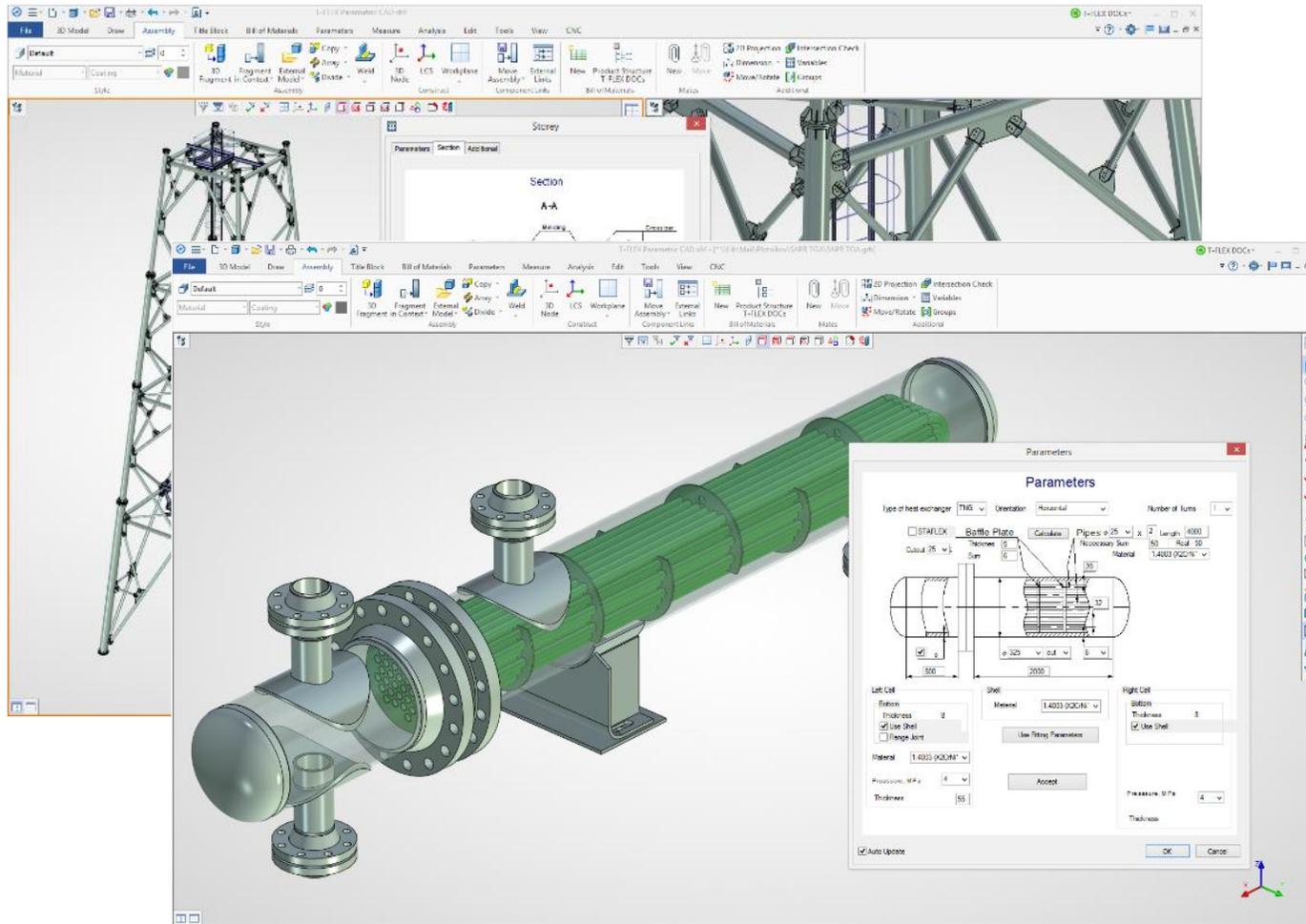
Parametric Drafting



- ✓ Unlike other products, T-FLEX CAD lets you create parametric 2D drawings from scratch.
- ✓ T-FLEX CAD has a much more robust palette of 2D tools.
- ✓ Its parametric engine is the basis of T-FLEX CAD design and unlike engines from other programs is not limited by the number of constrained 2D entities.
- ✓ The drawing immediately updates to any changes regardless of their source.
- ✓ T-FLEX CAD includes fully parametric drawing documentation, including dimensions, tolerances, text, and drawing notes.

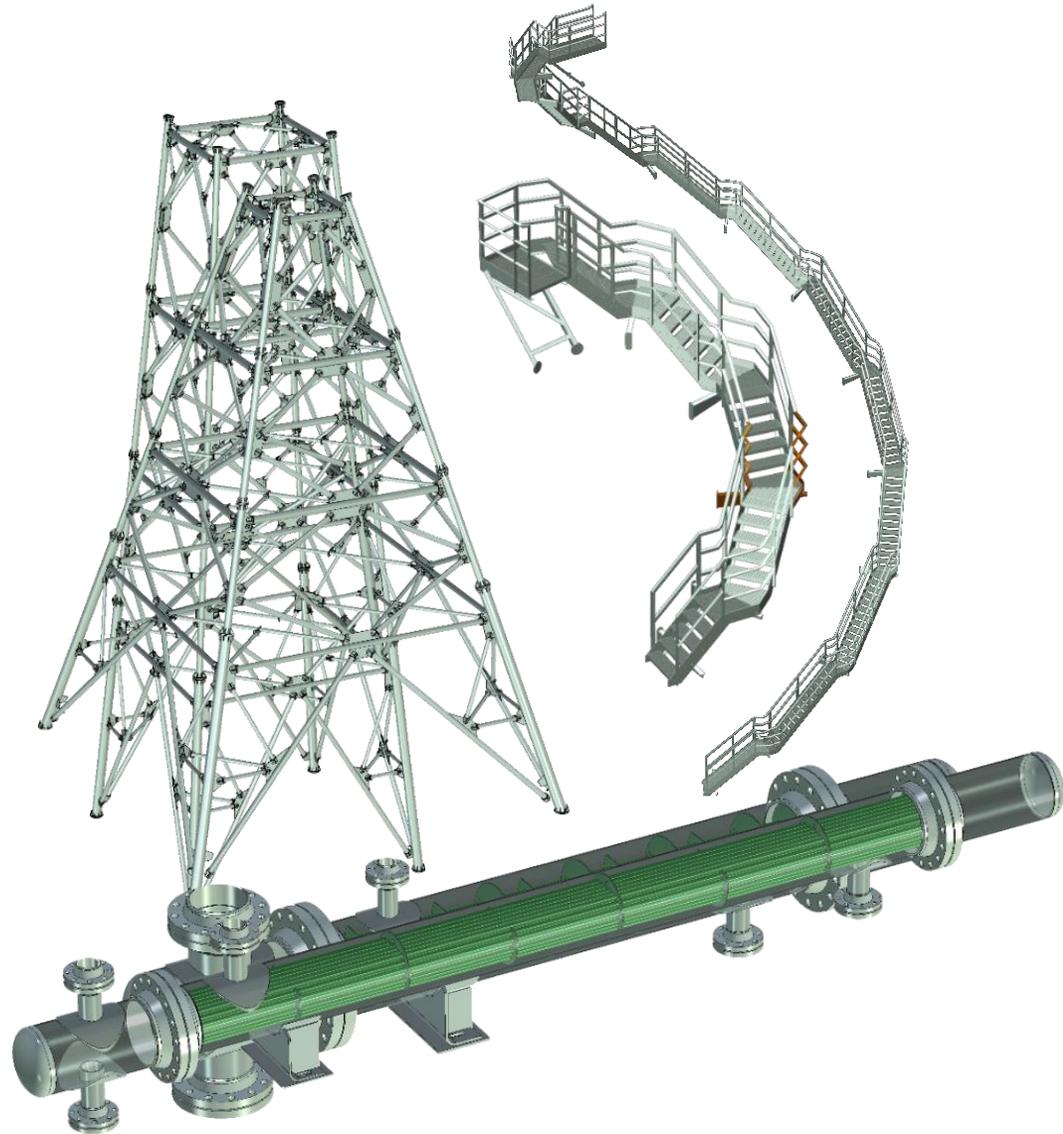
The result can be fully automatic, so that a master parametric drawing does not require any editing as changes are required.

Creating Custom Dialog Boxes



- ✓ Custom dialog boxes of model parameters can be created directly inside T-FLEX CAD.
- ✓ Users can control parametric model in a very convenient and intuitive way.
- ✓ This unique functionality does not require any programming knowledge or additional.

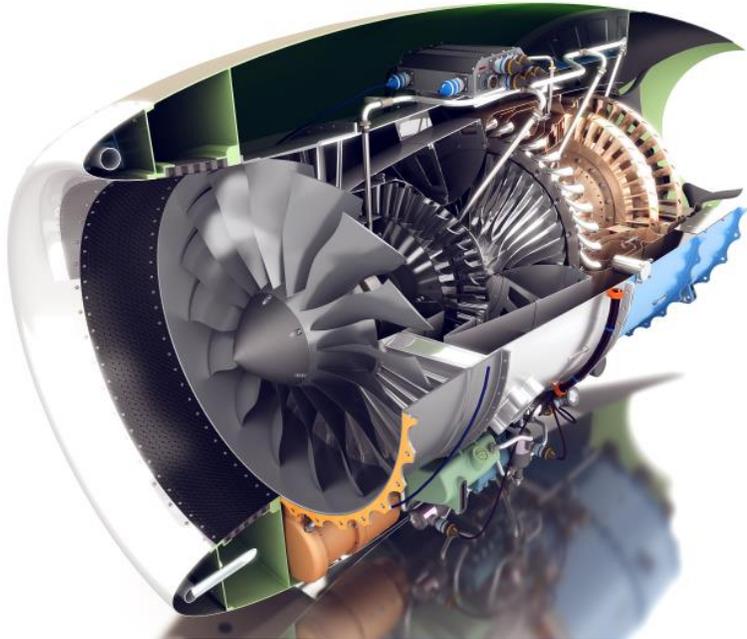
Parametrics and Adaptivity



- ✓ Any thing in T-FLEX CAD can be related to anything else.
- ✓ The variables can be assigned at any time for component names, visibility, material, any numeric or text attribute of any entity.
- ✓ The variables can be changed manually by dragging entities on the screen, or typing values into the variable editor, or by reading ASCII or database files as assigned.

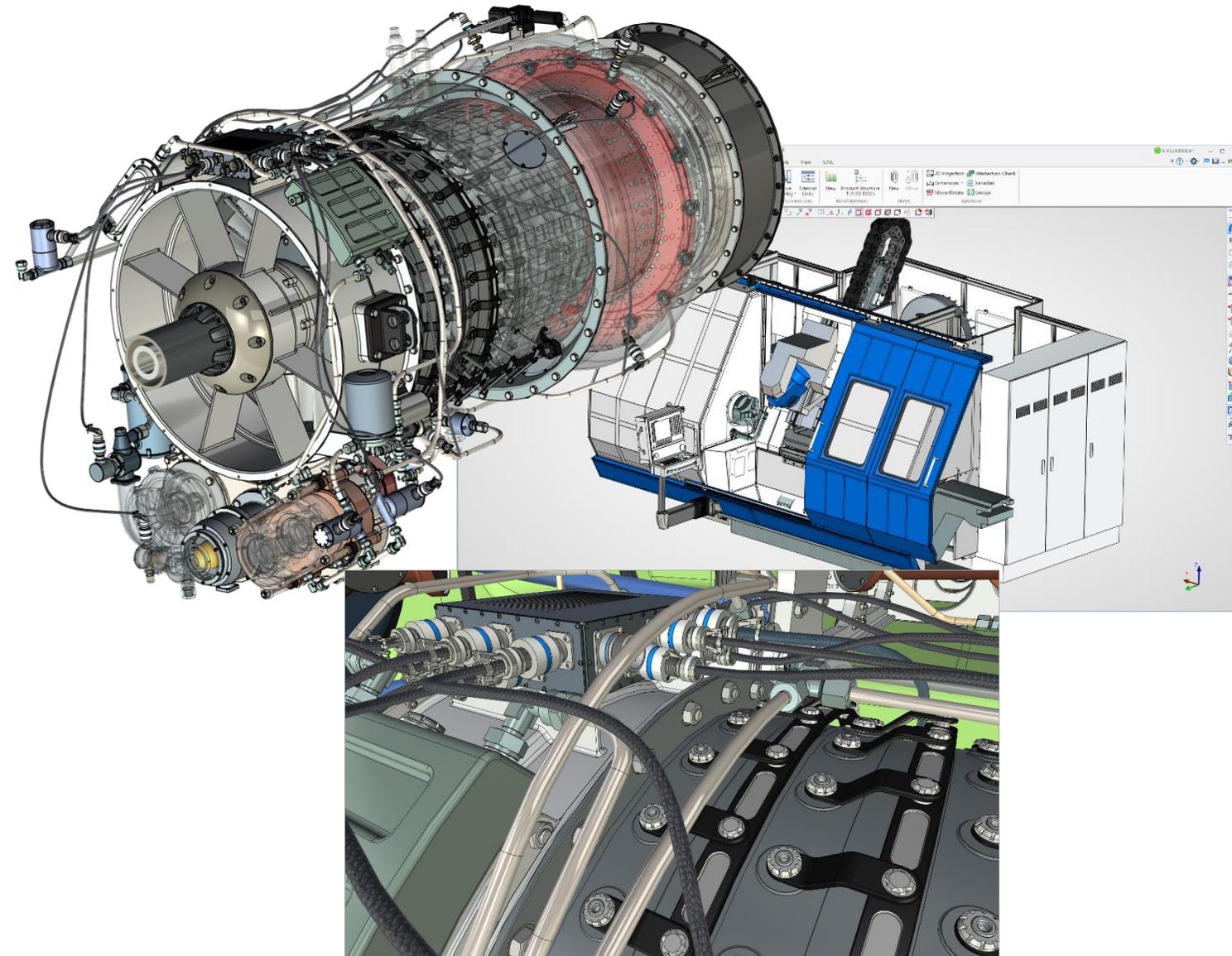
T-FLEX CAD is a natural choice for family-of-parts manufacturers or any other design situations that use similar geometry but require many different sizes or permutations.

T-FLEX CAD is a Creative Tool



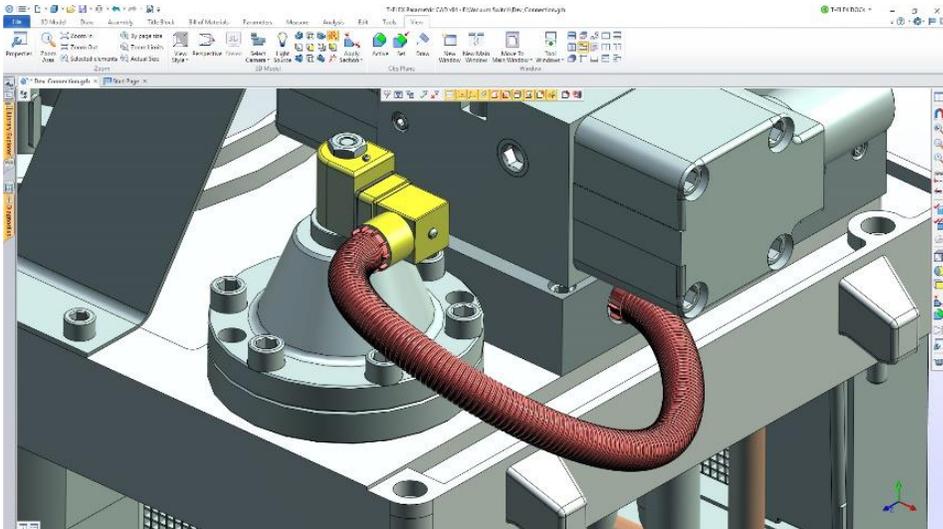
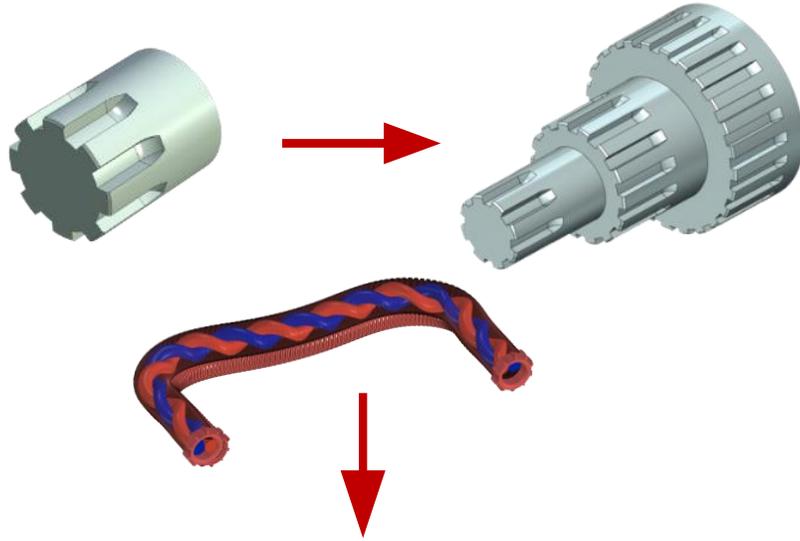
- ✓ The interface is easy to learn and very consistent.
- ✓ The incredible flexibility of design automation using parametric functionality.
- ✓ The program's Total Flexibility approach can truly eliminate redundant tasks and enhance design efficiency.

Assembly Modeling



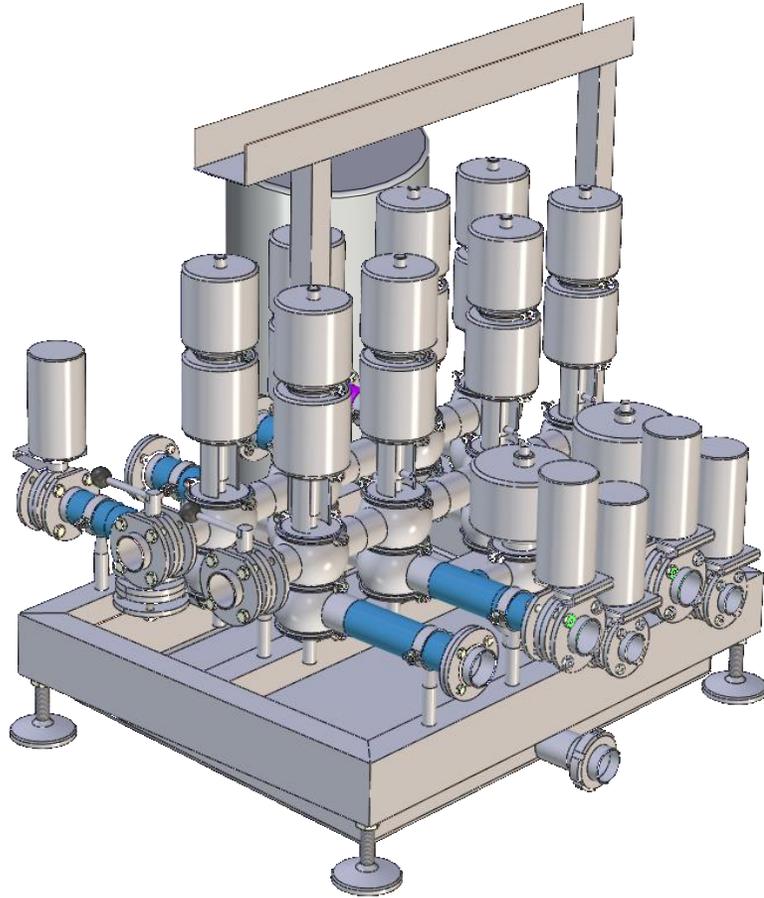
- ✓ T-FLEX CAD easily tackles assembly 3D models.
- ✓ You can build complex assemblies consisting of many components.
- ✓ Using bottom-up design, top-down design, or a combination of both methods.
- ✓ Configuration management helps to simplify design reuse by creating multiple product variations within a single document.

Adaptive Components



- ✓ The adaptive technology allows create assembly relationships by assigning geometrical links.
- ✓ You can capture design intent accurately, and manage and edit assemblies more easily.
- ✓ You can create your own library of adaptive fragments that will significantly accelerate product design of typical configurations..

User-defined Features



- ✓ Users create their own modeling features.
- ✓ T-FLEX CAD models may capture elements and geometry from other models as input parameters of operations inside their own model history tree.
- ✓ Any T-FLEX CAD model can be defined as a special feature that will function equally with other modeling commands.

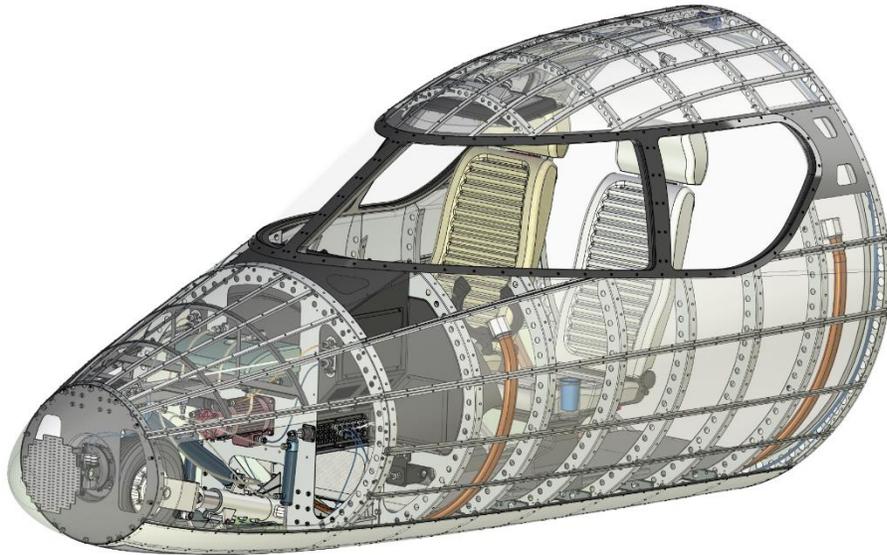
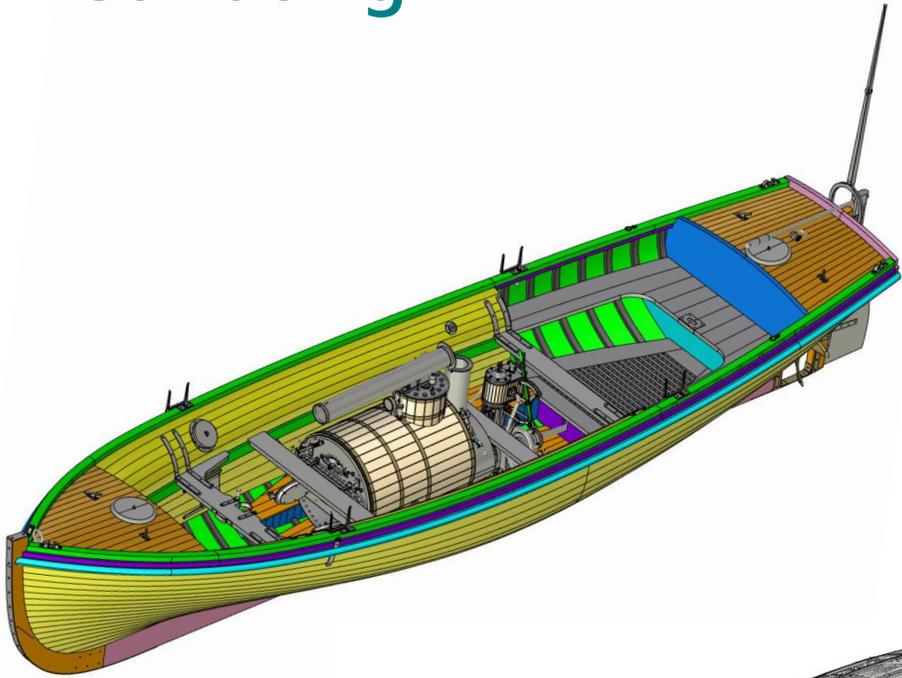
This mechanism can dramatically reduce the modeling time.

Assembly Design Automation



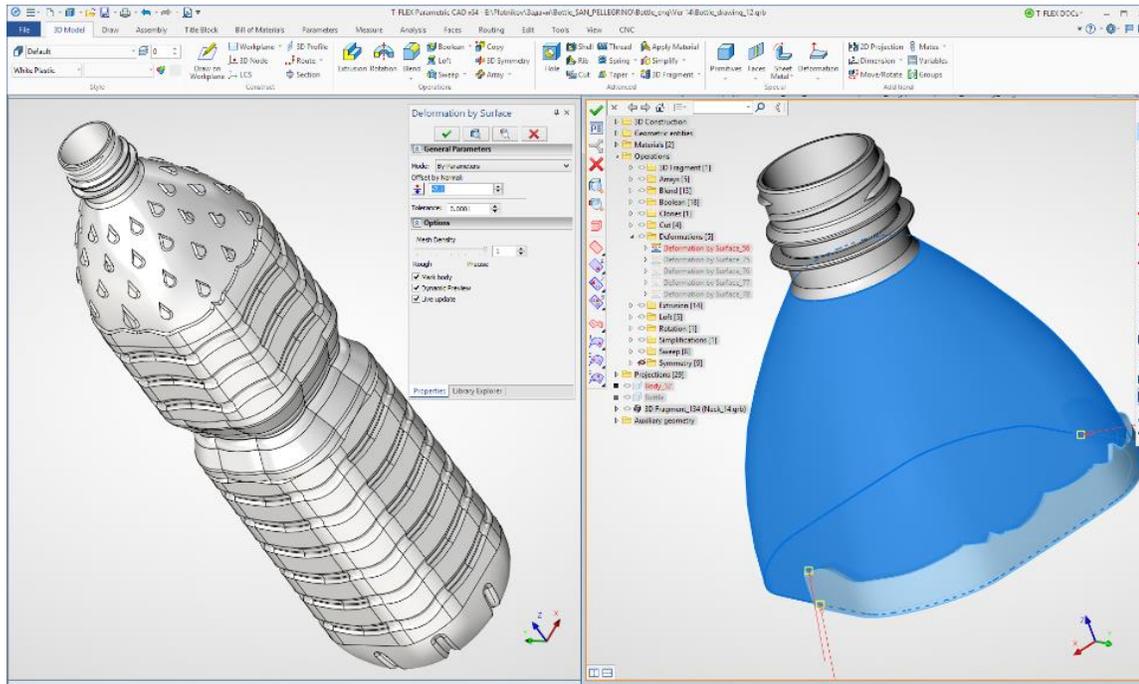
- ✓ Parametric connectors simplify assembly modeling by automatic parameter assignment for the parts being inserted.
- ✓ Parts location and sizes will adjust automatically on model modification.
- ✓ The structure of an assembly may be alterable.
- ✓ The drawings generated from a 3D assembly will update automatically on model modification with all detailing elements.

Surfacing



- ✓ T-FLEX CAD synergistically combines solid and surface modeling.
- ✓ Designers can extrude, sweep, revolve, and loft surfaces as can be done with solid models.
- ✓ It enables to do things that can't be done with parametric solids alone.
- ✓ Integrated surface and solid modeling provides flexibility in making design.

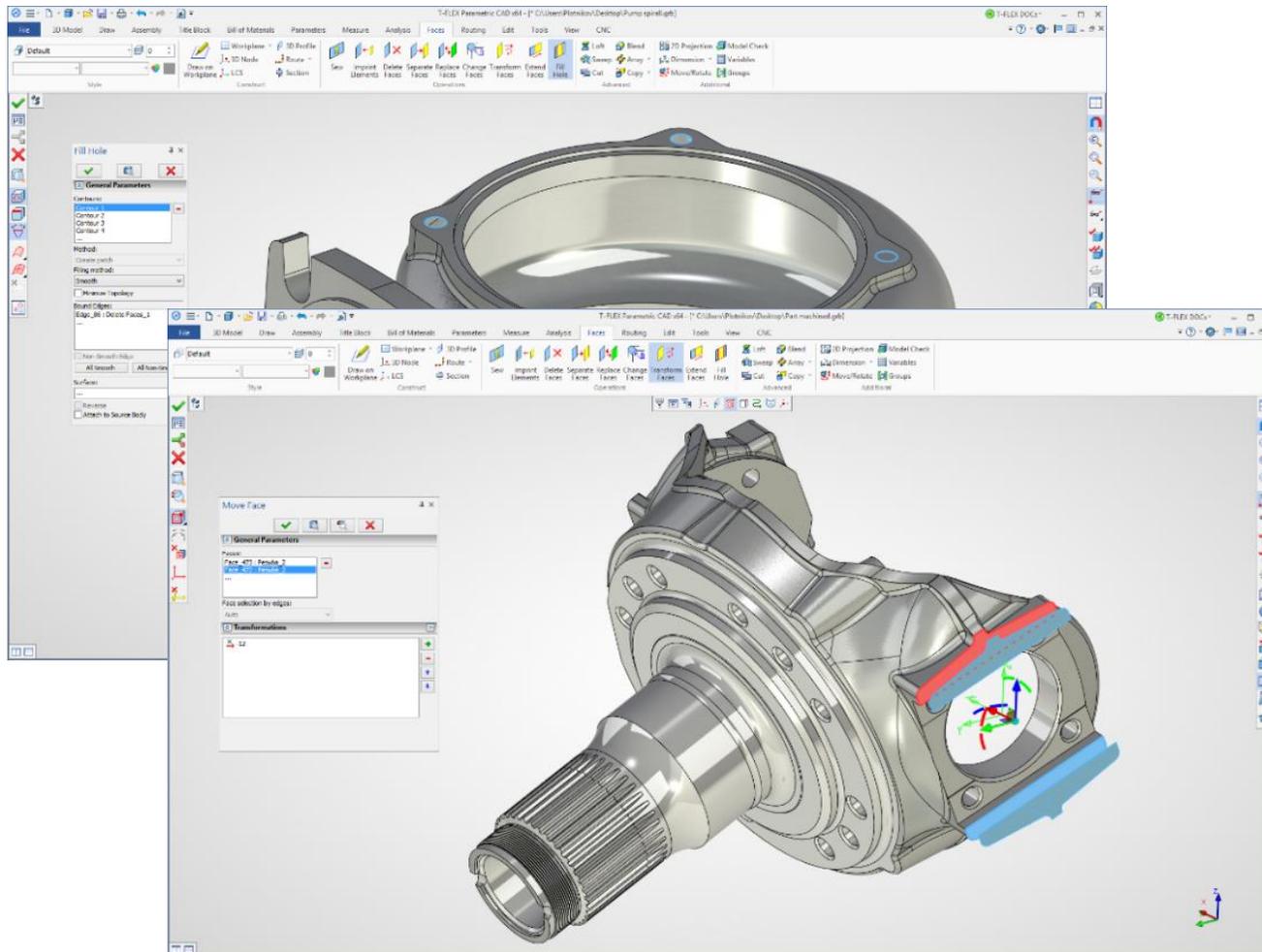
Deformation Commands



- ✓ The set of deformation commands provide a simple way to change shapes of complex surface or solid models.
- ✓ Deformation may be applied either in a local area or globally.
- ✓ Various options may be specified by direct rules and parameters or via the special handlers.
- ✓ Fast preview based on input data is available prior to exact model generation.

Direct Editing

T-FLEX CAD supports direct editing of 3D models, retaining history of the edits so that they can be regenerated.

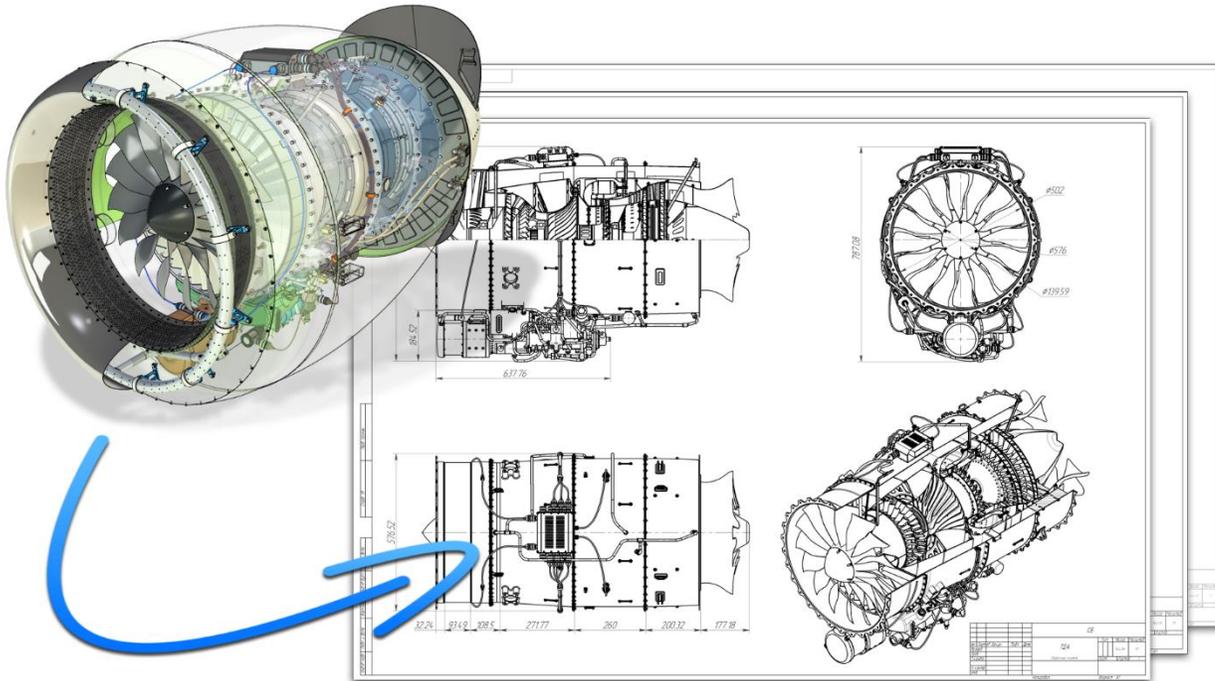


It is possible to modify parameters of the faces whose underlying surfaces are analytical.

- ✓ Modify parameters of faces created as blends
- ✓ Imprinting
- ✓ Face replacement
- ✓ Face removing
- ✓ Body separation
- ✓ etc.

Detailing Features

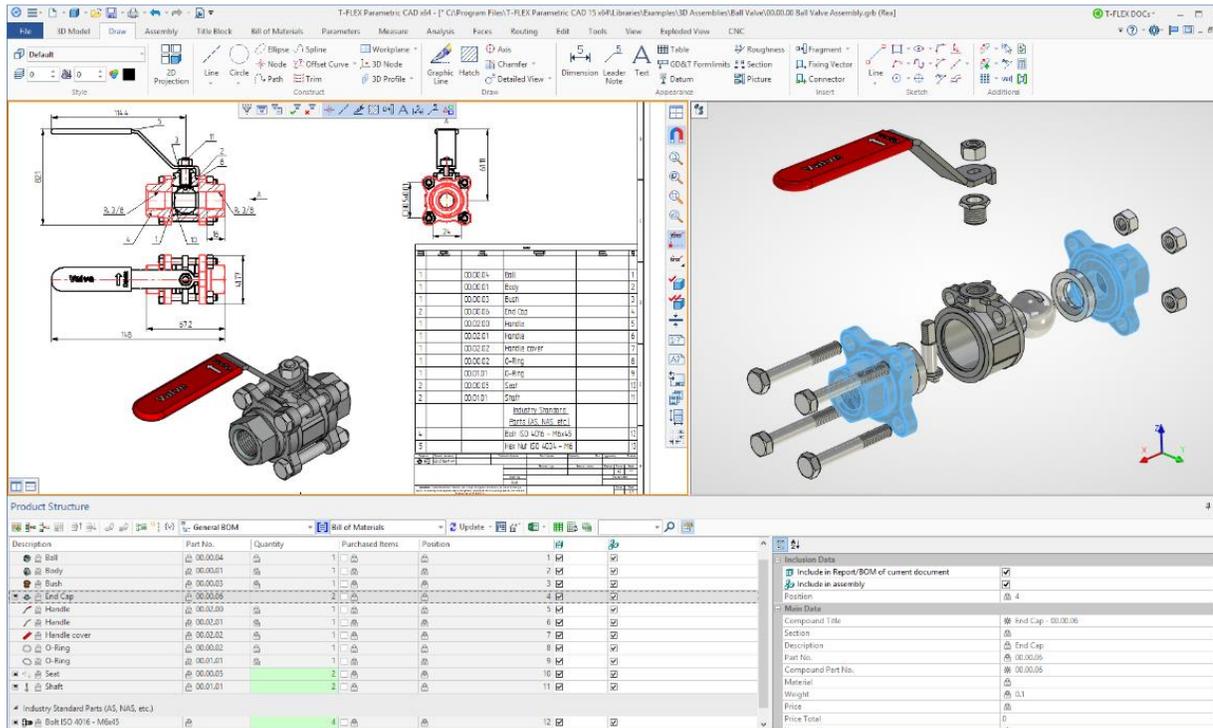
T-FLEX CAD automatically creates and updates drawings from 3D models



- ✓ Users can quickly create standard and auxiliary views including section, detail, broken and isometric views.
- ✓ Professional detailing functions support quick creation and complete manipulation of all common annotations used on mechanical drawings.
- ✓ Additional advanced capabilities can significantly increase detailing productivity.

With T-FLEX CAD, you have full control over every element of your drawings, so you know that they meet the requirements of organizational and international standards

Associative Bill of Materials (BOM)

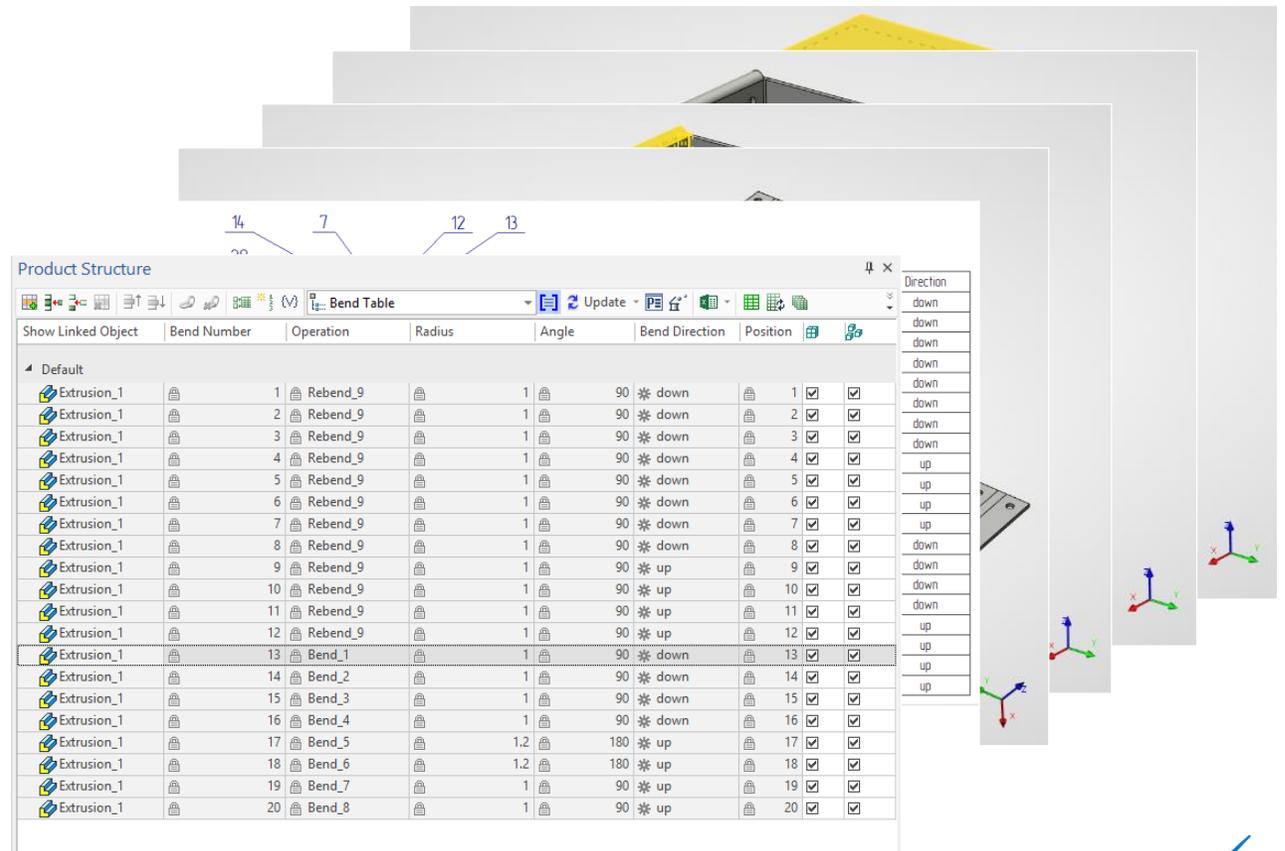


- ✓ T-FLEX CAD can generate and update an accurate BOM.
- ✓ Part and subassembly quantities are always kept up to date, and are instantly organized and populated into a drawing BOM.
- ✓ Changes to the assembly are associative. BOM table is updated automatically.
- ✓ BOM templates and table properties are fully customizable

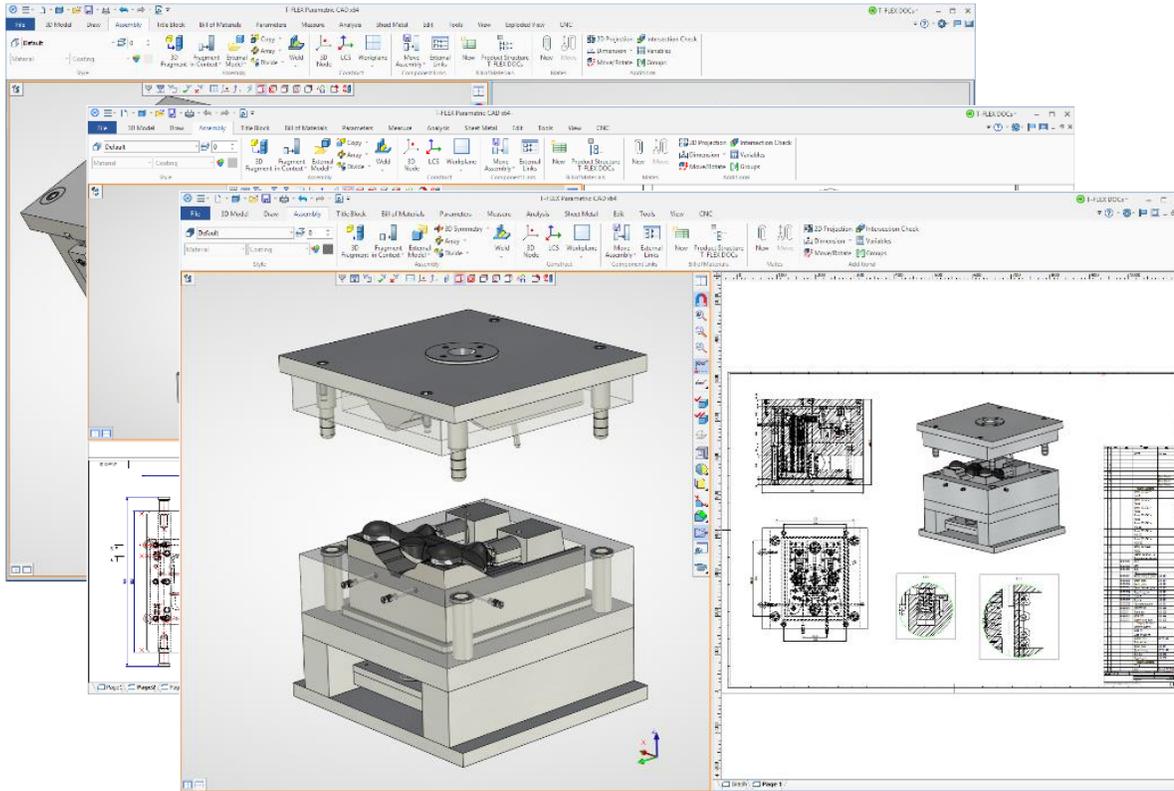
Sheet Metal Design

T-FLEX CAD provides a set of commands tailored for the efficient construction of sheet metal parts from design of sheet metal components to flat pattern development and the creation of engineering drawings:

- ✓ Sheet Metal Part
- ✓ Flange, Hem, Contour Flange
- ✓ Bend, Cut and Bend
- ✓ Bridge Bend, Jog
- ✓ Convert Solid to Sheet Metal
- ✓ Lofted Bend
- ✓ Corner, Gusset, Normal Cutout
- ✓ Forming Feature
- ✓ Unbend
- ✓ Re-bend
- ✓ Bend Table Data

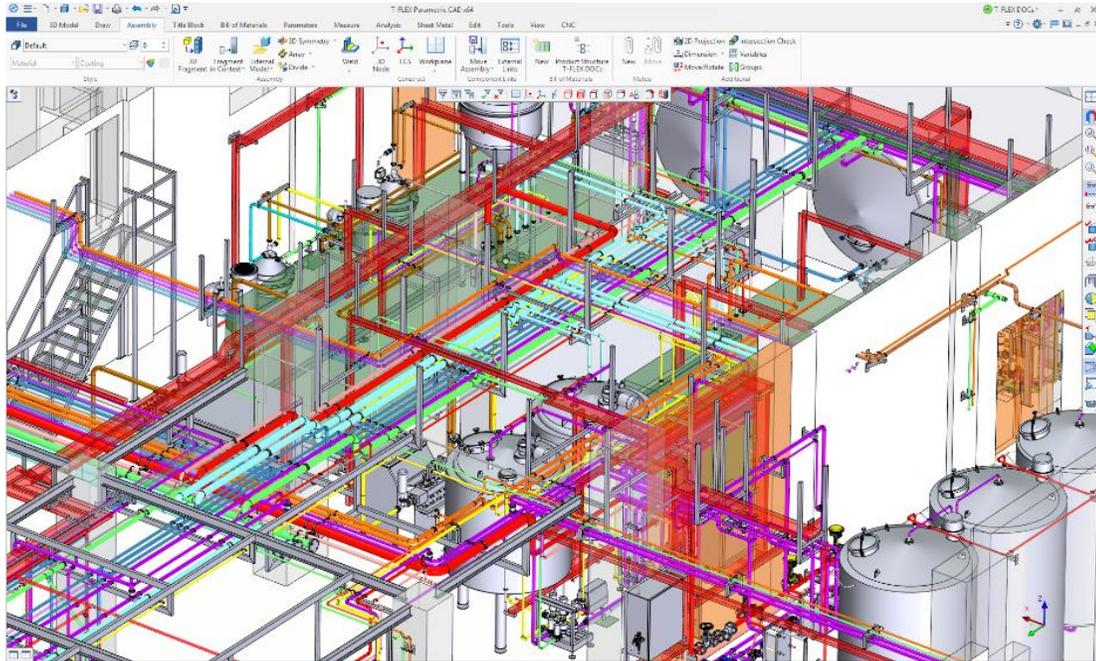


Mold and Stamp Design



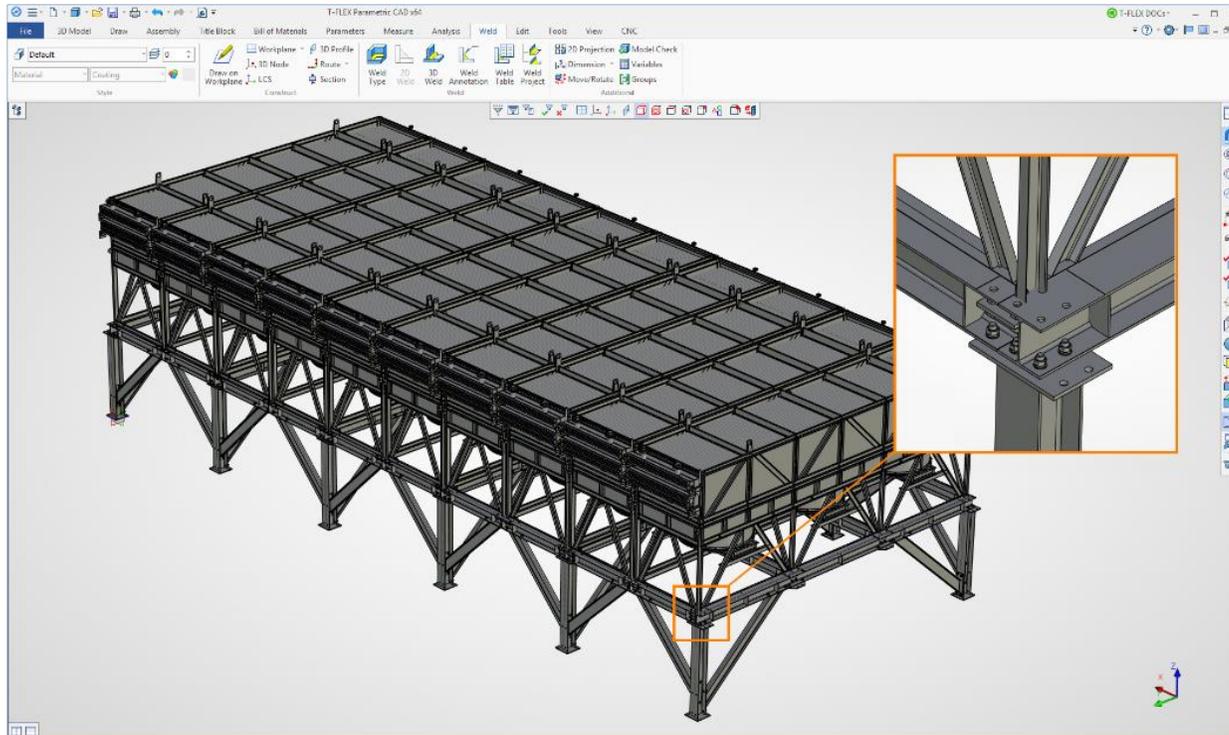
- ✓ T-FLEX CAD provides a sequence of integrated tools that control the mold creation process.
- ✓ You can apply body taper; generate parting lines and surfaces; resize the model's geometry to account for the shrink factor when plastic cools; perform tooling split to separate core and cavity.
- ✓ You can examine model for potential problems that might prevent the core and cavity from separating.

Piping and Cabling Design



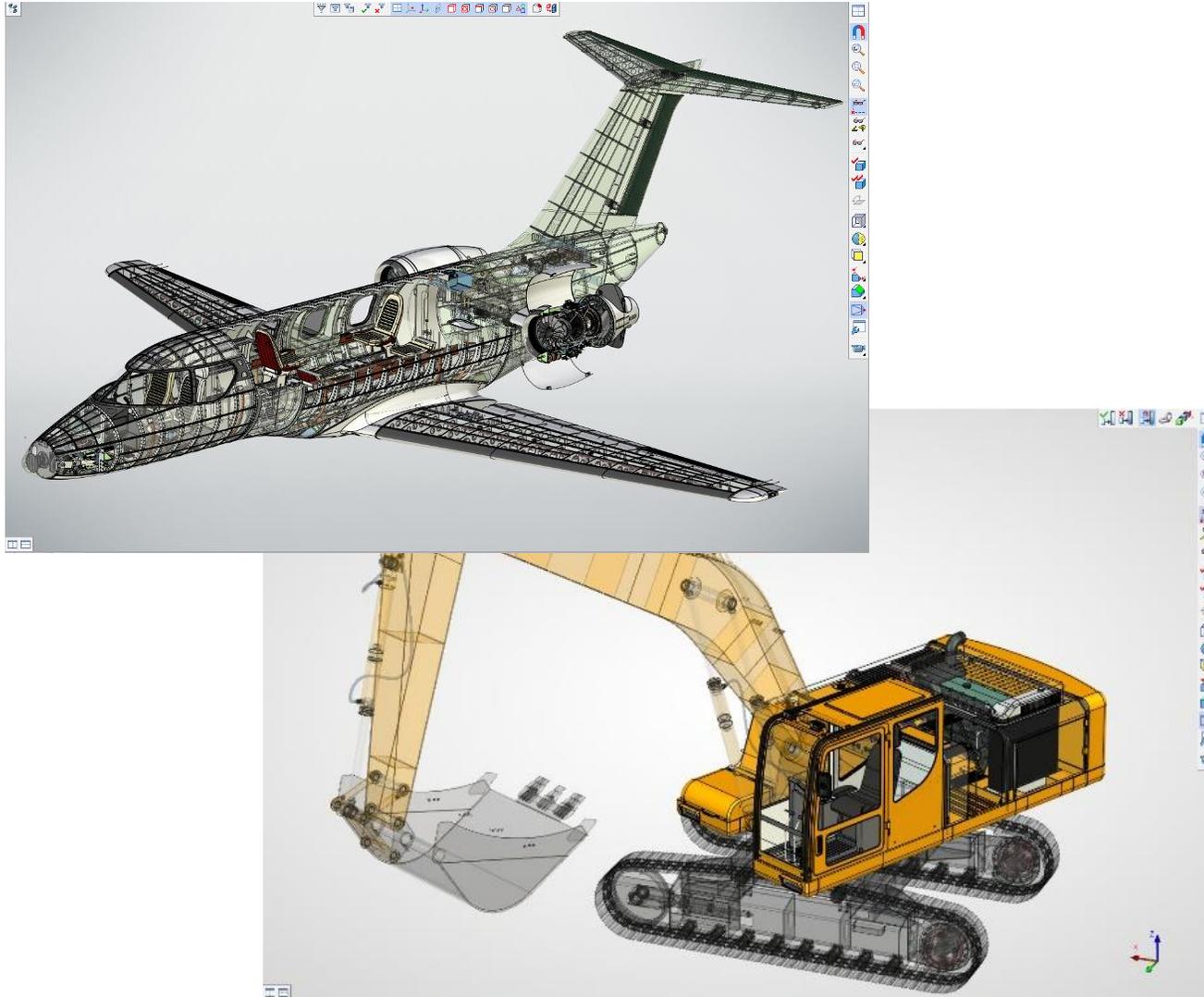
- ✓ T-FLEX CAD includes design tools that automate routed systems design.
- ✓ Speeds up the process of routing tube, pipe, venting, electrical cable, and harnesses across various manufacturing industries.

Weldment Design and Documentation



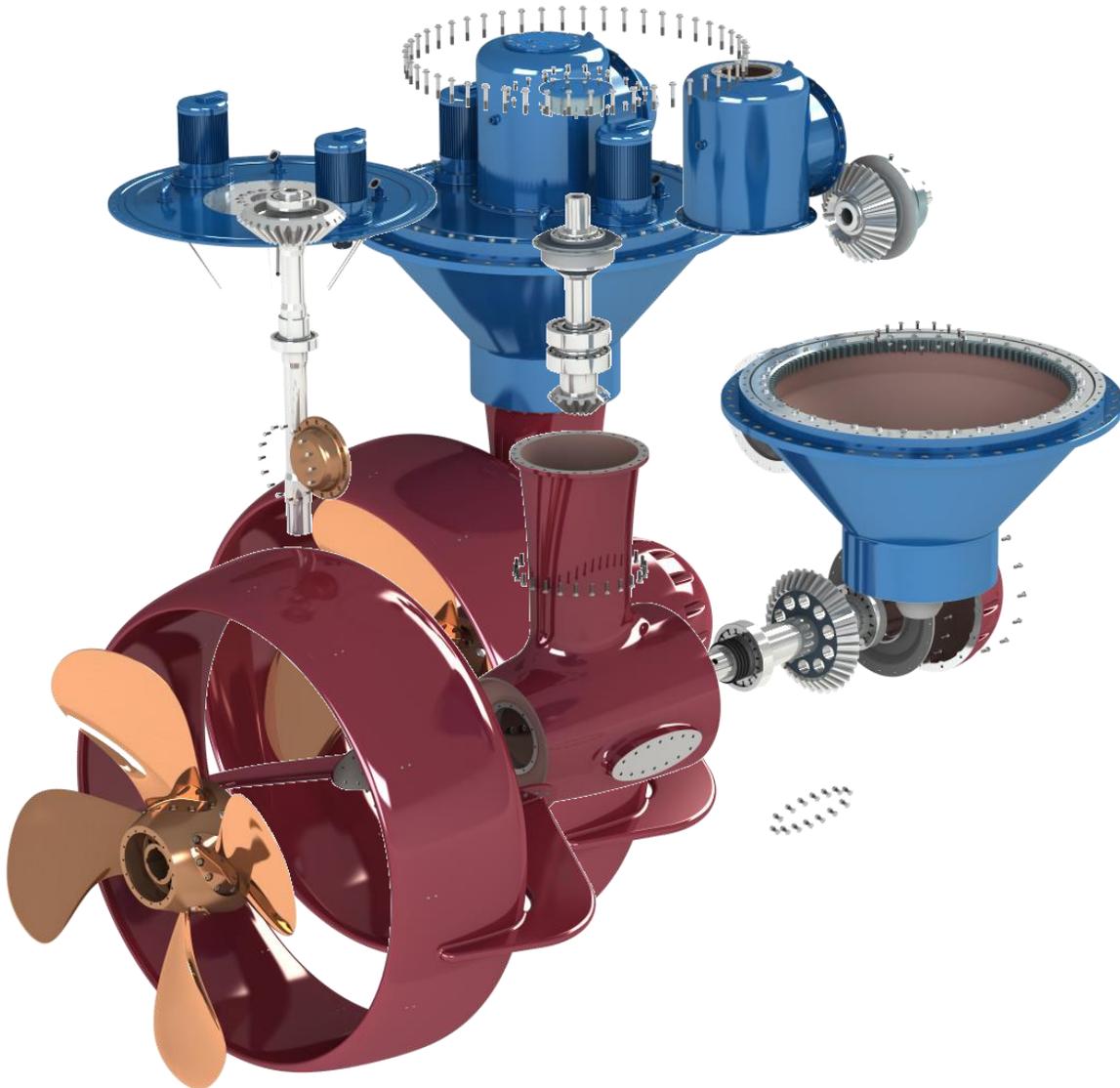
- ✓ T-FLEX CAD lets you work in a weld-specific environment of designing and documenting weldments.
- ✓ Model weldment annotations are associated with the model and automatically get updated when the model is changed.

Advanced Graphics Subsystem



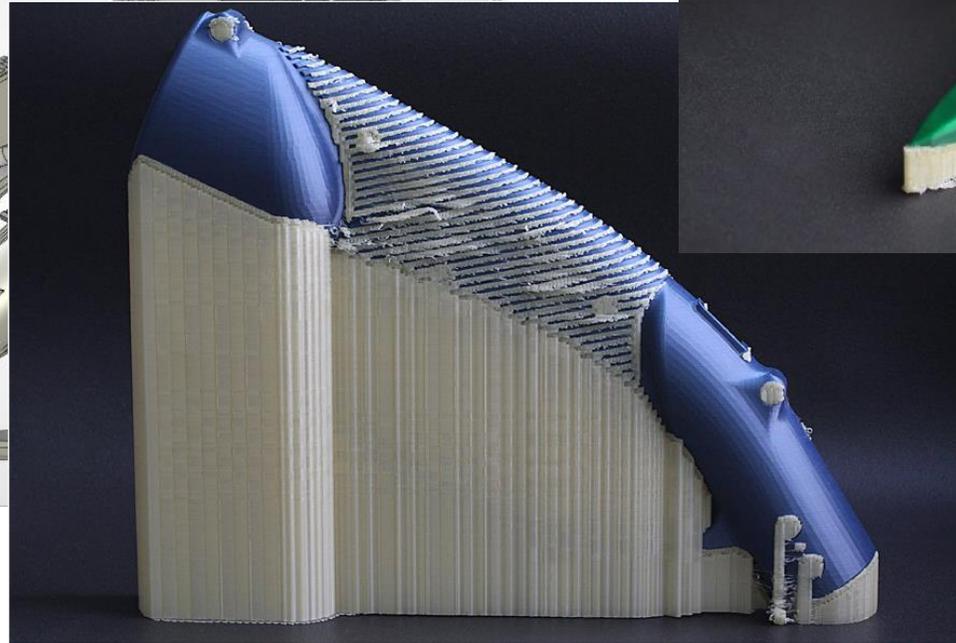
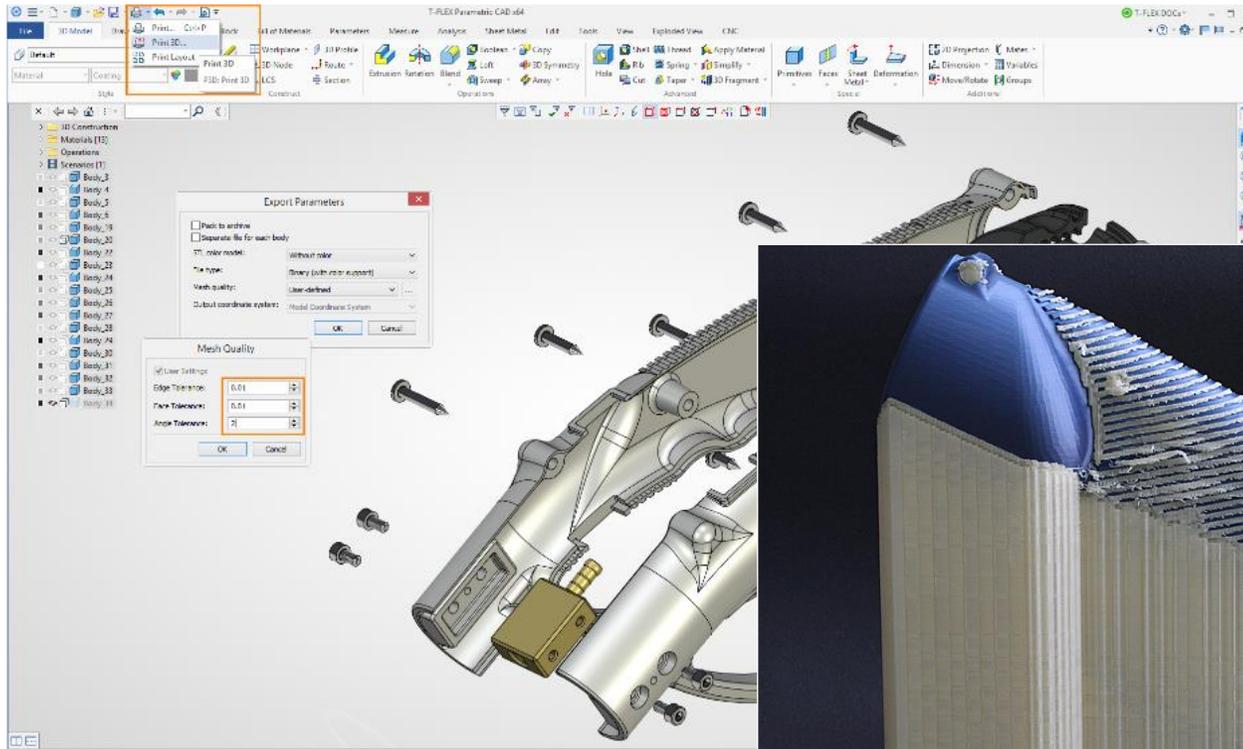
- ✓ High performance 3D graphics mechanisms ensure convenient operations even with very large assemblies.
- ✓ Comprehensive library of pre-defined materials with customized parameters and textures.
- ✓ Possibility to generate high quality photorealistic images based on lighting and material properties.

Animation Scenarios



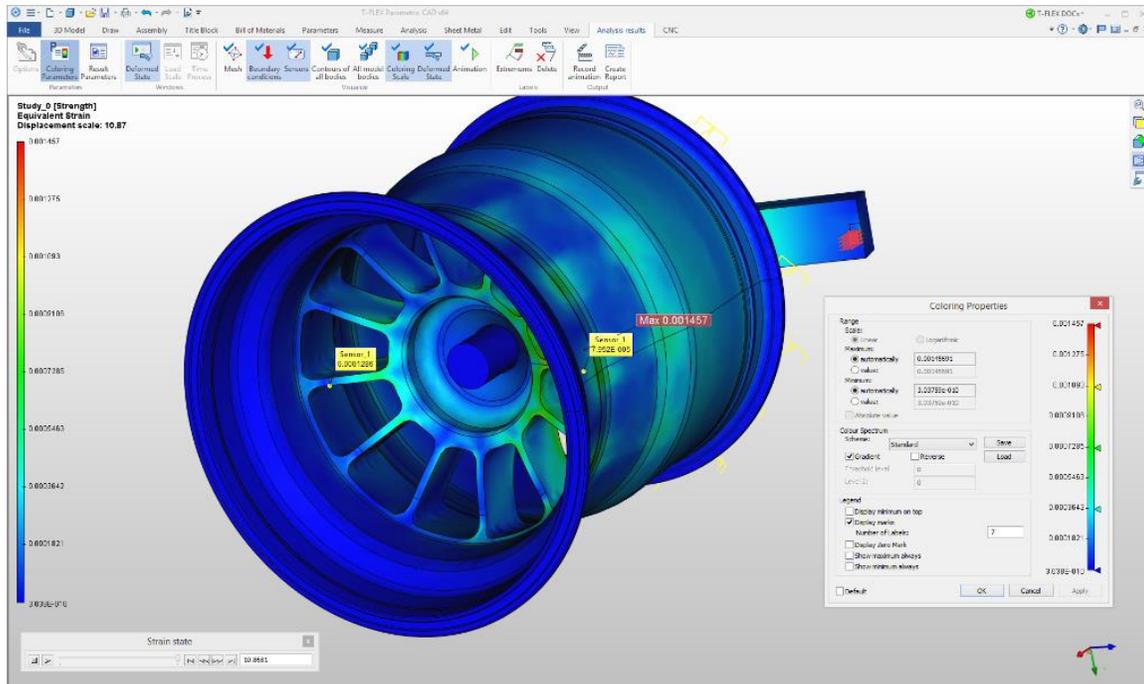
- ✓ Performing animation of the designed product assembly and disassembly.
- ✓ Simple and easy to use interface that allows you to use animation created within assemblies and subassemblies.
- ✓ The mechanism allows you to create complex animations using formulas and variables of the parametric model.

3D Printing Support



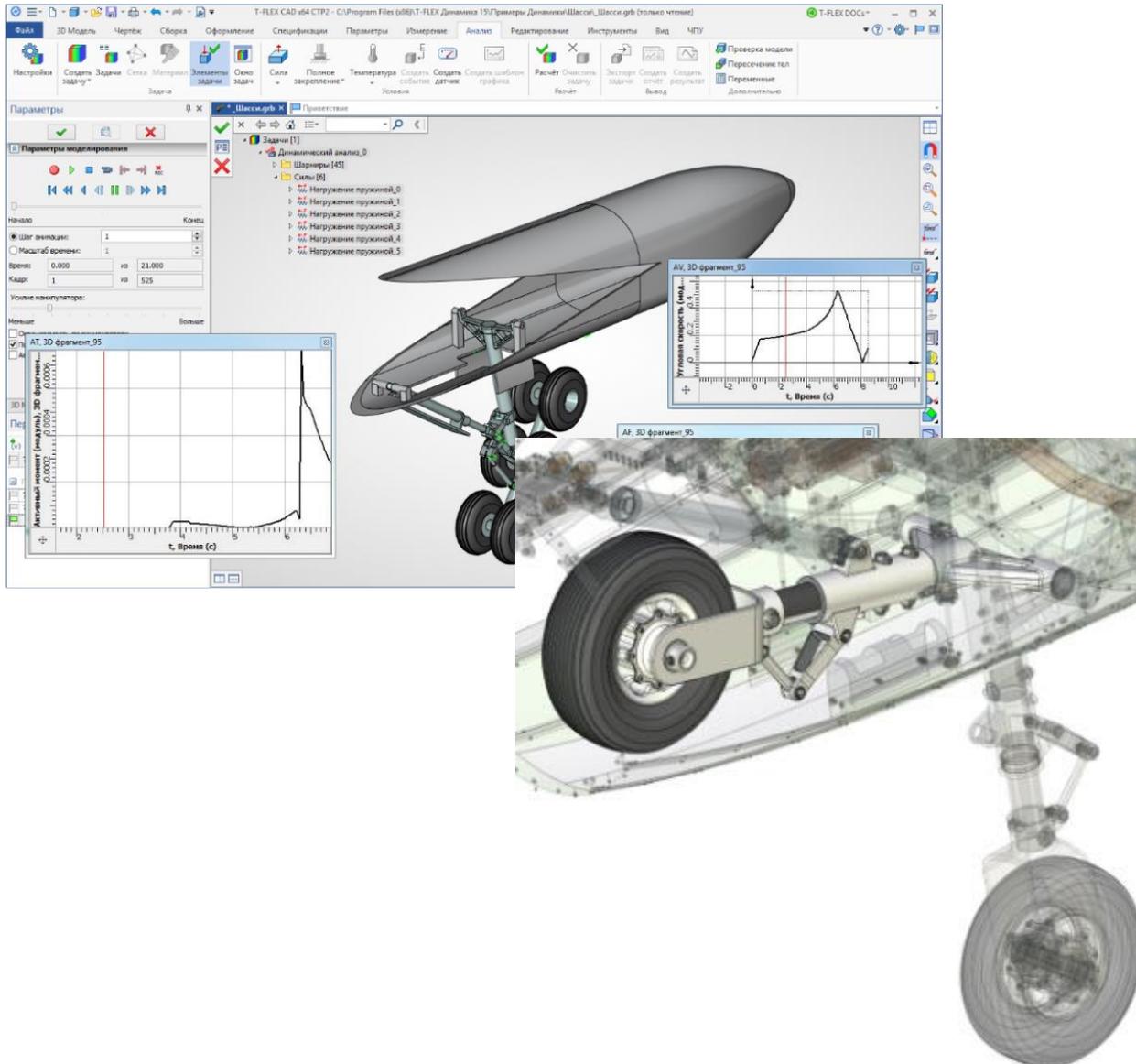
- ✓ Use STL, a widely accepted format, as well as other output formats, for 3D printing.
- ✓ In addition to the model geometry, output file can contain information about the color of objects

Express FEA



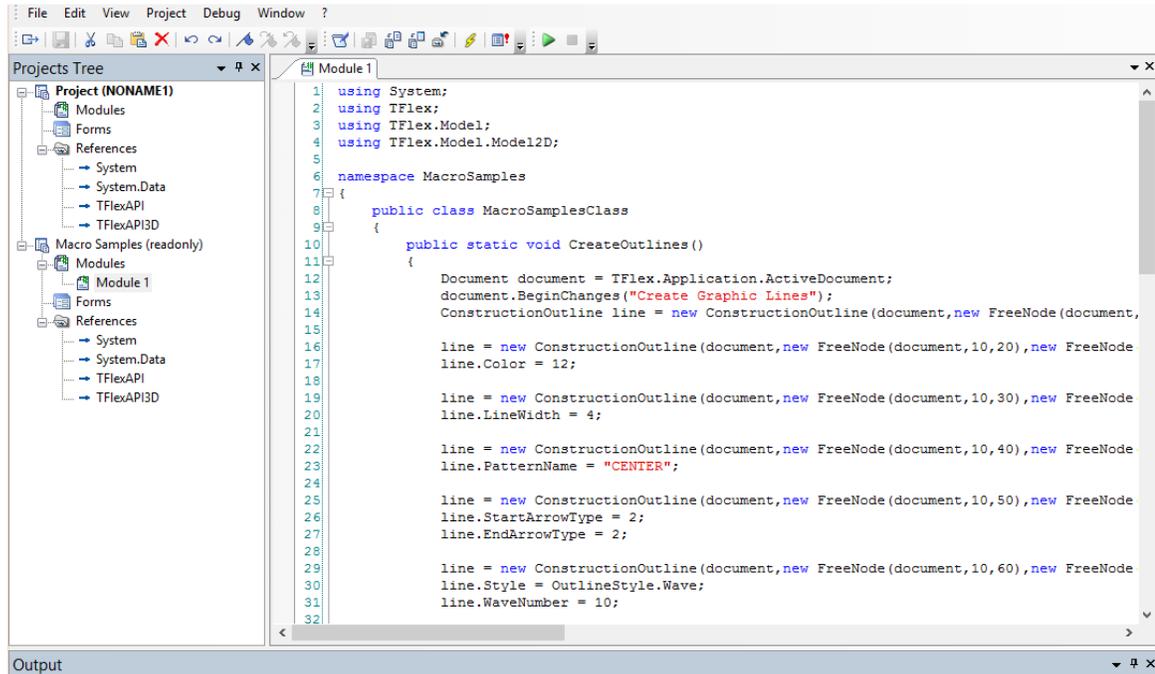
- ✓ Built-in Express Analysis offers an easy-to-use first pass stress analysis tool that enables design engineers to execute design verification directly in T-FLEX CAD.
- ✓ Express Analysis uses the same design analysis technology that professional FEA add-on module uses to perform stress analysis.
- ✓ It helps to determine how designs will perform under real-world conditions, and identify potential design flaws before expensive physical prototypes are built.
- ✓ More advanced analysis capabilities are available within the T-FLEX Analysis line of products.

Interactive Motion Simulation



- ✓ T-FLEX CAD provides a motion simulation solution for analyzing the complex behavior of mechanical assemblies.
- ✓ Allows you to test virtual prototypes and optimize designs.
- ✓ Results are viewable as graph, data plots, reports, or colorful animations.

Open API



```
1 using System;
2 using TFlex;
3 using TFlex.Model;
4 using TFlex.Model.Model2D;
5
6 namespace MacroSamples
7 {
8     public class MacroSamplesClass
9     {
10         public static void CreateOutlines()
11         {
12             Document document = TFlex.Application.ActiveDocument;
13             document.BeginChanges("Create Graphic Lines");
14             ConstructionOutline line = new ConstructionOutline(document, new FreeNode(document,
15
16             line = new ConstructionOutline(document, new FreeNode(document, 10, 20), new FreeNode
17             line.Color = 12;
18
19             line = new ConstructionOutline(document, new FreeNode(document, 10, 30), new FreeNode
20             line.LineWidth = 4;
21
22             line = new ConstructionOutline(document, new FreeNode(document, 10, 40), new FreeNode
23             line.PatternName = "CENTER";
24
25             line = new ConstructionOutline(document, new FreeNode(document, 10, 50), new FreeNode
26             line.StartArrowType = 2;
27             line.EndArrowType = 2;
28
29             line = new ConstructionOutline(document, new FreeNode(document, 10, 60), new FreeNode
30             line.Style = OutlineStyle.Wave;
31             line.WaveNumber = 10;
32         }
33     }
34 }
```

- ✓ T-FLEX CAD Open API is based on .NET technology offering customers and third-party developers extensive possibilities for developing add-on applications in various areas.
- ✓ T-FLEX CAD Open API supports full object oriented programming concepts and multiple programming languages with identical functional access to all T-FLEX functionality.
- ✓ It also helps users to customize T-FLEX CAD for their specific environment and automate specialized workflows.

Parametric Engine for Internet

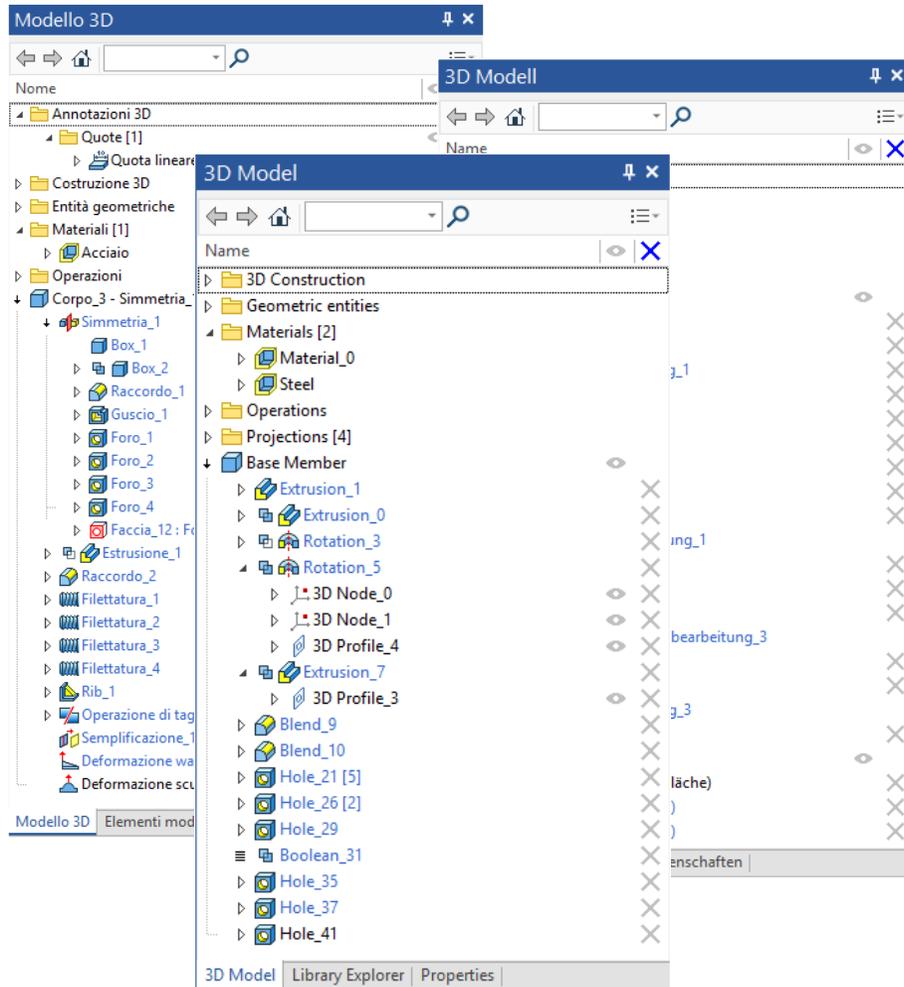
T-FLEX CAD can be utilized as an Internet engine.

- ✓ Provides engineers, manufacturers and distributors with opportunity to display their products.
- ✓ Uses third-party designs.
- ✓ Performs marketing activities.

Using T-FLEX CAD and T-FLEX CAD Open API, third parties, OEMs, developers, and system integrators can deliver parametric CAD functionality across a wide range of Internet-based products.



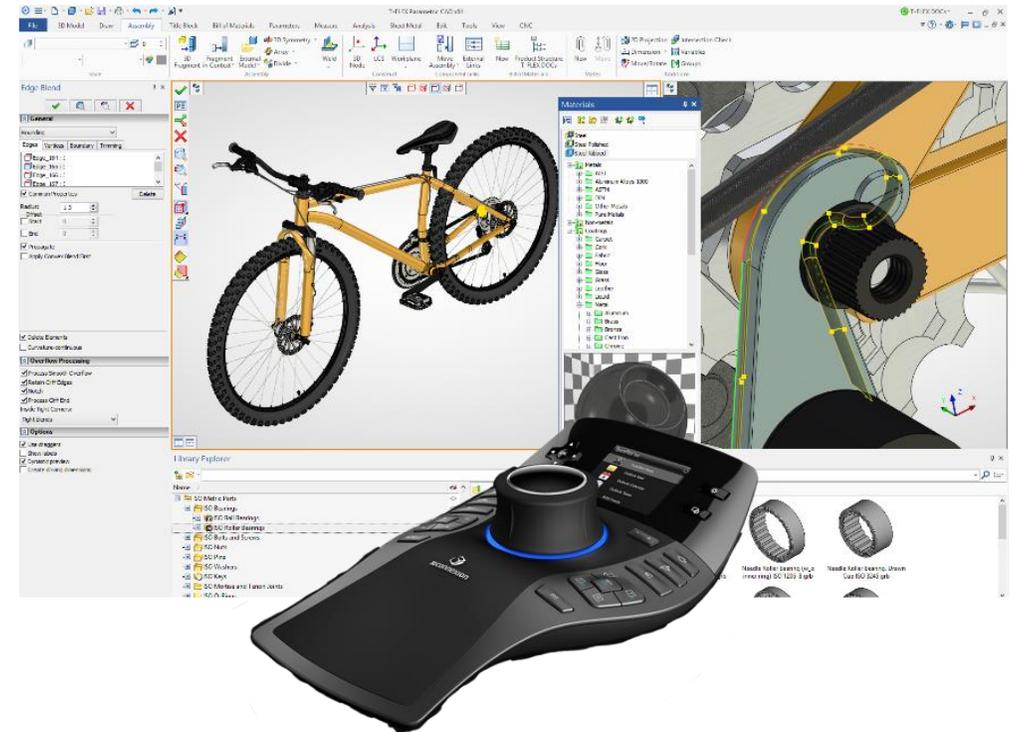
Multilingual Support



- ✓ T-FLEX CAD is a Unicode application and hence supports all of the languages around the world.
- ✓ Users can utilize multilingual text that will be displayed correctly in T-FLEX Parametric CAD documents.
- ✓ Users can name objects and parameters in whatever language they like.
- ✓ There will be no problems with any language files names under any language version of Windows operating system.

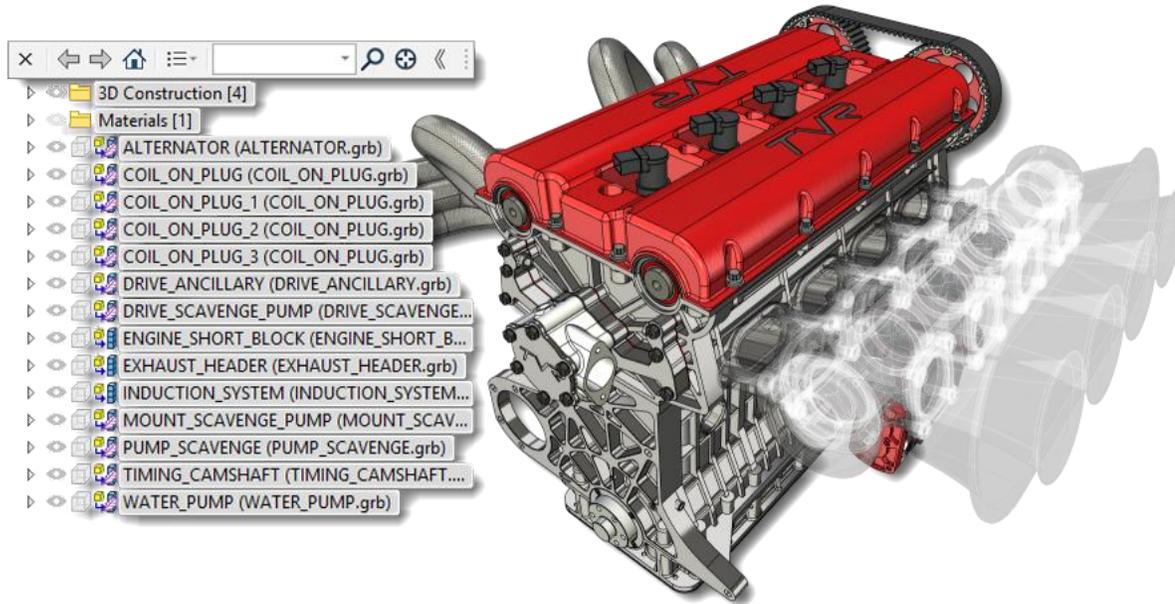
Interface Flexibility

- ✓ T-FLEX's CAD multiple interface options help maximize productivity by allowing users to choose an interface that matches their experience and preferences
- ✓ The Windows-style pull-down menu interface is easy to navigate.
- ✓ Compact text-based command bar, icon toolbars and shortcut key assignments are also available.
- ✓ Enhanced capabilities, such as intelligent positioning tools and pop-up menus driven by hot key activation, greatly simplify workflow.
- ✓ T-FLEX CAD provides direct model interaction, using 3rd mouse button, dynamic geometry preview, and support for SpaceMouse® to seamlessly blend frequent and advanced capabilities.



Translators

- ✓ The rich suite of T-FLEX CAD translators enables you to satisfy differing import and export requirements, effortlessly.
- ✓ T-FLEX CAD is interoperable with the most widely used 3D-modeling and 2D-drawing systems via the following formats:



- ✓ Creo (Pro/E)
- ✓ CATIA
- ✓ SolidWorks
- ✓ Solid Edge
- ✓ Inventor
- ✓ Siemens NX
- ✓ Rhino
- ✓ I-DEAS
- ✓ Revit
- ✓ Parasolid
- ✓ ACIS
- ✓ JT
- ✓ STEP
- ✓ IGES
- ✓ DWG, DXF
- ✓ PDF, 3D PDF
- ✓ STL
- ✓ PLY, OBJ, U3D
- ✓ VDA-FS
- ✓ IFC
- ✓ FBX, etc.

- ✓ Additionally, T-FLEX CAD provides options for exporting graphical images to presentations, web pages, and other documentation.

System Requirements



Minimum:

Microsoft® Windows® 7 64-bit (Service Pack 1)

Intel or AMD processor with SSE2 support, 2 GB memory, 3 GB hard disk space.

Recommended:

Windows® 8.1 64-bit, 10 64-bit

Core i7 processor or equivalent
SSD Disk

16 GB RAM or more for large assemblies
and T-FLEX Analysis

High-performance NVIDIA or AMD video
card with at least 1GB that supports
OpenGL 4.2 or higher.



T-FLEX PLM



For more information about T-FLEX CAD and other Top Systems' products you may contact directly our company or any regional representative

www.tfex.com | tfex@topsystems.ru

CONTACT US



TOP SYSTEMS