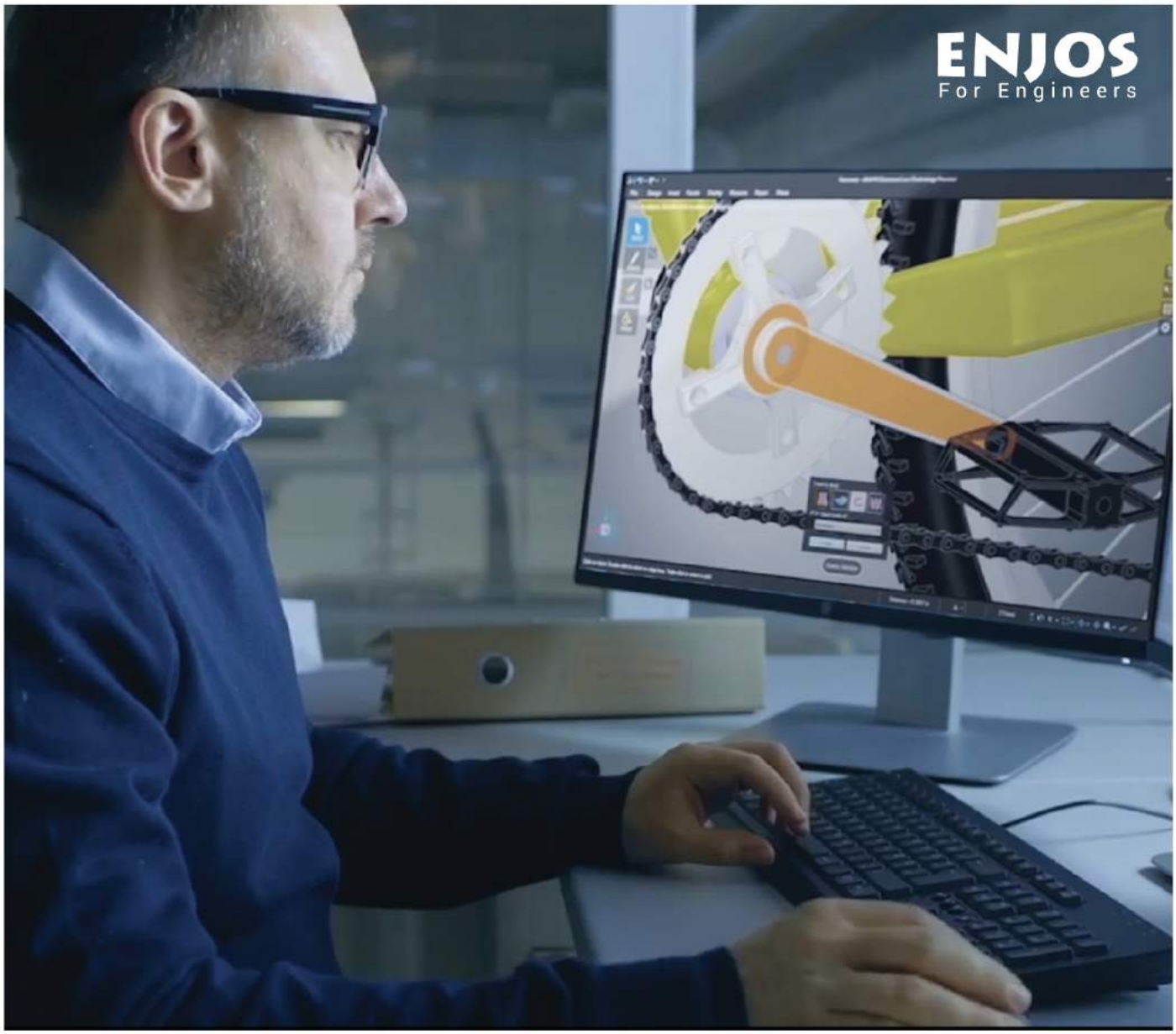
ENJOS
For Engineers

Mechanical Design program

WE TAKE **100% RESPONSIBILITY** OF YOUR CAREER



ADVANCE DESIGN PROGRAM

JOB ORIENTED DESIGN PROGRAM

LEARN FROM EXPERTS | INDUSTRY ORIENTED PROJECTS | LEARN THEN GET HIRED

1. Drafting

- AutoCAD

2. Modeling

- Solidworks
- Catia

3. Simulation

- Ansys

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AUTOCAD

Introduction to AutoCAD :-

- AutoCAD Interface
- Co-Ordinate System

Basic Drawing Commands:-

- (Line , Circle , Rectangle , Polygon , Ellipse , Arc , Point , Multiple Point , Construction Line , Ray , Revision Cloud , Polyline , Spline)
- Drafting settings
- Selection method.

Basic Editing Commands:-

- {Erase , Copy , Mirror , Offset , Move , Rotate , Scale , Stretch, Trim , Extend Break , Break at Point , Join , Fillet ,Chamfer)

Fastening Operation Commands:-

- (Array , Lengthen , Solid , Fill , Donut , Multiline , Polyline Edit)
- Isometric View
- Units
- Drawing Limits
- Layer & Object Properties
- Creating & Editing Text
- Creating & Editing Dimensions
- Working With Blocks
- Types of Table
- Different Types of Style (Text , Dimension ,Table, Multi Leader , Multiline , Point , Plot)
- Properties
- Hatching
- Attribute
- Design Centre
- Inquiry Tools
- Quick Calculator & Calculator
- External Reference
- Group

- Filter
- Hyperlink
- OLE Object
- Working With Layouts
- Steering Wheels
- Action Recorder
- Multiple Views & Viewports
- Plotting a Drawing

Different type of Views

- Isometric view
- Perspective view
- Section view

Introduction to 3D Modeling:-

- Types of 3D Model
- Visual Style
- Creating Solid Primitives
- Models from 2D Profiles
- Extrude , Sweep , Revolve , Loft
- Boolean Operation
- Creating Composite Solid
- Working with UCS
- Solid editing
- Materials
- Changing the 3D Model Position
- Introduction to Surface Modeling
- Creating Surface Primitives
- Project

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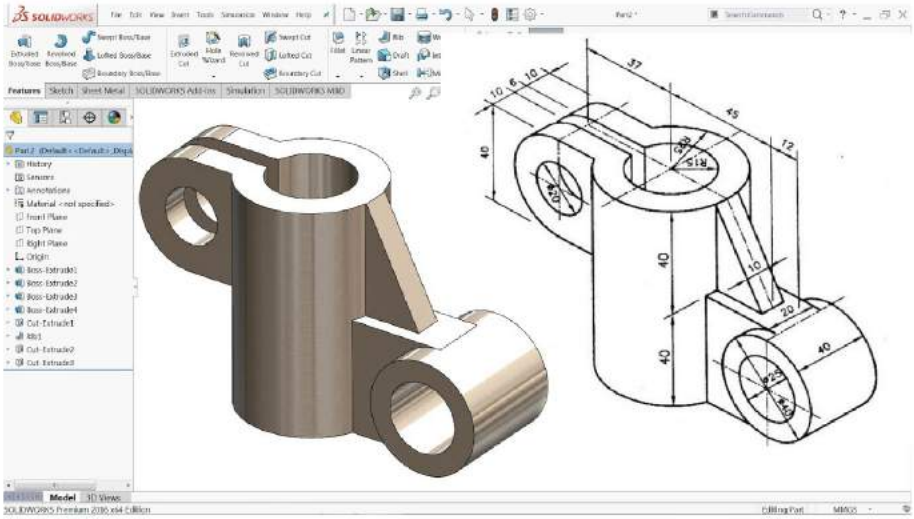
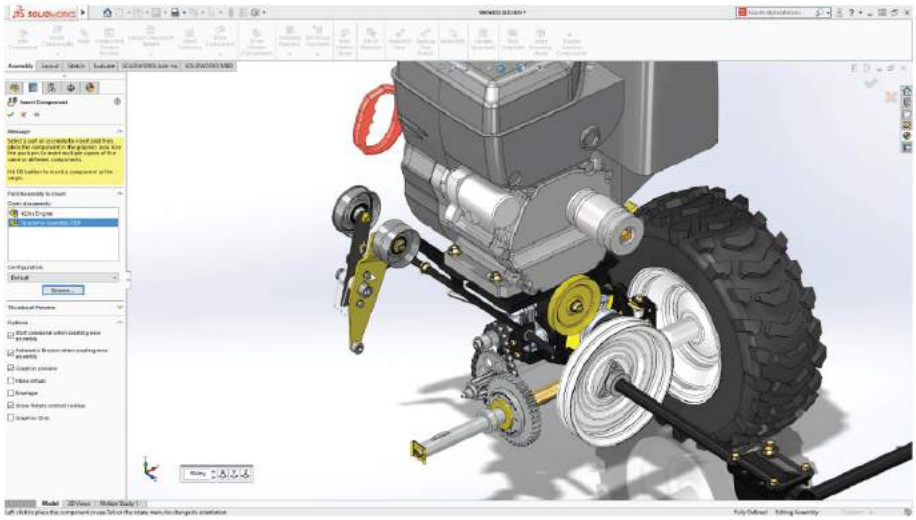
▪ SOLIDWORKS MODULES

1. Part modeling



Modelling in general means to create a virtual prototype of an item. It can be used for various purposes. Consider an engine of a car.Each part can be modelled separately and then can be assembled together to get the engine's final form. This type of modelling is called part modeling.

2. Assembly



Any individual machine can contain thousand of parts, assembly in design are used to assemble all parts together to form the whole machine.

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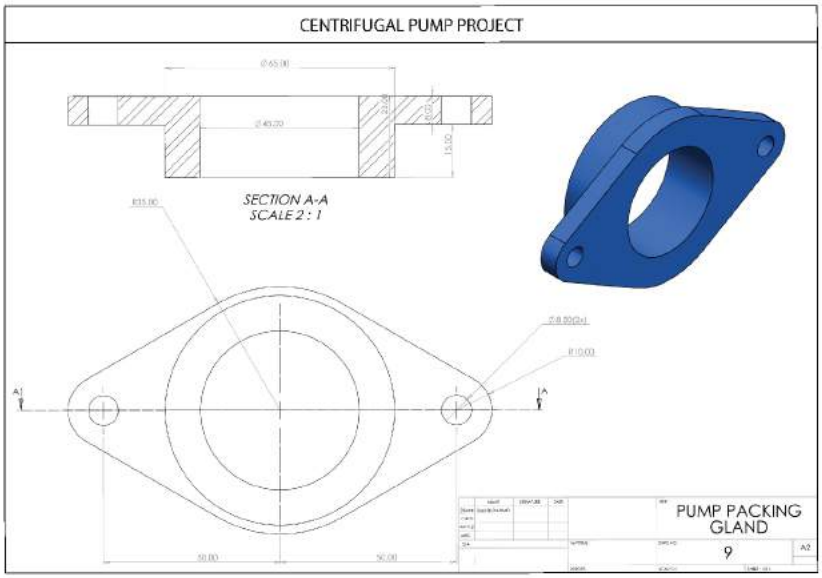
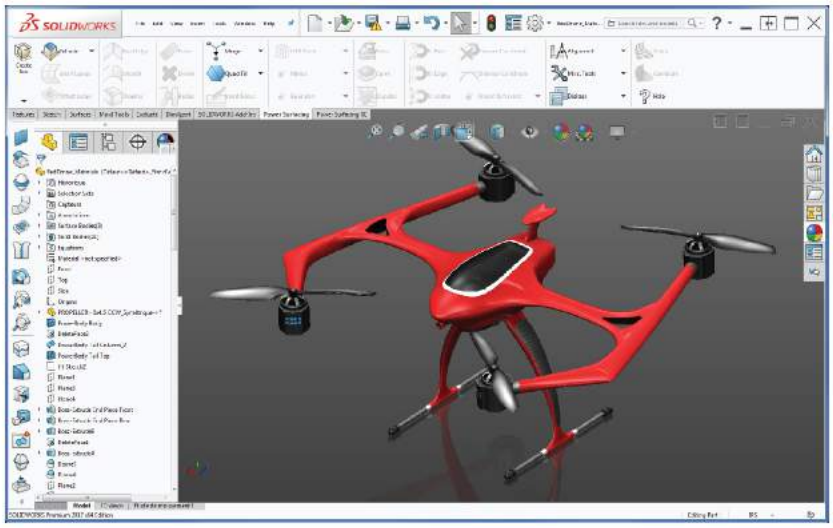
3. Drawing / Drafting



SolidWorks helps you move through the design cycle smarter With fully integrated drawing, design team can create drawings directly from 3D models, ensuring accuracy and preserving correspondences. Drawing sheets are created for production and manufacturing.

4. Surface modeling



Surface Modeling is the method of showing or presenting solid objects. The process requires you to convert between different 3D modeling types, such as converting the 3D object to show procedural surfaces, validate imperfections, and apply smoothness .While more complex than Wireframe Modeling, Surface Modeling is easier to achieve than Solid Modeling.

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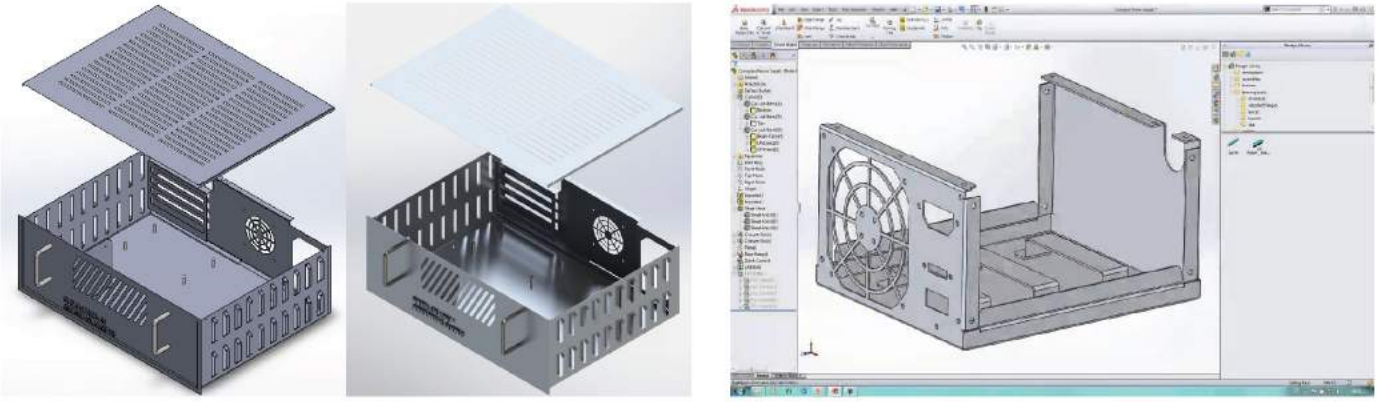
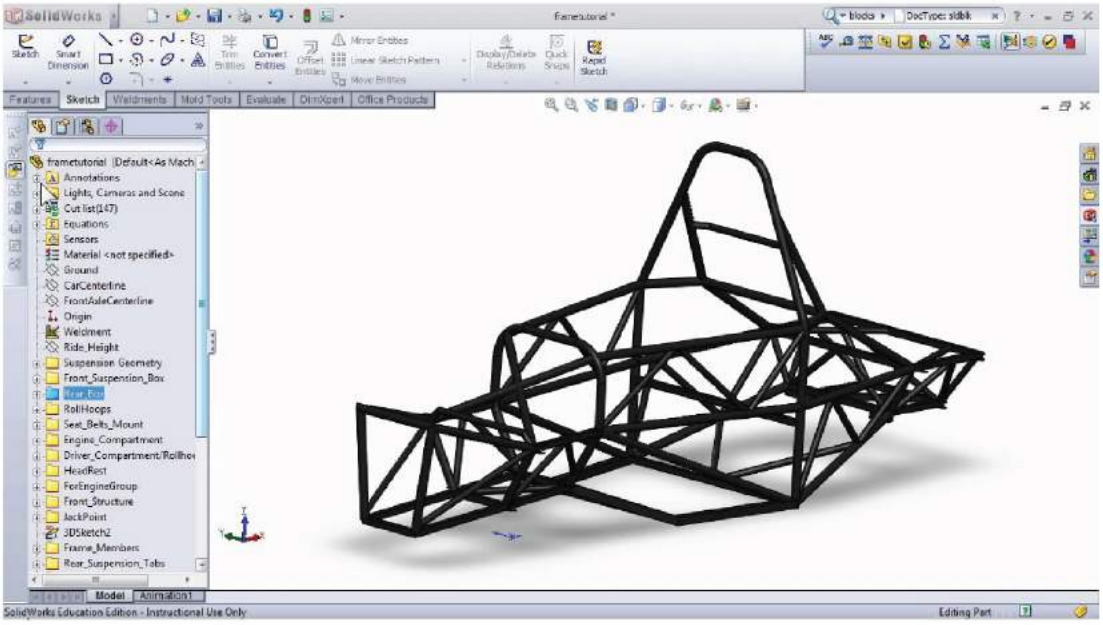
5. Sheetmetal modeling



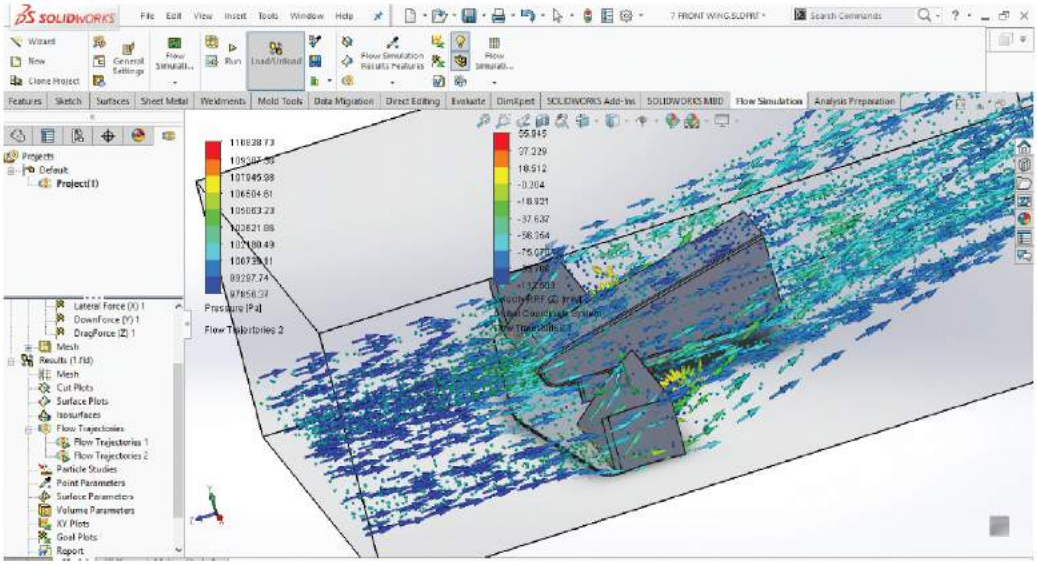
Sheet metal is metal formed by an industrial process into thin, flat pieces. Sheet metal is one of the fundamental forms used in metalworking, and it can be cut and bent into a variety of shapes.

6. Solidworks weldment



Weldments functionality enables you to design a weldment structure as a single multibody part. You use 2D and 3D sketches to define the basic framework. Then you create structural members containing groups of sketch segments. You can also add items such as gussets and end caps using tools on the Weldments toolbar.

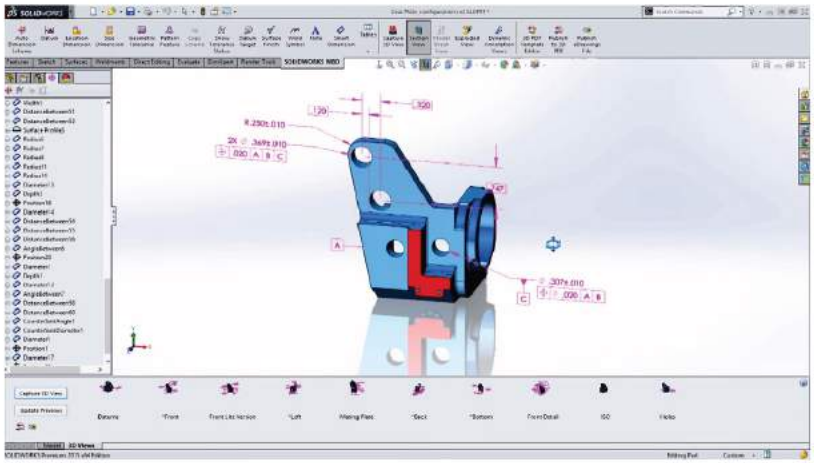
7. Solidworks simulation



SOLIDWORKS Simulation is a set of 3D engineering tools that enable product engineers in all industries, to set up virtual real-world environments to test product behavior for performance and quality during the development process.

With the intuitive and powerful applications found in the SOLIDWORKS Simulation suite, different physical situations can be applied to a 3D CAD model to gain insight about its mechanical and thermal r esistance, fluid flow characteristics around or inside it, or its plastic injection parameters to create the parts during the molding process.

8.Solidworks MBD



SOLIDWORKS MBD (Model Based Definition) is an integrated drawing less manufacturing solution for SOLIDWORKS 3D design software. It helps companies define, organize, and publish 3D Product Manufacturing Information (PMI).

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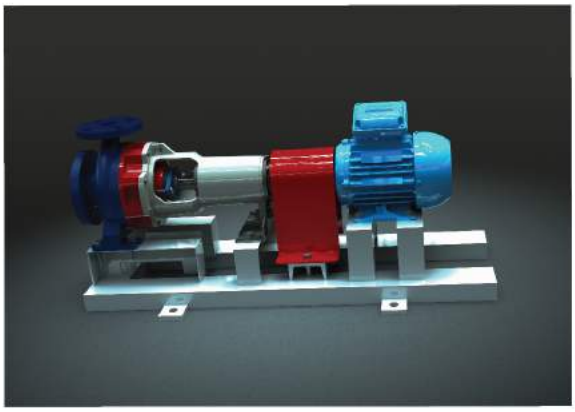
9. Motion study / Mechanism design

Motion studies are graphical simulations of motion for assembly models.They simulate and animate the motion you prescribe for a model. You can use SOLIDWORKS mates to restrict the motion of components in an assembly when you model motion.

10. Rendering



Rendering with PhotoView 360. PhotoView 360 is a SolidWorks add-in that produces photo-realistic renderings of SolidWorks models. The rendered image incorporates the appearances, lighting, scene, and decals included with the model.

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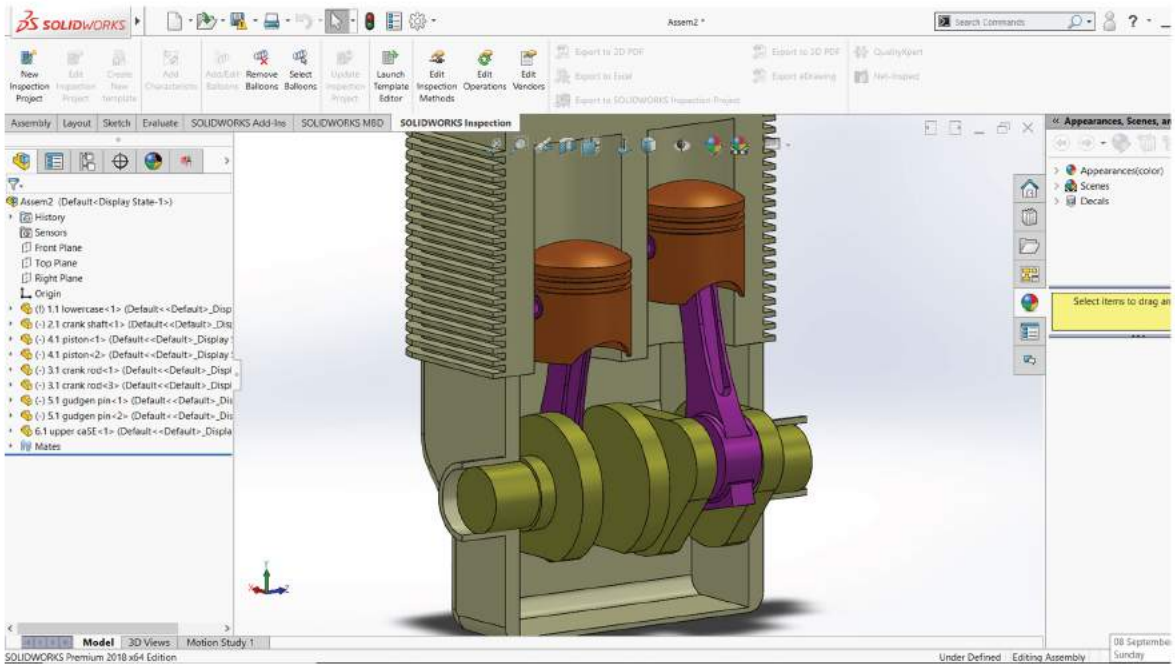
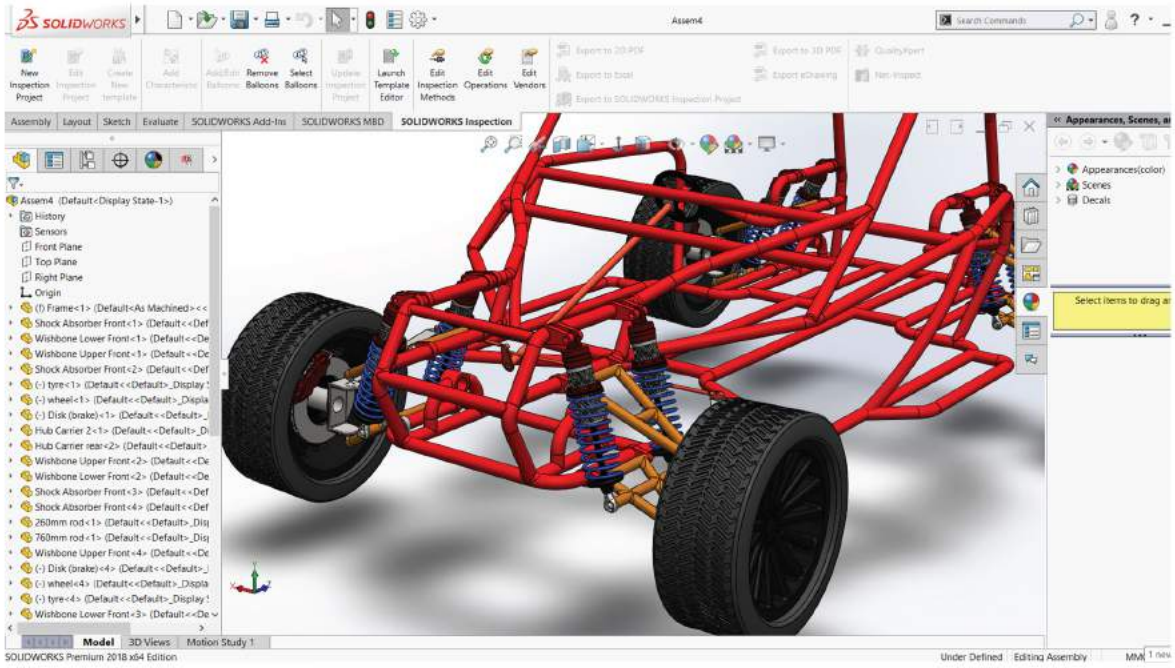
Projects on which you will work



- Make different 3D parts of an engine from scratch.
- Assemble all the 3D parts into a complete conceptual engine.

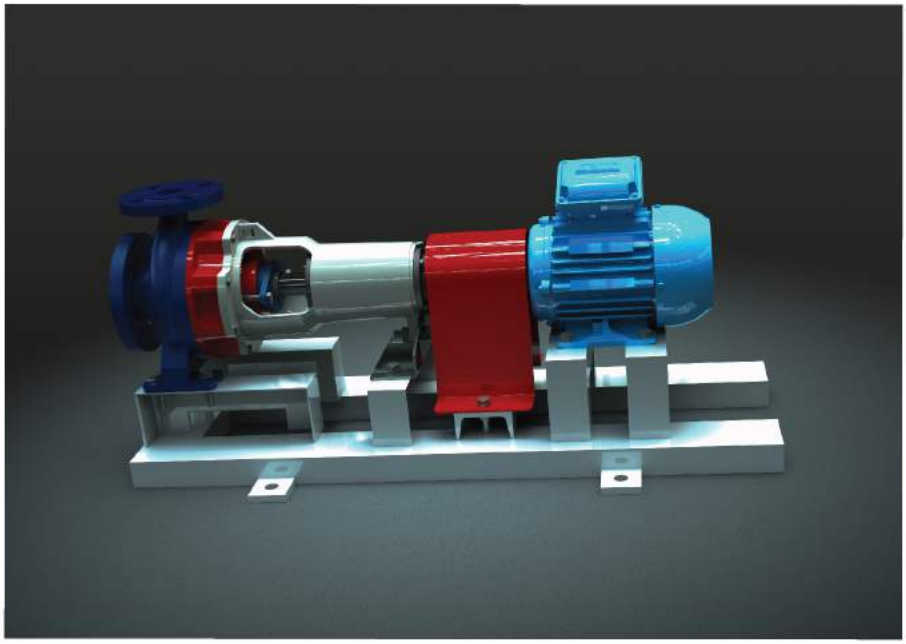
Buggy Project

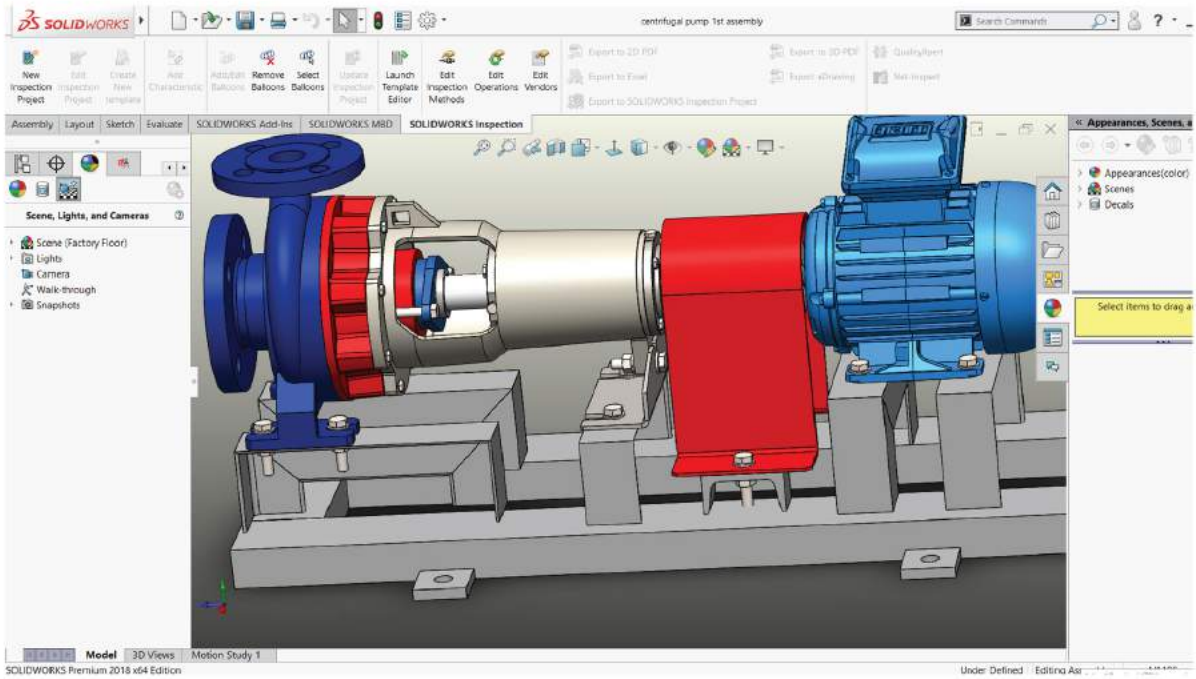


In this project you will learn how to build your own buggy in solidWorks from the scratch. You will create several parts like.

- Frame
- Wheel assembly
- Suspension
- Assembly

Centrifugal Pump Project

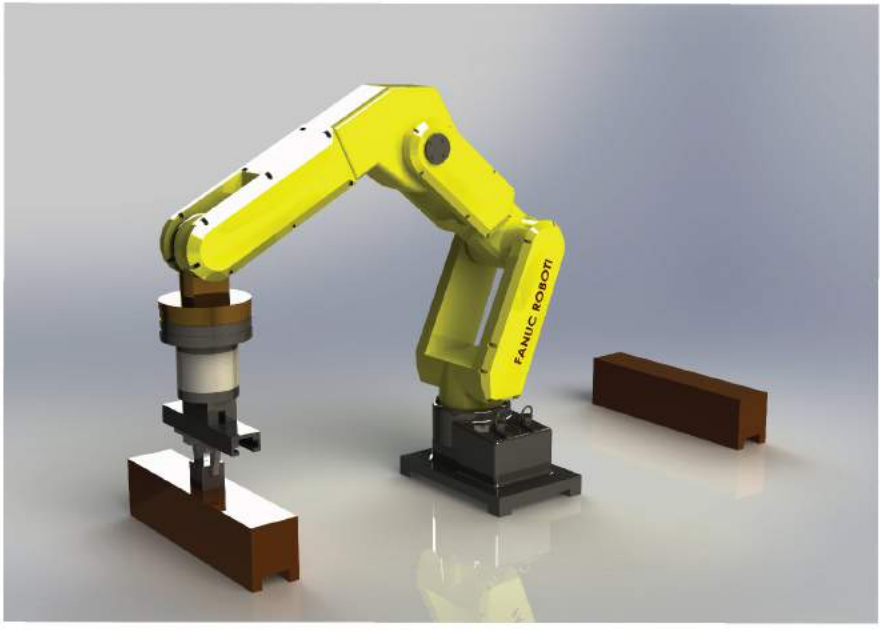




In this project you will learn how to build a centrifugal pump in solidWorks from the scratch. You will create several parts like

- Motor
- Pump Impeller
- Pump Base
- Casing...etc

Robotic Arm project



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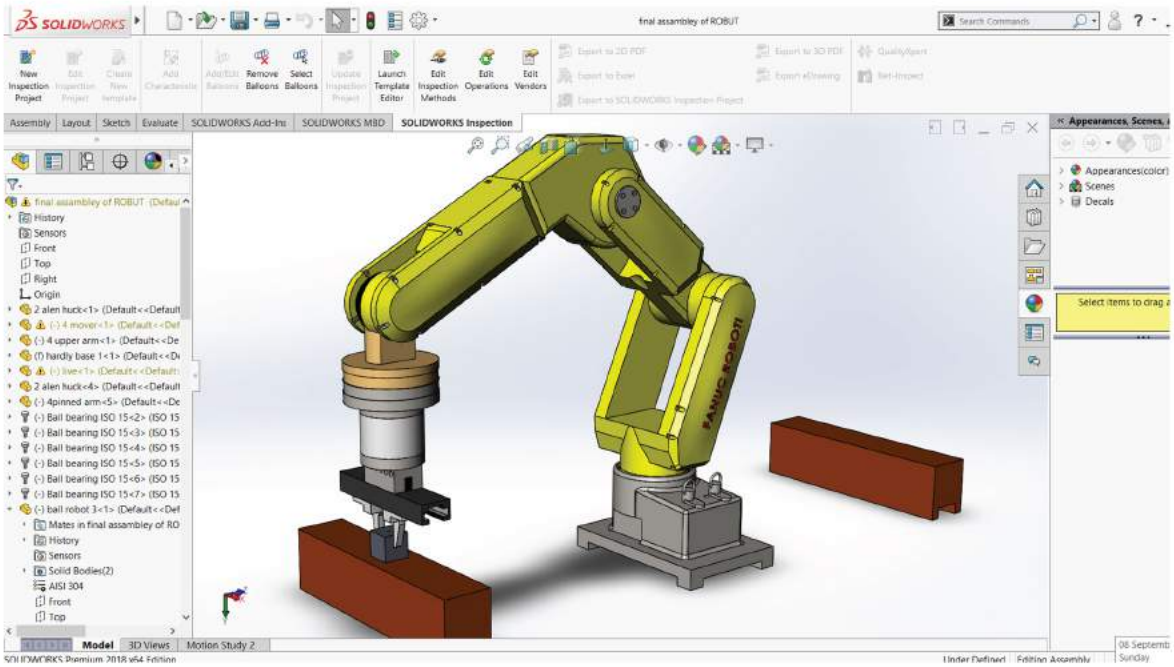

In this project you will learn how to build a Robotic arm in solidWorks and how to create a animation from robotic arm from the scratch. You will create everal parts like

- Base
- Arm
- Gripper
- Wrist...etc

— you will work ON —

100+
ASSIGNMENTS

&

15+
PROJECTS

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CATIA MODULES

1. 2D Sketching
2. 3D Modeling
3. Assembly
4. Drafting
5. Sheet Metal design
6. Surface design
7. Class A surface design
8. Reverse engineering & Remastering

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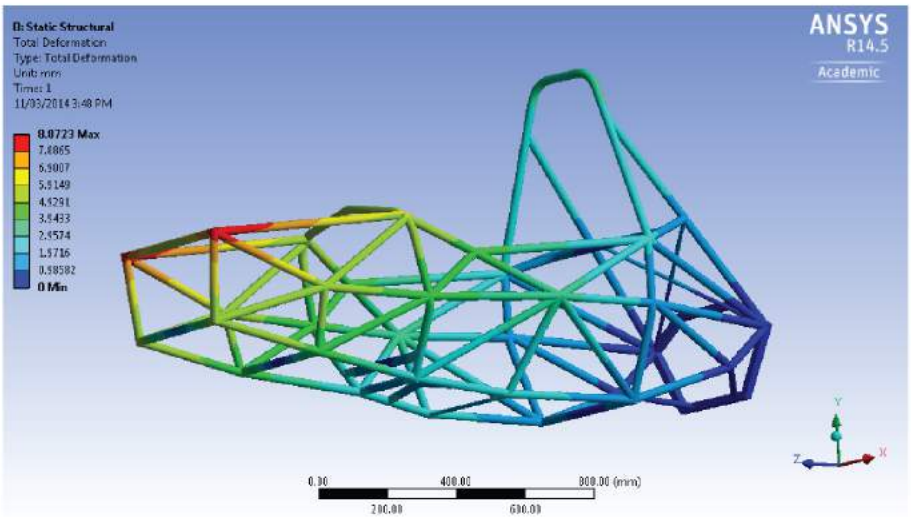
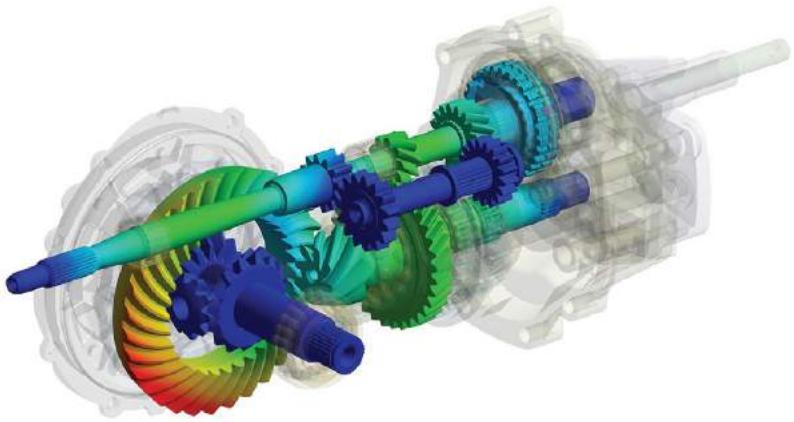
ANSYS MODULES

1. Structural analysis





Structural analysis is the determination of the effects of loads on physical structures and their components. Structures subject to this type of analysis include all that must withstand loads, such as buildings, bridges, aircraft and ships. Structural analysis employs the fields of applied mechanics, materials science and applied mathematics to compute a structure's deformations, internal forces, stresses, support reactions, accelerations, and stability. The results of the analysis are used to verify a structure's fitness for use, often precluding physical tests. Structural analysis is thus a key part of the engineering design of structures.

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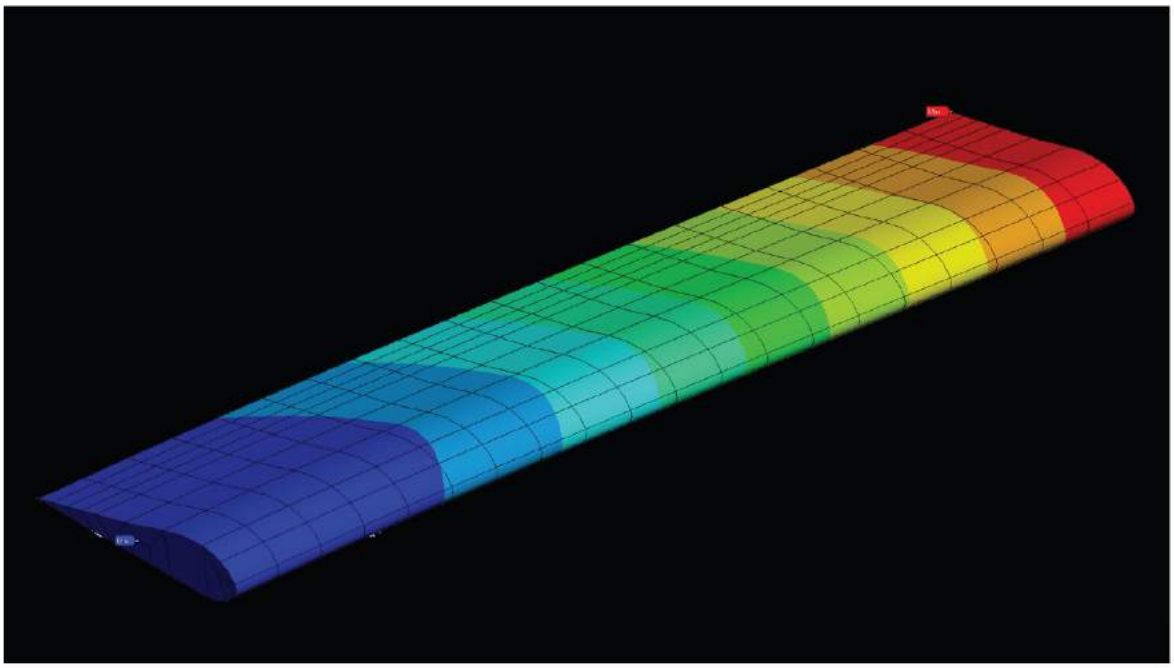
2. Model analysis



Modal analysis is the study of the dynamic properties of systems in the frequency domain. Examples would include measuring the vibration of a car's body, aeroplane wings. In structural engineering, modal analysis uses the overall mass and stiffness of a structure to find the various periods at which it will naturally resonate. Modal analysis is also important in structures such as bridges where the engineer should attempt to keep the natural frequencies away from the frequencies of people walking on the bridge.

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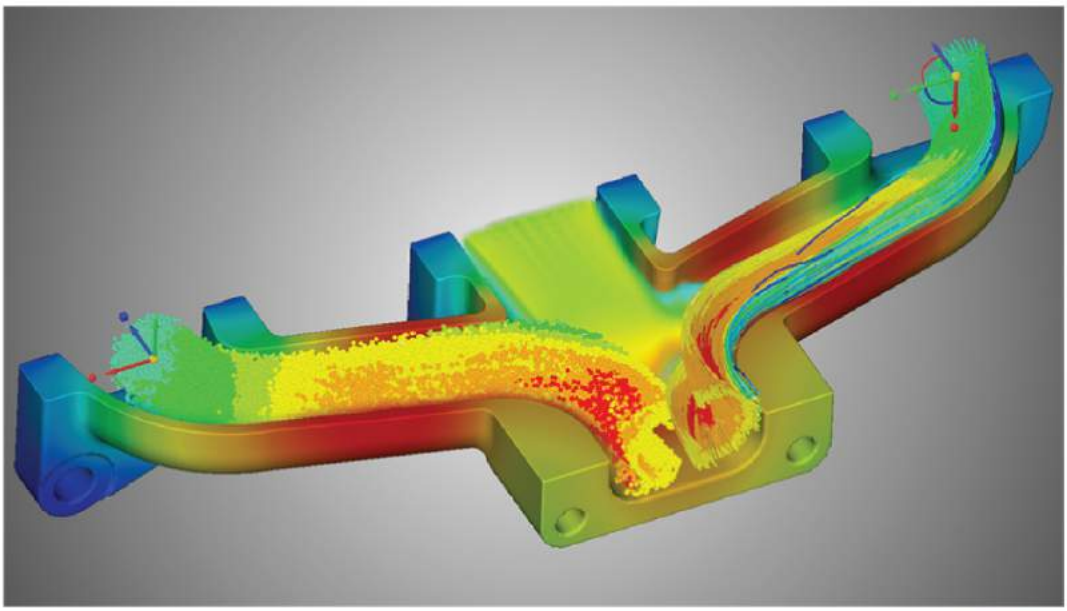
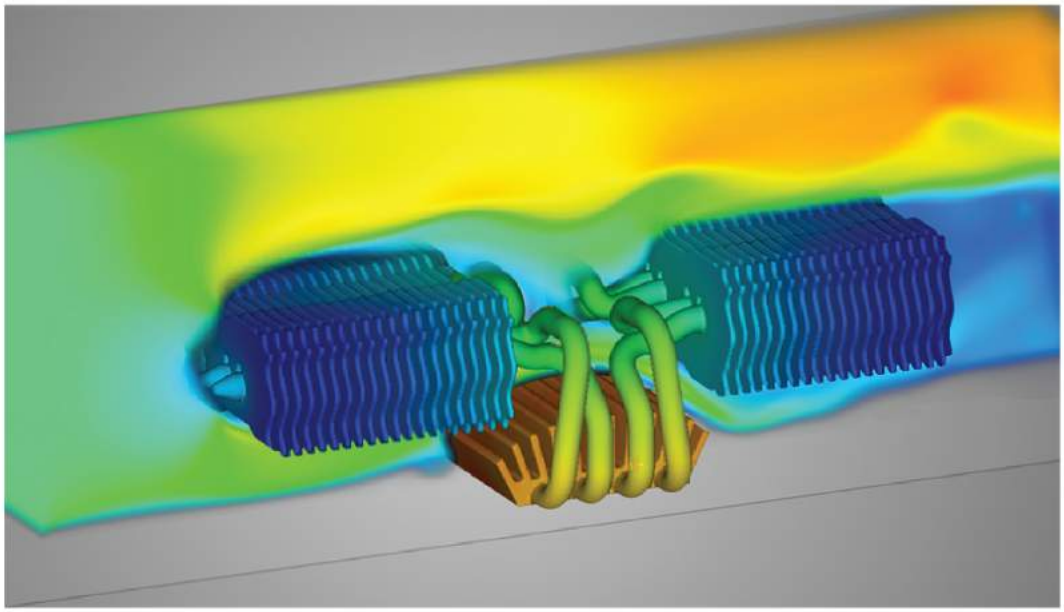
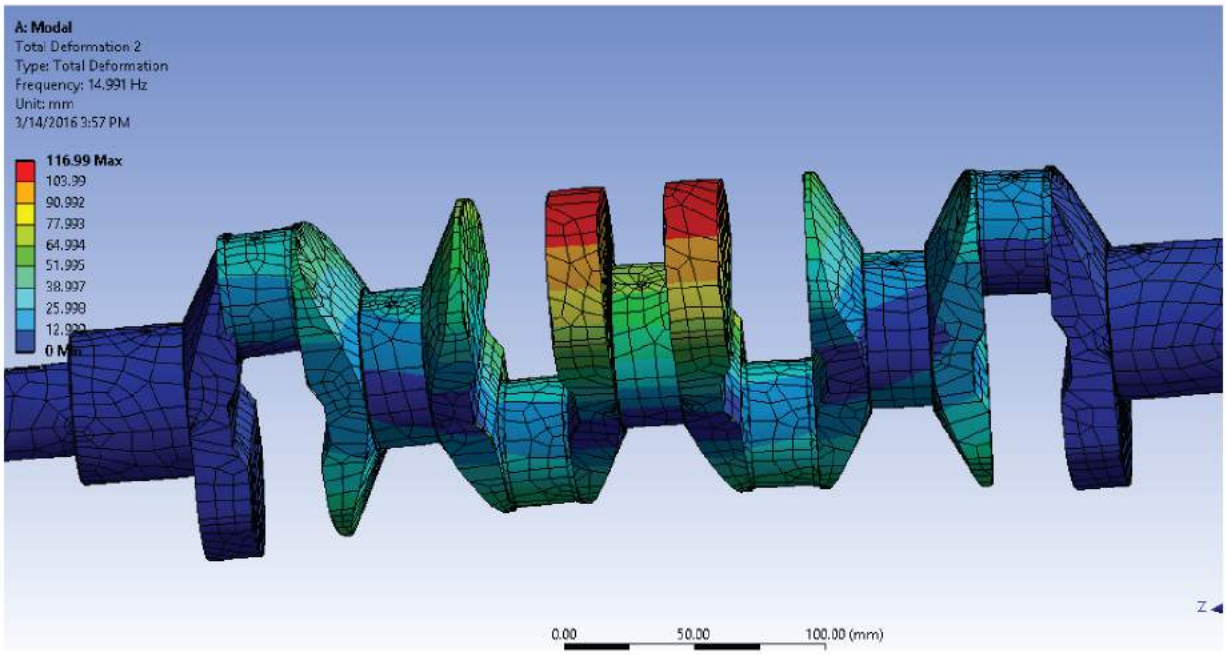
3. Thermal analysis

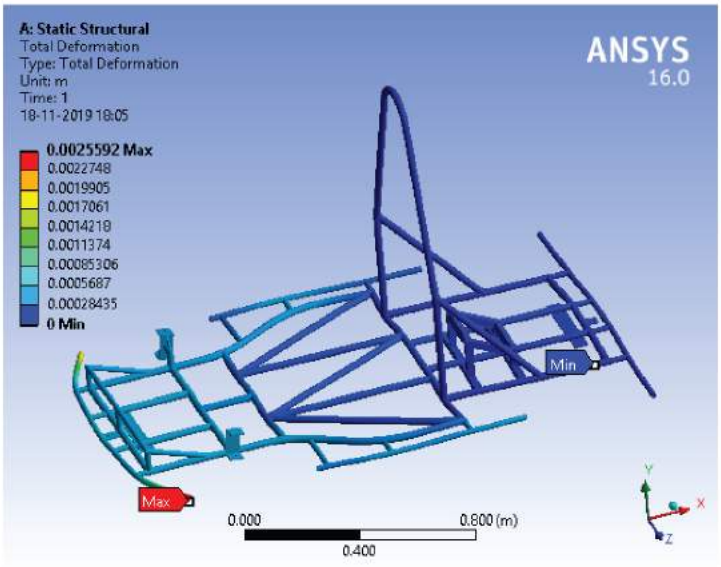




The effects of heat and thermal management of structures is more and more critical as performance limits are pushed further by the need to have lighter, smaller and more efficient designs. Convection, radiation and conduction loads are obvious, but the need to include the effect of power losses and thermal energy from friction and external sources such as pipe flows means that analysts need to have more tools at their disposal to simulate thermal models accurately. Thermal analysis is a branch of materials science where the properties of materials are studied as they change with temperature.

4. Buckling analysis





In engineering, buckling is the sudden change in shape of a structural component under load such as the bowing of a column under compression or the wrinkling of a plate under shear. If a structure is subjected to a gradually increasing load, when the load reaches a critical level, a member may suddenly change shape and the structure and component is said to have buckled.

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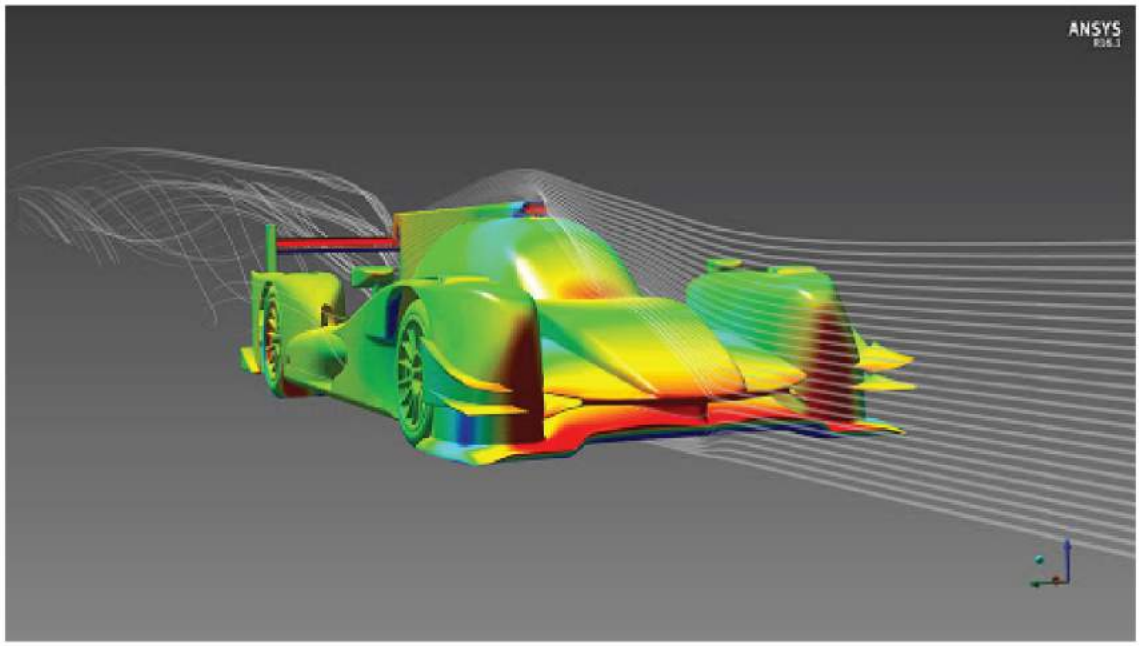
5. CFD (Computational fluid dynamics)



Computational fluid dynamics (CFD) is a branch of fluid mechanics that uses numerical analysis and data structures to analyze and solve problems that involve fluid flows. Computers are used to perform the calculations required to simulate the free-stream flow of the fluid, and the interaction of the fluid (liquids and gases) with surfaces defined by boundary conditions. CFD is applied to a wide range of research and engineering problems in many fields of study and industries, including aerodynamics and aerospace analysis, weather simulation, natural science and environmental engineering, industrial system design and analysis, biological engineering, fluid flows and heat transfer, and engine and combustion analysis.

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