



CASE STUDY

Lateral Flow Assay Cassette Quick-Turn Molds

Agile Mold Development: Accelerating Production While Adapting to Design Uncertainties

CUSTOMER: Drummond Scientific Company

SUMMARY:

This case study showcases HARBEC's ability to adapt to evolving design requirements while maintaining fast-paced production schedules. Traditionally, manufacturing molds for production-quality parts are not typically done during the early stages when design uncertainties exist. However, in these specific examples, the customer's time-to-market constraints necessitated the production of high-quality parts with limited time for prototyping. HARBEC collaborated closely with the customer, producing molds that kept pace with evolving needs while preparing for production ramp-up.



Adapting to evolving design requirements while maintaining fast-paced production schedules.



Preparing for production ramp-up alongside design revisions.



Adapting to evolving design requirements.

CHALLENGE:

Drummond Scientific Company's fast-paced production requirements and design uncertainties posed significant challenges. With limited time for prototyping, the parts needed to be production quality from the start. Additionally, as the design evolved and lessons were learned, part revisions became necessary. HARBEC needed to align its mold production with these changing requirements while maintaining efficiency and readiness for production scaling.

SOLUTION:

HARBEC devised an agile mold development strategy, ensuring a seamless progression from initial production to final mold design. The key phases in the solution included:

PHASE 1:

LFA Cassettes and Machining Modifications:

Modify part geometry to enable complete mold machining, ensuring production-quality parts without compromising mold integrity.

MOLD TYPE: Aluminum 4x6 (1+1 configuration)

MFG TIMING: Less than 1 business week

LIFE SPAN: Approx. 25,000 production shots

PHASE 2:

Phased Parallel Path: Quick-turn aluminum molds were employed to accommodate design changes and maintain continuous production. This was initiated when the customer revised their part design, onboarding multiple quick turn aluminum molds alongside higher cavitation mold development.

MOLD TYPE: Aluminum 4x6 2-Cavity (4 molds)

MFG TIMING: Less than 1 business week (per pair)

LIFE SPAN: Approx. 363,000 production shots

PHASE 3:

Enhanced Features: Aluminum-inserted MUD units were used, incorporating enhanced features like additional cooling, hot-tip inserts, and hardened gate inserts. This improved part quality, enhanced mold durability, and optimized overall performance.

MOLD TYPE: Aluminum 4-Cavity (2 molds)

MFG TIMING: 4 weeks

Mold Design Class: Type II Unit Insert

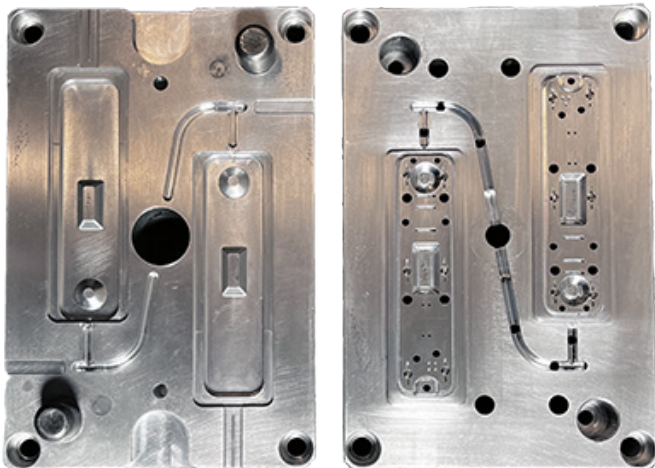
PHASE 4:

Final Production Mold: HARBEC successfully developed a steel full-frame mold featuring a hot runner system, hardened gate inserts, and comprehensive cooling provisions. This meticulously designed mold represents the ultimate production-ready configuration, poised for large-scale manufacturing.

MOLD TYPE: 8-Cavity Steel Production Molds

MFG TIMING: 16 weeks

Mold Design Class: SPI 102



BENEFITS:

Accelerated Time-to-Market: Meeting demanding time-to-market constraints by simultaneously producing production-quality parts and preparing for full-scale production.

Constant Product Flow: Maintaining production continuity through HARBEC's parallel path approach, despite part revisions.

Prototyping for Interim Production: Providing production-quality prototype molds for interim production, allowing the customer to test and validate designs while scaling up production capacities.