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# Simulation and Animation of Steel Structure for Stress Analysis by Solid Work

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**Abstract**: *We are going to simulate simple steel structure where how the stress strain and displacement happens when we apply the force. Here we do solid work simulation. When we get the result of stress the red mark in the corner shows if there is more force there is more stress and so that chance of breakdown.*

**Keywords**: *steel structure*

## I. INTRODUCTION

We are going to simulate simple steel structure where how the stress strain and displacement happens when we apply the force. Here we do solid work simulation. When we get the result of stress the red mark in the corner shows if there is more force there is more stress and so that chance of breakdown.

**Procedure.**

Geometry of steel structure in sketch mode

- Select the Front plane
- By sketch tool draw a steel structure and define it by giving dimensions.

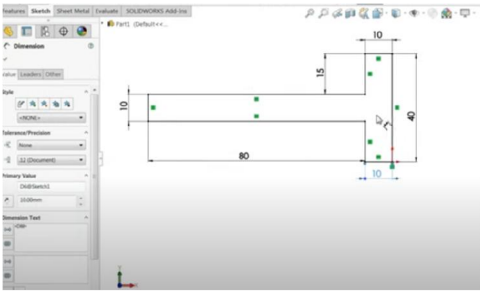


Fig no. 1

**Extrude feature**

Now extrude it up to 20 mm and we get the solid steel structure.

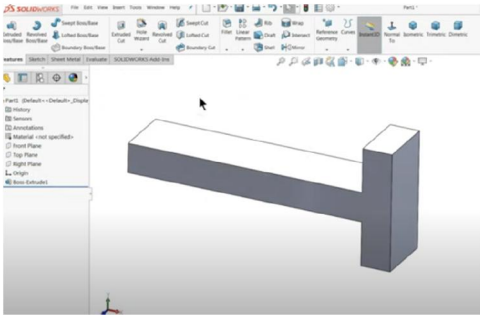

Fig no. 2



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**Solid work Simulation**

1. Command manager-Simulation
2. Study advisor-New study
   In study advisor there are different types of static test like Thermal, frequency Buckling & Drop test for our study we gave the name as Steel structure test
3. Part 1- apply material as AISI 4130 Steel , annealed at 800 c
4. Connection- not required.
5. Fixture- fixture advisor- here we need to fix the geometry.
6. There are three types of fixture

- Fixed geometry
- Roller/slide
- Hinge

   From that we will select fixed geometry and select the end of steel structure

7. External load- External load advisor

There are number of parameter such as force, torque, pressure, gravity, Bearing, load, Temperature.
Rom that we select Force & apply the force at end of steel structure in down direction and giving the amount of force = 200 N.

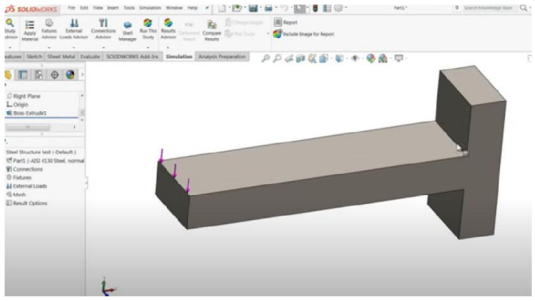

Fig no. 3

**Solid work Animation**

- First right click on stress & animate
- Control the speed
- Control FPS which stands for frame per second. To get slow motion of movement for study.

## II. RESULT

Stress- At the corner of steel structure we can observe that there is red mark it indicates that stress generated is more. If stress goes beyond its limit there is chance of Breakdown.

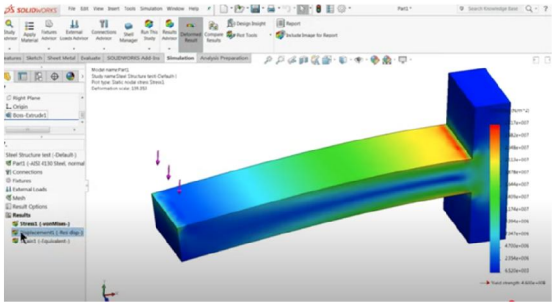

Fig no. 4

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Displacement- there is more displacement in steel structure where we apply the force which is indicated by red color.

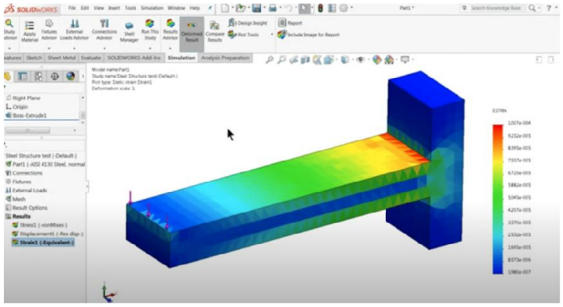

Fig no. 5

Strain- the stain is larger at where the stress is more.

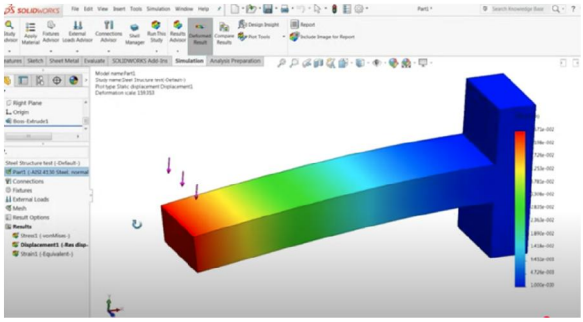

Fig no. 6

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