

INJECTION MOLDING & Tooling Capabilities

Texas Injection Molding | Houston, Texas



Texas Injection Molding at a Glance

A Houston-based partner from engineering through production



90,000

SQ. FT. FACILITY

34

INJECTION MOLDING MACHINES

55–1,350T

PRESS RANGE

80+ customers
450+ skus

ENGINEERING

Design for manufacturability, material selection, and validation.

TOOLING

Mold design, flow analysis, and tool construction.

PRODUCTION

Custom injection molding, process control, and quality inspection.

LOGISTICS

Warehousing and logistics support for ongoing production programs.

Hardware Components Magnify Small Design Decisions



Thin walls, precision interfaces and long flow paths make fundamentals more sensitive

FLATNESS

Large surfaces

WARPAGE

Cooling + geometry

MATING FEATURES

Fit + tolerance

FASTENING

Bosses + inserts

FLOW LENGTH

Gate strategy

ASSEMBLY

Interfaces + service



Good Part Design Makes Good Molding Possible

Six fundamentals shape quality, tooling complexity and cycle performance



Walls

Uniform sections

RIBS

Stiffness efficiently

BOSSES

Support and fastening

DRAFT

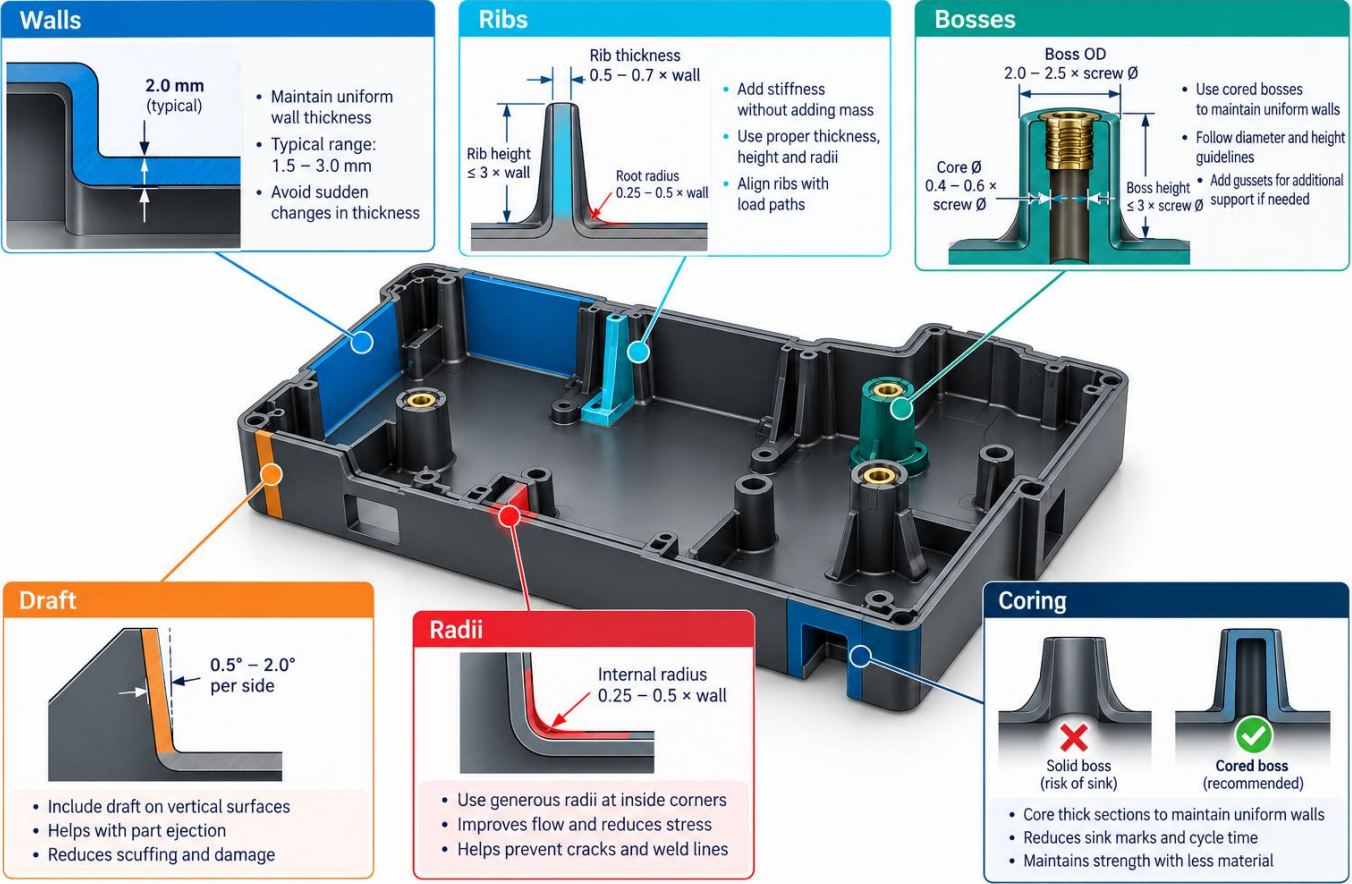
Reliable ejection

RADII

Reduce stress

CORING

Remove heavy mass



Core & Cavity Architecture

Mold halves create external geometry and internal features – and control where steel meets polymer



CAVITY SIDE

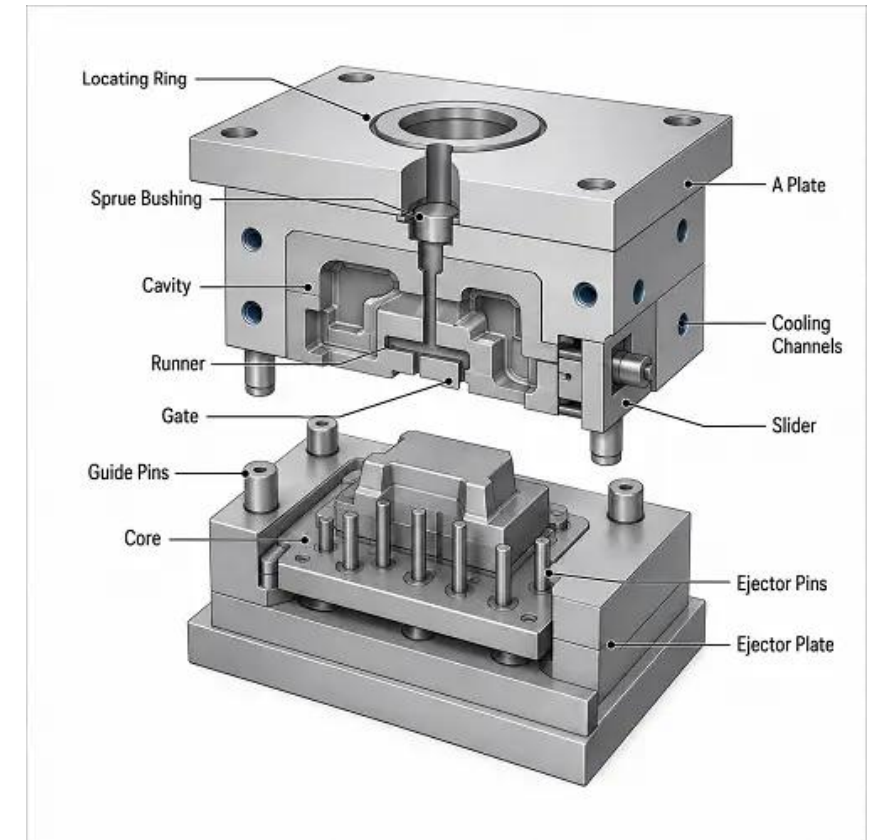
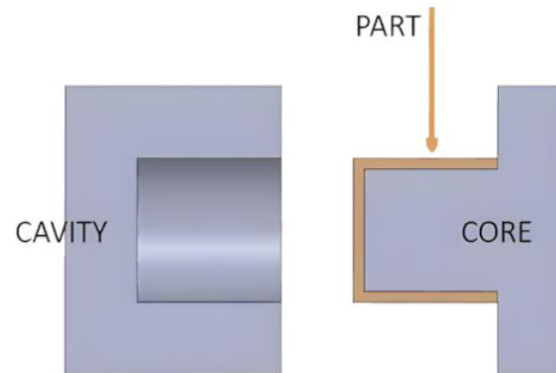
- External surfaces and appearance
- Gate and parting-line choices
- Surface finish requirements

CORE SIDE

- Internal geometry and ribs
- Ejection strategy
- Cooling access and steel strength

ENGINEERING CHECK

- Steel-safe dimensions
- Shrinkage and material grade
- Venting, cooling and serviceability



Parting Lines & Shut-offs

Parting-line placement affects flash risk, aesthetics, sealing, tool wear and maintenance



PARTING LINE

- Locate away from critical seals
- Account for visible witness lines
- Align with draw direction

SHUT-OFF GEOMETRY

- Steel to steel interfaces
- Provides robust engagement
- Avoid delicate feather edges

DESIGN REVIEW

- Flash-sensitive surfaces
- Venting and trapped air
- Tool wear and accessibility



Draft Angles & Ejection Mechanics

Release is a mechanical design requirement – not a cosmetic afterthought



DRAFT

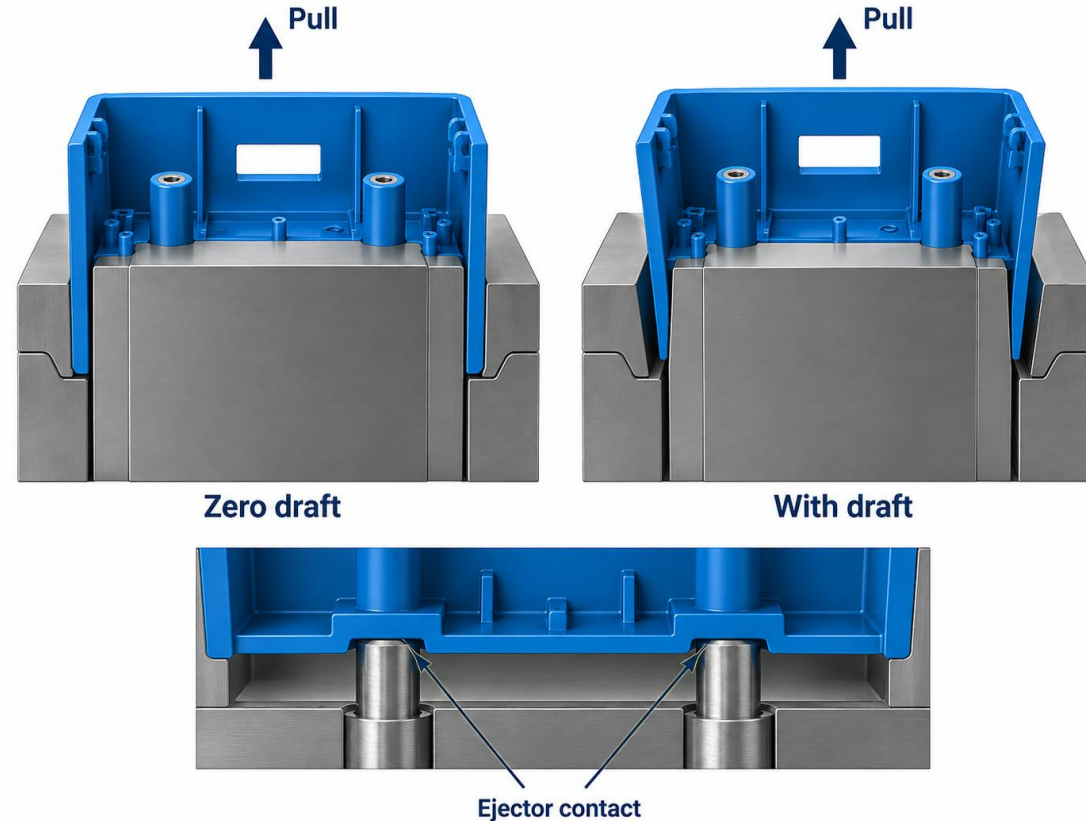
- Draft relative to mold pull
- More draft for deep or textured walls
- Confirm grade, depth and finish

EJECTION

- Pin placement and contact area
- Avoid marks on critical surfaces
- Balance ejection forces

FAILURE MODES

- Drag and scuff marks
- Sticking or part distortion
- Pin witness and stress whitening



Slide Actions and Undercuts

Undercuts may require lateral mold motion, increasing cost, cycle time and maintenance



COMMON FEATURES

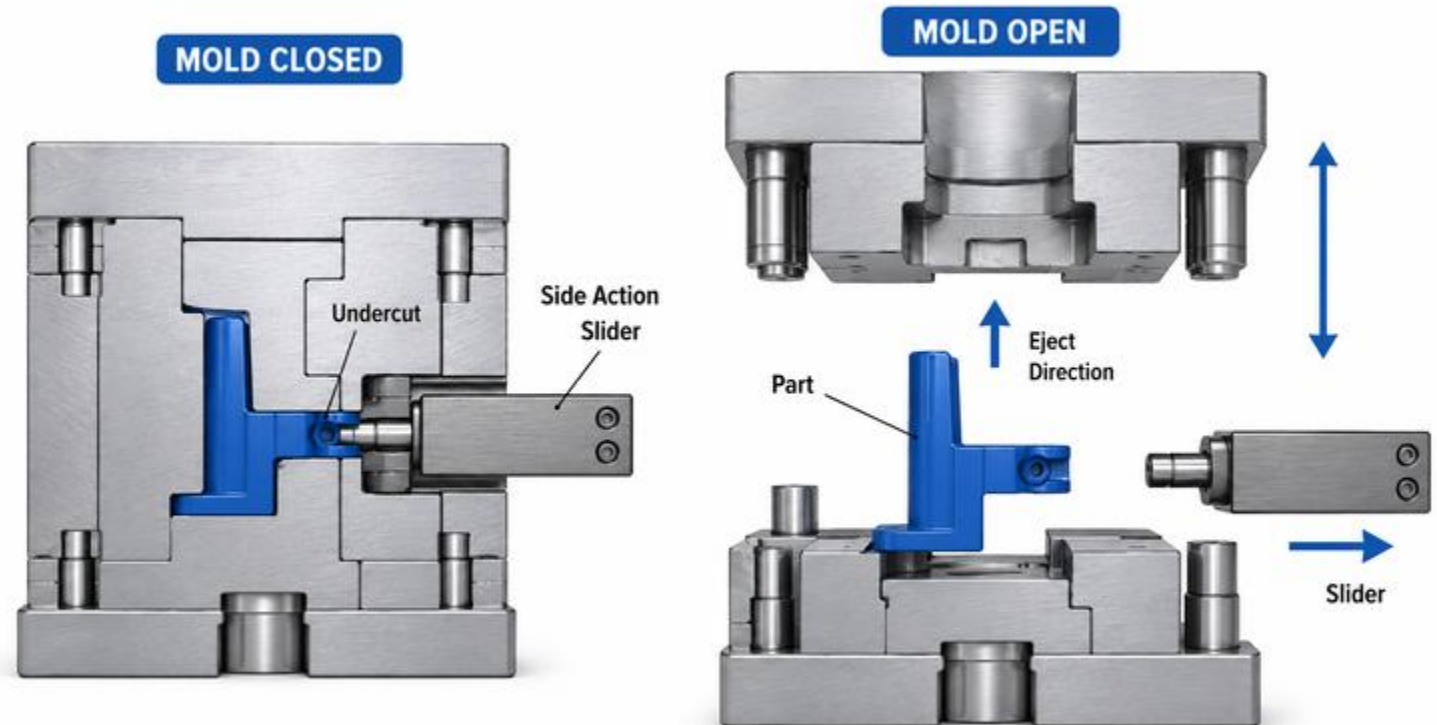
- Slide holes and windows
- Snap hooks and retention lips
- Cross-axis connector features

TOOLING OPTIONS

- Slides and angled pins
- Lifters and collapsible cores
- Redesign for straight-pull molding

TRADEOFFS

- More moving components
- Shut-off wear and alignment
- Added tool cost and cycle constraints



Textures and Surface Finishes

Surface specifications affect appearance, release, draft and tool construction



FINISH OPTIONS

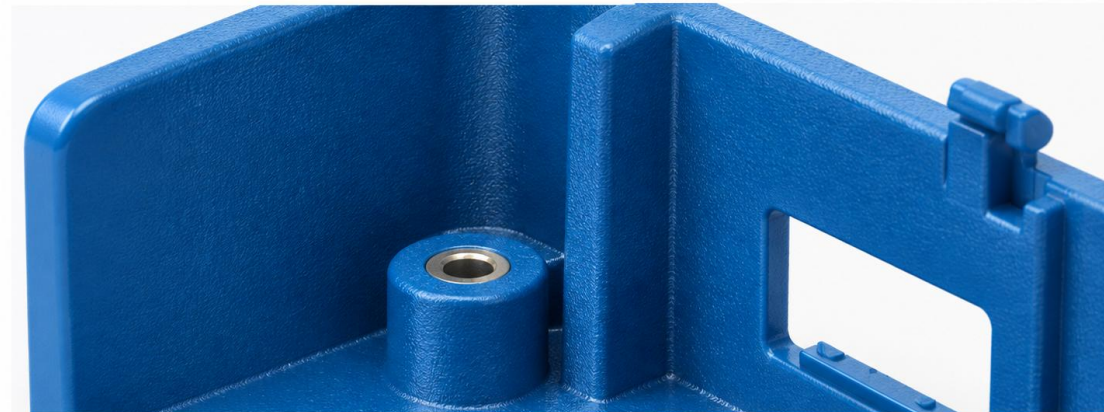
- Polished or machined finish
- Matte or etched texture
- Functional grip or visual masking

PROCESS IMPACT

- Texture increases release function
- Draft must increase
- Weld lines and flow marks remain relevant

SPECIFICATION

- Define appearance zones
- Agree on texture reference
- Approve samples under real lighting



Design the Mold Before Cutting Steel

Engineering the Mold for Quality, Efficiency and Repeatability



TOOL DESIGN

- Gate location
- Parting line
- Ejection
- Cooling

GATE LOCATION

- Controls flow and fill pattern
- Helps minimize weld lines and cosmetic issues
- Sized for balanced filling and easy gate removal



COOLING

- Internal water channels control mold temperature
- Improves cycle time, part quality and dimensional stability
- Optimized placement based on part geometry



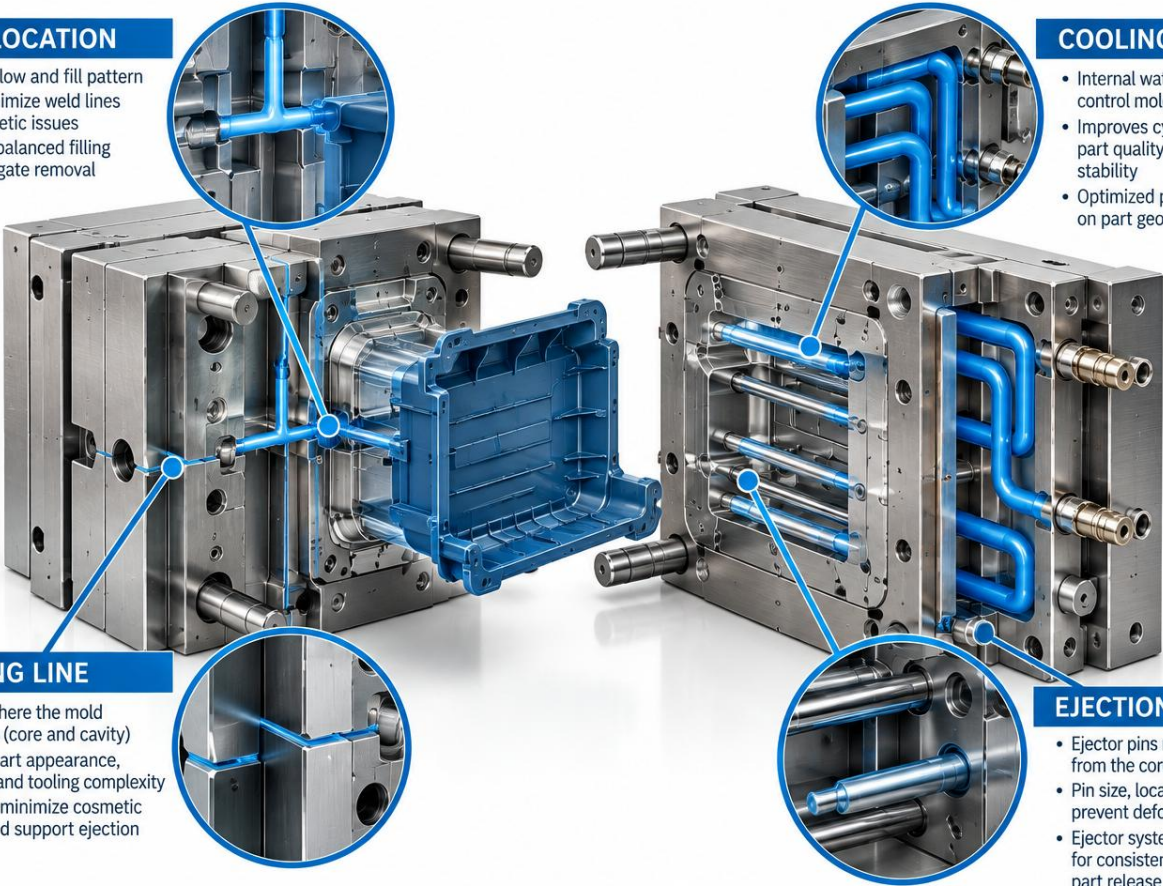
PARTING LINE

- Defines where the mold separates (core and cavity)
- Impacts part appearance, flash risk and tooling complexity
- Placed to minimize cosmetic impact and support ejection



EJECTION

- Ejector pins release the part from the core side
- Pin size, location and count prevent deformation
- Ejector system designed for consistent, repeatable part release



Design the Mold Before Cutting Steel

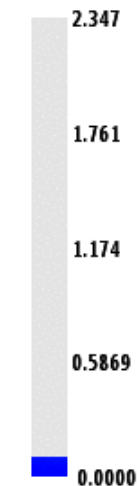
Optimizing Material Flow, Packing, and Cooling to Minimize Molding Defects



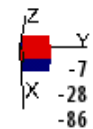
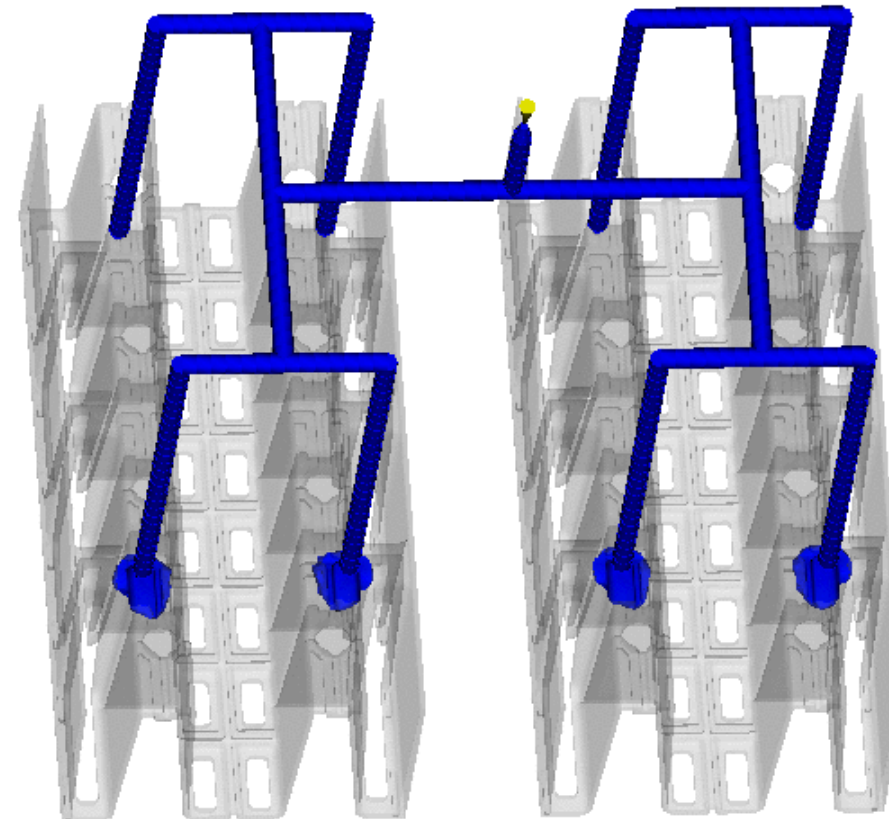
MOLD FLOW

- Evaluate filling
- Packing
- Weld lines
- Warpage

Fill time
= 0.0978[s]
[s]



AUTODESK
MOLDFLOW INSIGHT



From Approved Design to First Samples

A controlled tool build connects design reviews to manufacturing execution



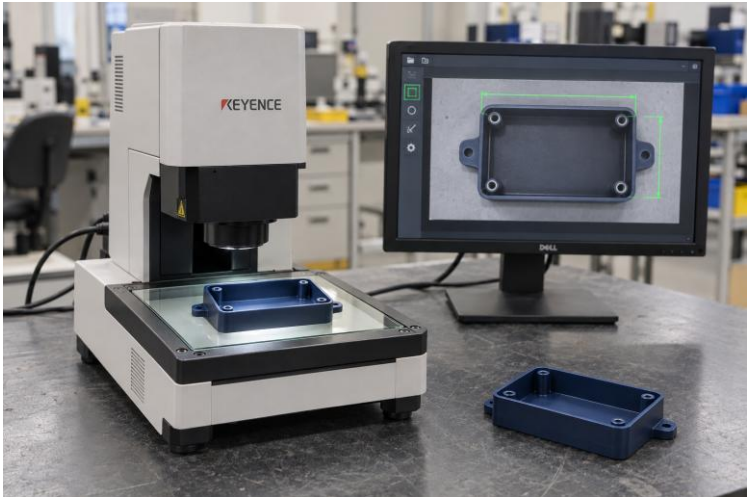
**DESIGN
APPROVAL**

**MOLD
DESIGN**

**CNC / EDM
+ ASSEMBLY**

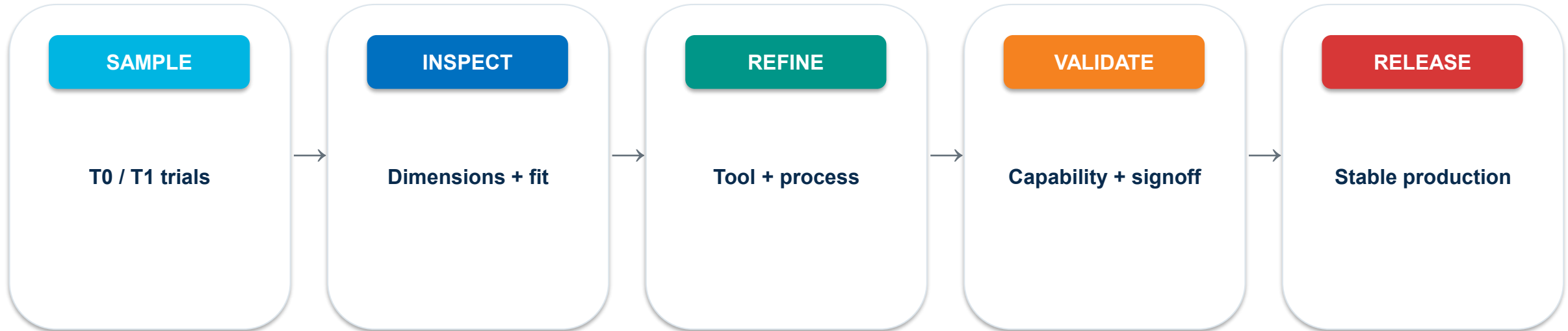
**T0 / T1
SAMPLES**

**INSPECT +
REVIEW**



First Shots Begin Production Validation

Inspect samples, refine tooling and establish a repeatable molding process



The goal is a capable, repeatable process—not simply an acceptable first shot.

Managing NPI from Design to Production

Engineering milestones and open actions visible

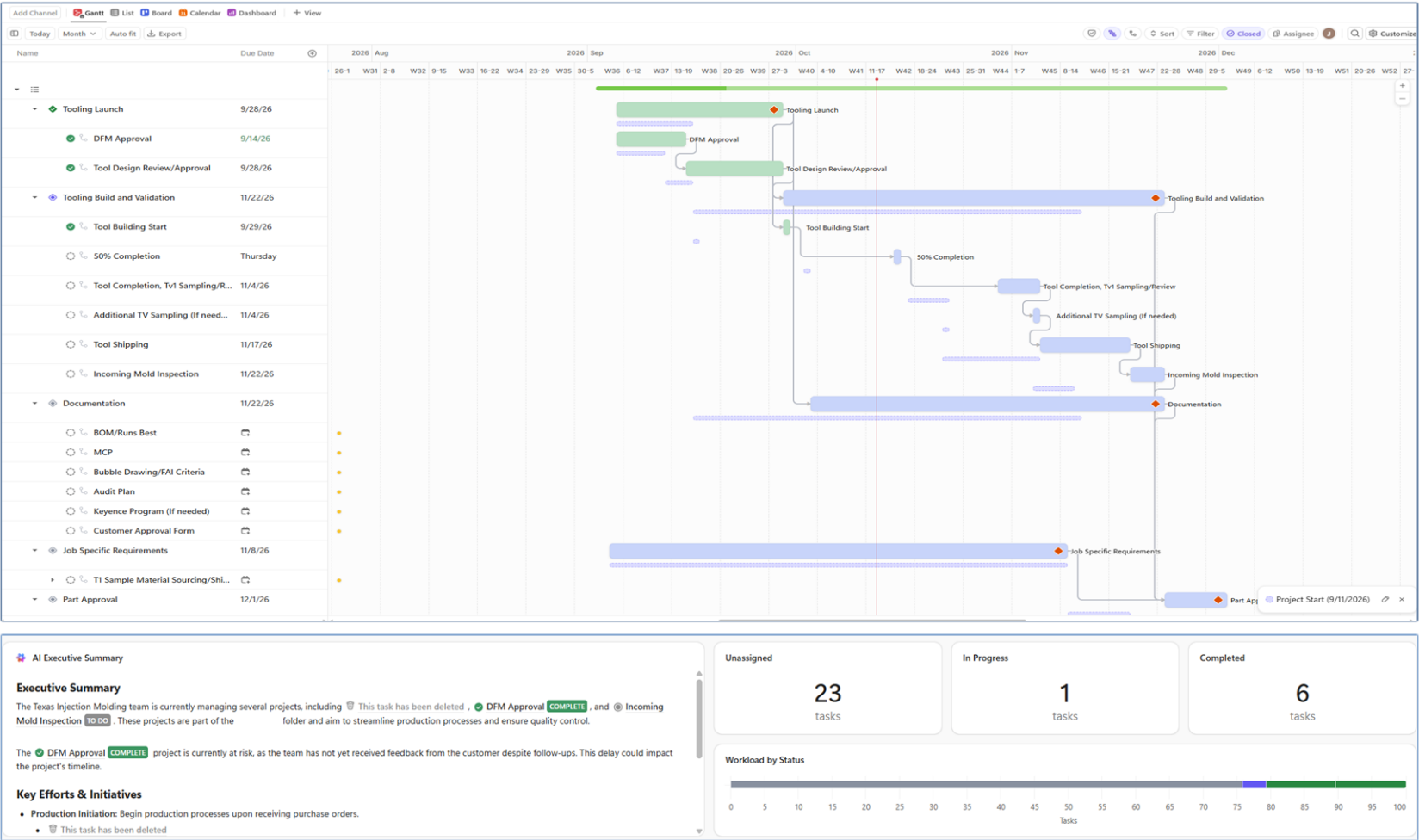


MILESTONE TRACKING

TASK OWNERSHIP

ACTION TO CLOSURE

VISIBILITY



TEXAS INJECTION MOLDING

From Design to Production

Engineering, tooling, and manufacturing support for custom injection molded plastic components.

Engineering | Tooling | Production | Logistics

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