Sheet Metal Stamping Course: Press Tool and Die Design, Try-Out and Troubleshooting

15 – 19 November 2027
London - Central London four-star



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Introduction:

Sheet metal stamping, press tool and die design, try-out and troubleshooting is a 1-week course for die design, press shop, toolroom and supplier quality teams, ending with a Stamping Die Design and Try-Out Plan. Press shops lose output and margin when clearances, strip layouts, press tonnage and die steels are chosen by habit, so dies arrive late, wear early and produce burrs, splits, wrinkles and springback. Nominees already design, set or maintain stamping dies, and teaching is by case study on part drawings, strip layouts and defect samples. CoreConcept Training Center delivers this sheet metal stamping course.

Course Objectives:

- Calculate punch-to-die clearance, cutting force and stripping force for blanking and piercing operations and predict the resulting cut edge and burr
- Determine bend allowance, minimum bend radius and springback compensation for flanging, wiping and V-bending stations
- Set limiting drawing ratio, redraw reductions and blank holder force for drawn shells and pans
- Lay out progressive die strips and transfer die stations with pilots, carriers and feed pitch that hold part position
- Select press tonnage, stroke energy, die steels and coatings that match the part, the volume and the expected wear
- Plan die try-out, preventive die maintenance and root cause correction of stamped part defects

Target Audience:

- Die design teams responsible for strip layouts, die sets and detail drawings of press tools
- Press shop process engineering teams responsible for setting dies, press parameters and production approval
- Toolroom and die maintenance teams responsible for sharpening, shimming, repair and die records
- Supplier quality teams responsible for stamped part approval, defect claims and corrective action
- Tooling procurement teams responsible for reviewing die quotations and die build progress at toolmakers

Course Outline:

Day 1: Stamping Operations, Shearing Mechanics and Current Press Shop Review

- Stamping Operation Map from Blanking to Coining
- Sheet Material Properties Read from Mill Certificates
- Shearing Sequence with Rollover, Burnish, Fracture and Burr
- Punch-to-Die Clearance Selection by Material and Thickness
- Current Press Shop Scrap and Die Downtime Review

Day 2: Blanking, Bending and Deep Drawing Calculation Methods

- Cutting Force, Stripping Force and Shear Angle Calculations
- Fine Blanking and Shaving Routes for Clean Cut Edges
- Bend Allowance and K-Factor Flat Blank Calculation
- Limiting Drawing Ratio and Redraw Reduction Sequence Planning
- Blank Holder Force, Draw Beads and Drawing Lubricant Choice

Day 3: Progressive and Transfer Die Layout, Press Selection and Tooling Materials

- Progressive Die Strip Layout with Pilots and Carrier Web
- Transfer Die Station Sequence and Finger Tooling Clearances
- Press Tonnage, Stroke Energy and Shut Height Checks
- Die Set Components Including Guide Pillars, Strippers and Springs
- Tool Steel Grades, Hardening and Surface Coatings for Punches

Day 4: Springback Control, Die Wear and Stamped Part Defect Diagnosis

- Springback Compensation by Overbending, Bottoming and Restriking
- Forming Simulation Results Used to Predict Splits and Thinning
- Wrinkle, Split and Galling Diagnosis on Drawn Panels
- Burr Height Trend as a Punch Wear Indicator
- Dimensional Drift Root Cause Using Fishbone and Five Whys

Day 5: Case Study Practice and the Stamping Die Design and Try-Out Plan

- Case Bracket Process Sequence and Station Count Decision
- Case Strip Layout with Material Utilisation and Tonnage Check
- Die Try-Out Sequence, Shimming and First Part Approval
- Preventive Die Maintenance Schedule by Stroke Count
- Stamping Die Design and Try-Out Plan Completion and Peer Review

Skills You Will Gain:

- Shearing Force Calculation
- Flat Blank Development
- Deep Draw Sequence Planning
- Strip Layout Design
- Press Capacity Assessment
- Die Material Selection
- Stamping Defect Diagnosis
- Die Maintenance Planning

Why Attend This Course:

- Deliver a Stamping Die Design and Try-Out Plan to the tooling manager and the press shop production lead
- Decide between a progressive die, a transfer die or a line of single dies for a new part and volume
- Avoid late die approvals, cracked punches and customer rejections caused by wrong clearances, undersized presses and unchecked springback
- Coach toolroom and press shop colleagues on clearance tables, burr checks and stroke-based maintenance routines

Conclusion:

Back at work, the participant hands the Stamping Die Design and Try-Out Plan to the tooling manager and the press shop production lead, who use it to approve the die concept, confirm press allocation and agree try-out acceptance criteria with the toolmaker. Toolroom staff use its stroke-based maintenance schedule and defect diagnosis sheets on running dies. After the first die built under the plan reaches production approval, the unit should compare try-out loops, scrap rate and unplanned die pulls against the plan and update its clearance and springback tables.

Frequently Asked Questions FAQ:

What should participants know before a sheet metal stamping, press tool and die design course?

Participants should already read part drawings and work with stamping dies, presses or stamped part quality. Basic workshop arithmetic is enough for the calculations. Bringing a drawing, strip layout or defect photo of a part from their own press shop makes the case work more useful.

How does a sheet metal stamping and die design course differ from a general manufacturing processes course?

It stays inside the press shop: clearances, forces, strip layouts, press capacity, die steels, try-out and defect correction for stamped parts. A general manufacturing processes course compares machining, casting, forming and additive routes and treats stamping as one option among many.

Why do sheet metal stamping dies produce springback and how is it controlled?

Springback occurs because elastic strain recovers after the punch withdraws, so the bent flange opens. Die designers control it by overbending, bottoming or restriking, by adding stiffening features and by checking higher-strength materials in forming simulation before the die is built.

What do participants take back from the sheet metal stamping, press tool and die design course?

Participants take back a Stamping Die Design and Try-Out Plan: process sequence, strip layout with utilisation and tonnage check, die material choices, a try-out and first part approval sequence and a stroke-based maintenance schedule, ready to adapt to their own parts.