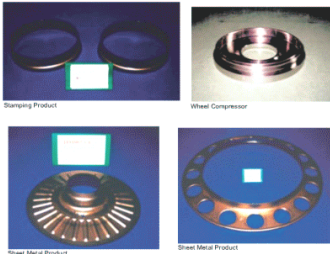


Introduction to Fundamentals of Sheet Metal Formability

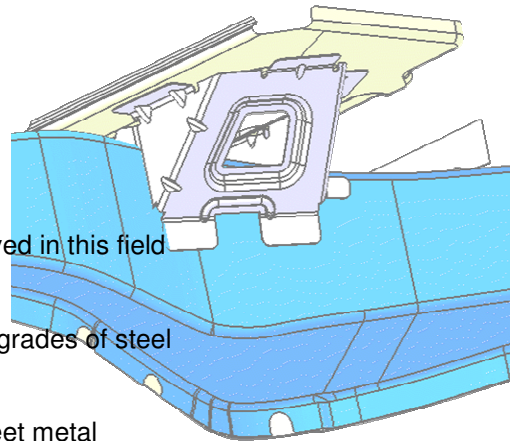


Objective:

To provide a fundamental understanding of sheet metal stamping. It gives an insight into the manufacturing and processing of sheet metal in the industry. The basic principles of stamping tool design, sheet metal behavior during stamping and the different methods of evaluating defects are introduced. Students are also exposed to the state of the art computer based approach to stamping design and analysis.

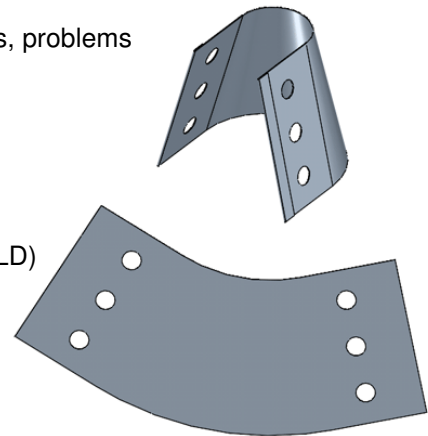
Who Should Attend :

- Product designers
- Process layout and manufacturing engineers
- Die development engineers
- Die designers and tool makers
- CAE analysts
- Management
- University students or lecturers who are involved in this field



Topics

- Manufacturing and processing of sheet metal
 - Processing of steel: composition and grades of steel
 - Coating systems
 - Other materials
- Determination of mechanical properties of sheet metal
 - Uniaxial tensile test:
 - definition of stress, strain (engineering, true, principal)
 - elasticity, plasticity
 - anisotropy
 - rate sensitivity
- Basic deformation modes in stamping
 - Deep drawing: nomenclature deformation modes, problems
 - Stretch-flanging
 - Stretch forming
 - Bending
- Defects in stamping
 - Splitting, thinning, wrinkling, springback, etc.
- Tests of formability
 - Failure analysis with Forming Limit Diagrams (FLD)
- Basics of draw die development
 - Controlling material flow
 - Addendum and binder development
- Stamping press actions
 - Binder and punch tonnages
 - Effect of gravity
- Advanced forming processes
 - Hydroforming, tailor welded blanks, etc.
- Computer analysis of forming processes
 - Role of CAE in manufacturing



Class Format

- 2 days
- Instructor led
- Presentation, exercises, evaluation and discussion

Pre-requisites

- None