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MECHANICAL
ENGINEERING
LECTURE BY SUBODH
KUMAR

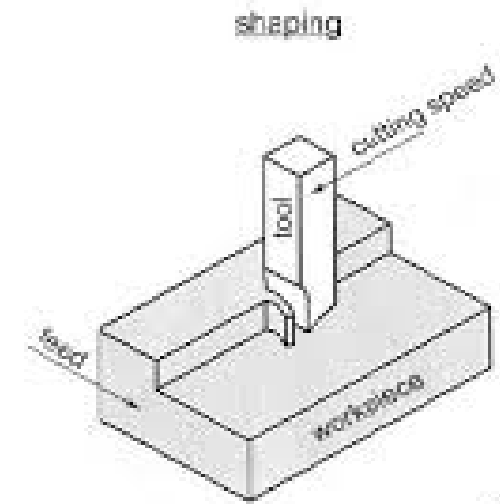
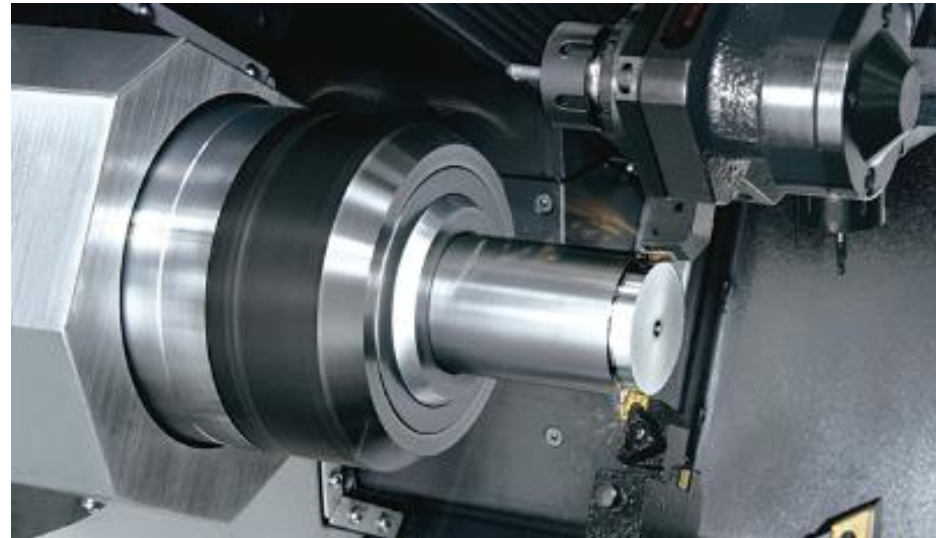
Metal cutting

- Metal cutting or Machining is a manufacturing process in which a cutting tool is used to remove excess material from a work piece so that the remaining material is the desired product.
- As the cutting tool engages the workpiece ,the material directly ahead of the tool is sheared and deformed under tremendous pressure.
- The deformed material then seeks to relieve its stressed condition by fracturing and flowing into the space above the tool in the form of a chip.



Advantages :

- It can be applied to a wide variety of work materials.
- It can be used to generate any regular geometry ,such as flat or curved planes , round or special formed holes ,and cylinders.
- It can produce dimensions to very close tolerances of less than 0.025mm.it is more accurate than most other process.
- Smooth surface finish.



Mechanism of metal cutting

Three important parameter

Cutting speed (v)

Feed(f)

Depth of cut (d)

Material removal rate(MRR) is the amount of material removed per time unit when performing machining operations such as using a lathe or milling machine.

Mechanism of metal cutting

- Tool and workpiece interaction given a depth of cut and relative of motion between tool and workpiece result in chipping.
- Cutting action involves shear deformation of work material to form a chip ,as chip is removed ,new surface is exposed.

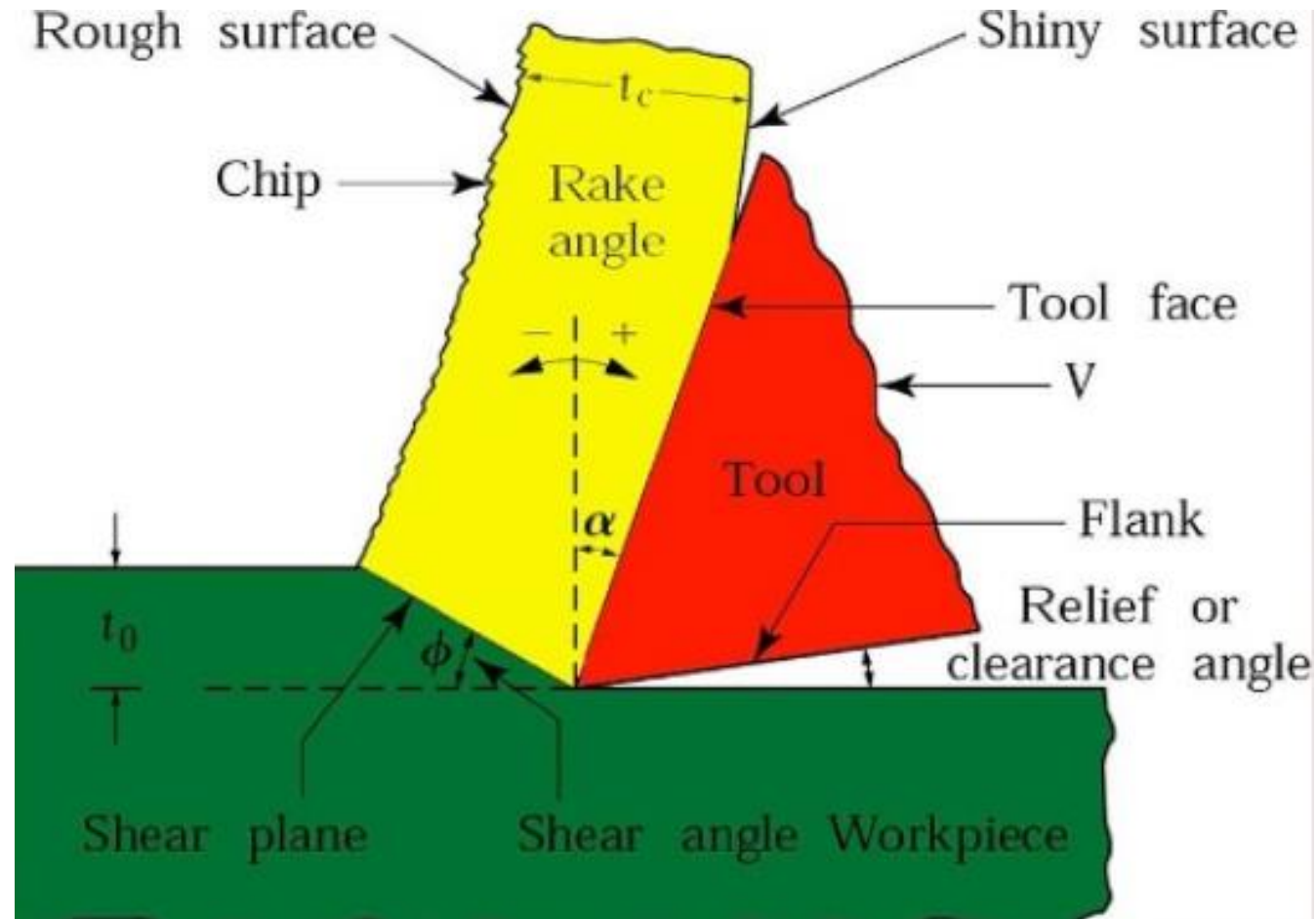


Fig. Element of metal cutting

THANKYOU