SIMPLE STRESS AND STRAIN

[1] Ashraf Reza, [2]Avakash Raghav and [3]Shabaz juneja
[1,2] B.E, student, Mech. Engg. Department, Chandigarh University, Mohali, India
[3]Assistant Professor, Department of Mechanical Engineering Department

Abstract

Stress is defined as when the body is subjectedto an external load due to this load there is some changes in the body many deform or contract.

It is of many types:-

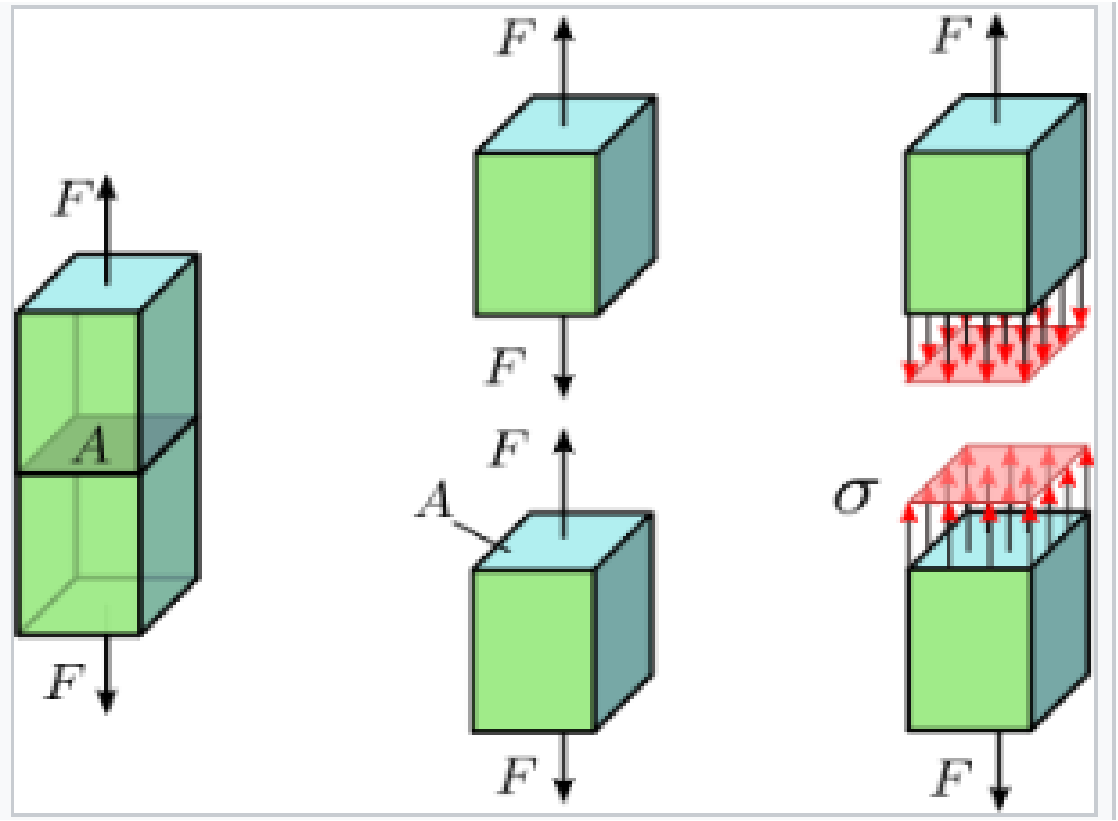
- Tensile stress
- Compressive stress
- Shear stress
- Thermal stress
- Hoopstress

Introduction

Basically it is related with the material and change in the structure of material due to some external force. Due to the cohesion between the molecules the structure gets deformed.The resistance of material which opposes the deformation known as strength of material with in certain limit the resistance is directly proportional to load But,beyond this resistance the resistance of material is less than applied load.Inthis type the deformation continues until and unless failure take place.According to Hooks law stress is directly proportional to strain.

Literature Review

The buckling capacity of uniformly compressed flat plates has been investigated in this study.Materials properties were characterized on the basis of parametrization of stress.Strain curves using a simple and novel mathematical expression Ideal stress.Strain relationships can be developed by the material model and extensive parametrical numerical analysis.On stress-strain curvesthe yield point is the results of parametric study shown a minimal influence of the material propertieson the buckling capacity of the plates. The strain hardening properties was observed in plates with round house curves.



Research gap

In the earlier era there is such methods to find stress and strain. But now a daysthere is many more methods to find stress and strain. These methods are more accurate and more convenient than the earlier era. Some of the methods are:-

- **(a)** Classical mathematical techniques.
- **(b)** Analytical mathematical method.
- **(c)** Computational simulation.
- **(d)** Experimental testing.
- **(e)** Combination of methods.
- **(f)** Graphical representation.

Future work

In vehicle and automobile we can use more effective material in place those material whose cost is more and limited quantity. If we studied about a particular material we actually know about that material. Such as its stiffness, strength, hardness, elasticity, plasticity etc. Then we can analyse which material is more effectively used in a particular machine. Suppose if we take an example of cars. 10 years ago the materials used in the cars were heavy in weight. The cost of material is also so high. But now a days the company used those material which is light in weight and also the cost of the material is less in comparission to the old material. The materials used in the vehicles ae bullet proof , fire proof etc.

Conclusion

Based on the data developed on the stress and strain property results of the explained as

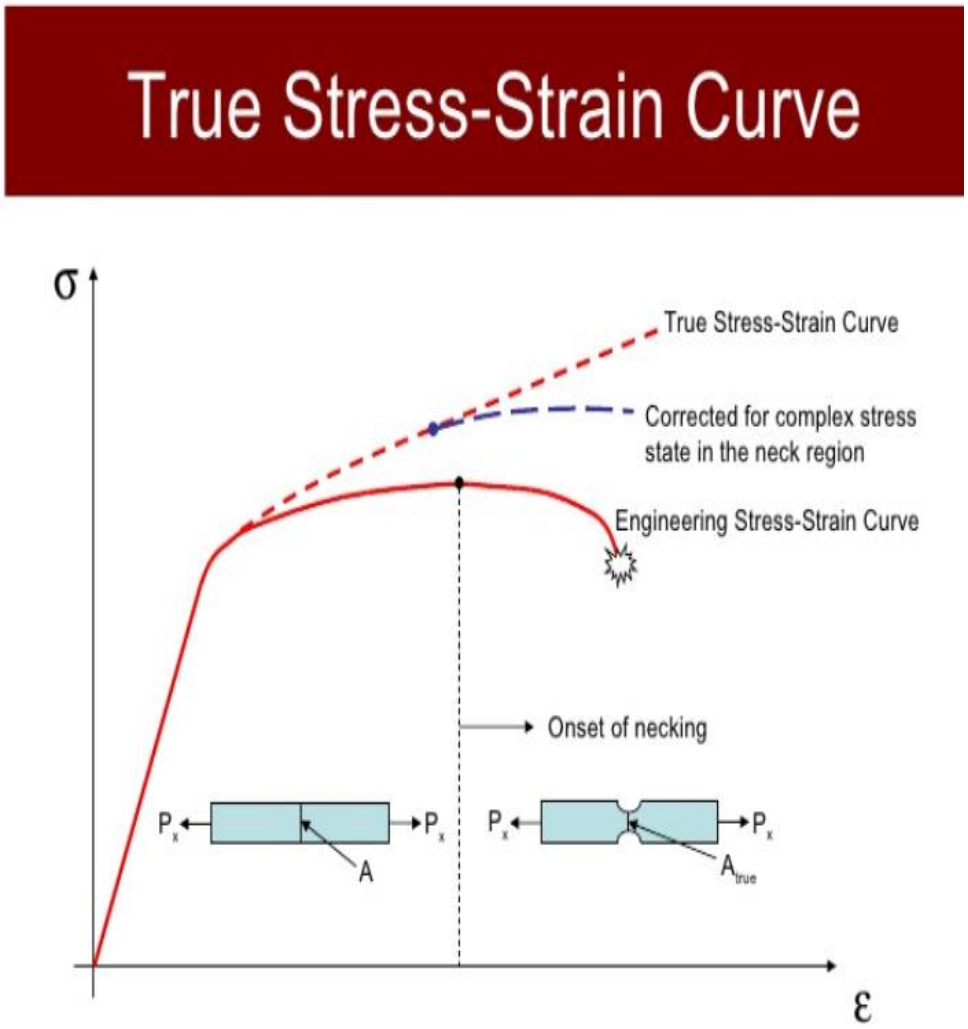
We choose a material based on the following mechanical properties:

(a) Strength (yield and ultimate)
(b) Stiffness (modulus of Elasticity)
(c) Ductility (percent elongation).

Additional properties from the stress and strain curve

(a) Modulus of Elasticity-the slope of the stress -strain curve in the linear region.

(b) percent elongation- Is more than 5% the material is ductile.



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