

Deep Draw Tooling Technology In-Plant Training Agenda (Sample)

Full Day Training

Designed for Engineers, Die Makers, Die Repair, Die Tryout Personnel and Apprentices

Morning Session (3-1/2 hours)

Introduction(s)

Drawing Cylindrical Cups

- Draw Die Nomenclature
- Design Principles
- Limiting Drawing Ratios
- Blank Size Calculations
- Draw Reduction Ratios
- Punch Nose and Die Entry Radii
- Constancy of Volume
- Blankholder Pressure

Redrawing Cylindrical Cups

- Redrawing Ratios
- Beveled Draw Edges
- Internal Pressure Rings
- Redrawing without Internal Pressure
- Special Cases: Elliptical, Flat Side and Conical Cups
- Wall Ironing

Effects of Material Type, Temper and Alloys

- Mild Steel and High Strength Steel
- Aluminum Alloys
- Stainless Steel Alloys

PMA in-plant training programs are fully customizable. Subjects in this agenda can be removed, replaced or additional topics added from other PMA in-plant training programs.

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Afternoon Session (3- hours)

Drawing and Redrawing Rectangular Boxes

- Design Principles
- Drawing and Redrawing Ratios
- Application of the Formability Curve
- Developing the Box Corner Size for Redrawing
- Developing the Punch Nose Radii for Redrawing
- Application of Draw Beads
- Corner Flange Spotting

Drawing Irregular Shapes

- Addendum Development
- Addendum Features
- Blankholder Development
- Draw Bead Layout
- Optimizing Material Flow & Blank Shape

Effects of Material Type, Temper and Alloys

- Important Sheet Metal Properties for Deep Drawing
- Mild Steel and High Strength Steel
- Aluminum Alloys
- Stainless Steel Alloys