About the Seminar

The seminar presents an intensive introduction to die design for plastic extrusion. The objectives of this seminar are:

- To teach the basic principles of die design
- To demonstrate the application of these principles to the design of the main types of extrusion dies:
  - Tubing and pipe dies, wire coating dies, sheet and flat film dies, profile dies, spiral mandrel dies, and coextrusion dies
- To discuss the design of calibrators

Two recognized experts will be the instructors for the seminar.

What the attendees will learn:

- The flow properties that determine how the material behaves in the die and when it leaves the die
- The various types of extrusion dies used for different products
- Materials and coating used for extrusion dies
- Simple calculations for die design
- How computer programs can be used to analyze and design extrusion dies
- The advantages and disadvantages of various die geometries, e.g. the conventional pipe die versus the spiral mandrel pipe die
- Various die flow problems and how to avoid them

Who should attend:

- Die designers
- Process engineers
- Manufacturing engineers
- Extrusion Supervisors
- Technical service personnel
## Course Description

### Introduction
- Overview of types of extrusion dies
- Important melt flow properties
- General rules & guidelines
- Complicating factors in die design
  - Extrudate swell
  - Draw down
  - Relaxation
  - Shrinkage

### Design of flat & annular dies
- Computer aided die design
- Flat sheet and film dies
  - Fish tail dies
  - Coathanger dies
  - Horseshoe dies
  - Tubing and pipe dies
  - In-line dies
  - Crosshead dies
- Wire coating dies
- Blow film dies
  - Spiral mandrel dies
  - Smooth mandrel dies
  - Pancake dies
- Coextrusion dies
  - Feed block system
  - Multi-manifold system
  - Interfacial problems
  - Troubleshooting extruders

## Continued...

### Profile Die Design
- Conceptual design
- Design parameters
- Flow through profile dies
- How to handle swell
- Parabolic flow
- Esthetics of the extruded profile
- Statistics to improve extrusion
- Actual die design and effect of
  - Plastic properties
  - Land length
  - Preland
  - Draw down
  - Die Material

### Calibrators
- Different types of calibrators
- Friction sizing
- External sizing with compressed air
- External sizing with vacuum
- Internal sizing
- Precision extrusion pullforming

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