Traditional Machining

Traditional machining uses cutting tools to remove material from the stock material surfaces. Generally, traditional machining involves the drilling, milling and/or turning operations.

This presentation module deals with traditional machining parameters, calculations and issues. First, the module describes chip formation and different chip types. The four chip types are: continuous, segmented, built up edge, and discontinuous.

It distinguishes factors that affect chip formation such as rake angle, clearance angle and shear angle. The module further describes other factors, which include:

- effective diameter
- depth of cut
- radial depth of cut (if applicable)
- speeds (tip and spindle)
- feed rate
- material
- tool material

The presentation gives formulae for depth of cut, step over distance, chip load, feeds and speeds calculations using both flat and ball end mill tools. The calculations include power and force estimations. Tables are given for recommended feeds and speeds depending on the tool and bulk material. The presentation finishes with several examples of feeds, speeds, and power calculations.