

# DAZAO Advances Die Casting Solutions with Integrated Mold and CNC Capabilities

XIAMEN, FUJIAN, CHINA, February 11, 2026 /EINPresswire.com/ -- Die casting remains one of the most productive ways to make metal parts at scale—especially for programs in automotive, new energy, and industrial equipment. However, in 2026, "die casting excellence" is no longer about simply pouring metal. Buyers judge excellence by three outcomes: stable forming, machinable features, and fully verifiable deliveries.

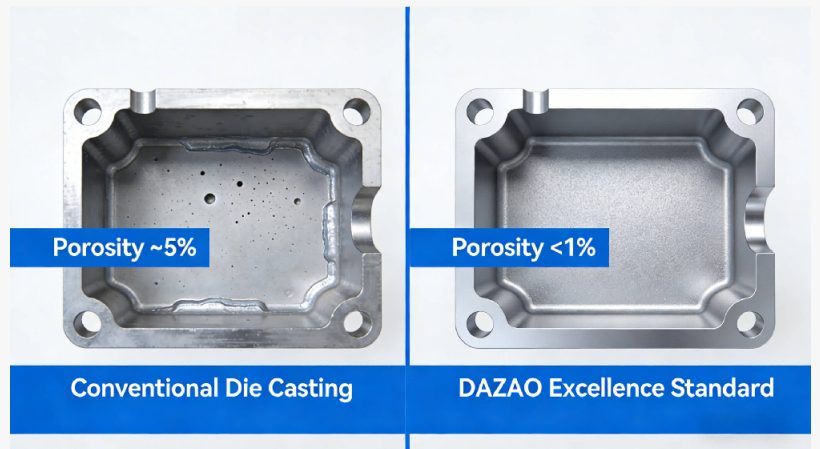
This shift reflects risks sourcing teams face. The true cost isn't just unit price—it's the fallout from porosity causing leaks or warpage rendering CNC fixtures useless. In an era of strict compliance, a casting without complete inspection and traceability is an incomplete delivery stalling assembly lines.

In one recent aluminum housing program, early samples passed dimensional inspection but failed pressure testing after CNC machining. The root cause was uneven wall shrinkage near a sealing groove, which shifted the machining datum by 0.04 mm. The mold required gating redesign and localized cooling adjustment before stable production was achieved. Situations like this are why casting excellence cannot stop at metal filling—it must account for downstream machining behavior.

To close the gap between raw casting and production readiness, DAZAO (Xiamen DAZAO Machinery Co., Ltd.), a [Leading China-based die casting supplier](#) with 25 years experience, runs die casting as a coordinated chain—from mold design to post-casting CNC machining. By

No.	Tonnage Range	Machine Type	Clamping Force (kN)	Max Shot Weight (Al Alloy)	Max Projected Area (ReL)	Typical Applications & Components
1	160T - 280T	Small Cold Chamber	1,600 - 2,800	0.1 kg - 1.5 kg	< 400 cm <sup>2</sup>	Precision Micro-Parts 3C electronics, smartphone frames Furniture hardware, handles/hinges Electric tool internal brackets Industrial connectors
2	350T - 500T	Small-Medium Cold Chamber	3,500 - 5,000	1.5 kg - 3.5 kg	400 - 800 cm <sup>2</sup>	General Industrial Parts Rearview mirror brackets, wiper bases LED lighting heat sinks (Small Med) Motorcycle engine side covers Home appliance structural parts
3	650T - 900T	Medium Cold Chamber	6,500 - 9,000	3.5 kg - 8.0 kg	800 - 1500 cm <sup>2</sup>	Functional Structural Parts Automotive water/oil pump housings 5G filter housings (Standard size) Steering system components Gas meter housings
4	1000T - 1250T	Large Cold Chamber	10,000 - 12,500	8.0 kg - 12.0 kg	1500 - 2200 cm <sup>2</sup>	Powertrain & Large Housings Transmission cases/housings Engine timing chain covers Large outdoor streetlight housings Escalator step plates
5	1600T - 2000T	Extra Large Cold Chamber	16,000 - 20,000	12.0 kg - 25.0 kg	2200 - 3500 cm <sup>2</sup>	Heavy-Duty Structural Parts Engine blocks (V6 In-line-4) EV reducer housings Automotive shock towers Large 5G base station chassis
6	2000T - 3500T+	Giga Casting Units	> 20,000	> 25.0 kg	> 3500 cm <sup>2</sup>	Integrated Mega Castings EV battery pack trays & end plates Sub-frames & longitudinal beams Integrated rear floor assemblies Car door inner frame structures

## Production Capacity and Delivery Performance



Conventional vs. DAZAO Excellence

addressing root causes of porosity and deformation upfront, we deliver functional components with the evidence and stability needed to scale.

#### DFM Strategy to Reduce Casting Risk

The journey to a flawless die-cast part begins on the drawing board. Design for Manufacturability (DFM) represents where production issues are solved proactively. DAZAO approaches DFM leveraging 25 years of pattern recognition to de-risk projects.



DAZAO's engineering team engages early to analyze 3D models, providing actionable feedback that targets the root causes of common casting defects and downstream machining challenges. Key focus areas include:

□Optimizing Wall Thickness: DAZAO advises on achieving uniform wall distribution to ensure smooth metal flow during filling, which reduces weight without sacrificing structural strength. This practice prevents issues like sink marks and porosity while minimizing material usage.

□Specifying Strategic Draft Angles: Recommending appropriate draft angles is essential for effortless part ejection from the mold. DAZAO's suggestions balance design intent with practical necessity, significantly extending mold life, preventing drag marks, and ensuring consistent cycle times.

□Designing for Robustness: The team identifies and proposes modifications to problematic features—such as sharp corners that can create stress concentrations or complex geometries that may trap air—to enhance the overall durability and manufacturability of a design.

This upfront partnership prevents expensive mold rework, optimizes the production cycle, and sets the unshakable foundation for stable, high-yield manufacturing. It is the first concrete step in DAZAO's promise of delivering certainty.

#### Die Casting in 2026: Why "Excellence" Is Still a Competitive Edge

In 2026, sustainability shows up as qualification checklists—especially for programs tied to European and North American OEM supply chains. Buyers must demonstrate compliance readiness and traceability, making green manufacturing inseparable from documentation and stable production. This raises the bar: projects require both parts meeting print and paperwork enabling customers to pass internal reviews.

## Three Critical Factors Buyers Actually Evaluate

Excellence in die casting is rarely decided by one capability—it's determined by whether three execution points hold up under production pressure:

**Mold Control and Process Stability:** Most casting problems—shrinkage variation, porosity, warpage, surface inconsistency—are rooted in tooling and process stability. DAZAO's workflow reduces trial-and-error by treating mold design, optimization, and production control as one system. Ten mold engineers use simulation predicting metal flow and optimizing gating before tooling fabrication. During production, process parameters are documented then monitored continuously. When parameters drift toward limits, production stops for investigation—preventing defects.

**Post-Casting Machining Capability:** Die casting produces near-net-shape geometry, but assemblies depend on what happens next. Sealing faces, threaded holes, locating features, and mating interfaces require CNC finishing. DAZAO integrates machining with casting and machining engineers collaborating during design review to establish where tolerances need tightening and how fixtures align with cast surfaces. This ensures critical datums stay consistent.

**Acceptance Documentation and Material Traceability:** For many buyers, a part isn't delivered until verifiable. DAZAO frames inspection and traceability as product—inspection reports with every order, plus material certifications with heat numbers and CoCs—enabling confident review and repeat. For customers requiring FAI protocols or PPAP submissions, the quality team formats documentation matching customer requirements.

## Integrated Die Casting and Machining Platform

### Integrated Manufacturing Chain: Reducing Handoff Points That Introduce Risk

DAZAO positions die casting as a one-stop solution from mold design through surface treatment. This integration matters because handoffs between suppliers create failures: specifications get misinterpreted, dimensional variation becomes problematic for machining, or finishing discovers geometry issues too late.

The chain begins with in-house mold engineering. Ten designers use 4-axis and 5-axis CNC equipment to fabricate molds. After casting, parts move to CNC machining without leaving the facility. Surface treatment (chemical film, anodizing, plating, powder coating) completes within the same quality framework.

Beyond components, DAZAO provides full-BOM assembly support including welding subassemblies, installing hardware, and functional testing—positioning as an engineering supplier delivering finished assemblies rather than a single-process factory. This consolidates supply chain management and reduces suppliers requiring qualification.

## Production Capacity and Delivery Performance

**Monthly Production of 2 Million Pieces:** This volume demonstrates sustained capability without

bottlenecks. Material procurement operates at scale. Downstream operations balance capacity across stages.

T1 Sample Delivery in 10 Days: From mold completion to first samples covers tool tryout, parameter development, production, and verification. Samples include preliminary inspection data enabling design validation.

Equipment Capability Range: DAZAO operates 20+ machines spanning 160-ton to 2000+ ton capacity, determining part size and complexity the facility can produce.

Conventional vs. DAZAO Excellence: In porosity control, conventional operations accept 3-5% porosity, while DAZAO maintains below 1%—In dimensional consistency conventional suppliers show  $\pm 0.08$ - $0.15$ mm variation, while DAZAO maintains  $\pm 0.03$ - $0.05$ mm. Surface quality: conventional operations experience 8-12% rejection, while DAZAO reduces surface rejects to under 3%.

#### How Precision Capability Translates to Process Control

DAZAO's tolerance capability reaches  $\pm 0.015$ mm on critical features through systematic controls. Casting tolerances begin with tooling accuracy—CNC equipment produces mold cavities within  $\pm 0.005$ mm. During production, automated systems monitor injection parameters recording data. When parameters trend toward limits, operators receive alerts before nonconforming parts get produced.

Dimensional inspection reports accompany every shipment. CMM verification generates documented results. For customers with specific requirements, the quality team provides detailed protocols. This makes quality measurable and manufacturing traceable.

#### Process Selection: Matching Technology to Part Requirements

##### Hot Chamber vs. Cold Chamber—How to Choose

The selection decision starts with one question: what metal does your part specification require?

If Your Part Requires Aluminum or Copper: You need cold chamber die casting. Aluminum's melting point ( $660^{\circ}\text{C}$ ) would degrade hot chamber systems. Cold chamber separates melting furnace from injection. DAZAO's cold chamber equipment (160-2000+ ton range) handles compact automotive components through bulky structural housings. Common grades: A380, A360, ADC-12.

If Your Part Can Use Zinc or Magnesium: You can choose hot chamber die casting. Zinc alloys (Zamak-3, Zamak-5, ZA-8) and magnesium alloys (AZ91D, AS41B) have lower melting points compatible with hot chamber. The injection mechanism enables rapid cycle times—often 2-3x faster than cold chamber.

##### Selection Factors Beyond Material:

Part Size: Cold chamber handles 160-2000+ tons (projected areas from under  $300\text{ cm}^2$  to exceeding  $800\text{ cm}^2$ ). Hot chamber typically limits to under  $300\text{ cm}^2$  and 2-3 kg weight.

Production Volume: Hot chamber becomes economical above 500,000 annual pieces where faster cycles create cost savings. Cold chamber works from prototype through sustained high-volume production.

Mechanical Requirements: Aluminum offers higher tensile strength for structural load-bearing. Zinc provides dimensional stability and surface finish for housings and trim.

DAZAO's Dual-Process Capability: Operating both processes means recommendations emerge from engineering evaluation rather than equipment limitations. During quotation, the team assesses requirements—recommending the optimal balance.

### Certified Materials and Compliance Control

By 2026, material selection is no longer just about performance—it's equally about verifiable sustainability and compliance. DAZAO provides fully certified aluminum, zinc, and magnesium alloys, each backed by complete Material Certifications and Certificates of Conformance (CoCs) for full traceability.

Aluminum Alloys (e.g., A380, A360) are chosen for their optimal balance of lightweight strength, thermal conductivity, and corrosion resistance, making them dominant in automotive and electronics.

Zinc Alloys (e.g., Zamak-3, Zamak-5) offer exceptional dimensional precision, surface quality, and plating capability, perfect for decorative hardware and complex, thin-walled components.

Magnesium Alloys (e.g., AZ91D) provide the ultimate weight savings for portable devices and weight-sensitive applications.

This material expertise is fundamentally integrated with environmental responsibility, creating a verifiable green manufacturing framework for global buyers. DAZAO's commitment is demonstrated through concrete, documented practices:

**Prioritizing Recycled Aluminum:** DAZAO actively sources aluminum alloys with certified recycled content. Using recycled aluminum, which requires only about 5% of the energy of primary production, significantly reduces the embodied carbon of components and supports clients' sustainability goals.

**Investing in Energy Efficiency:** Equipment upgrades and process optimizations focus on thermal efficiency, reducing energy consumption per part through improved furnace insulation, optimized heating cycles, and minimized standby losses.

**Implementing Closed-Loop Recycling:** DAZAO maintains documented scrap recycling protocols for aluminum and zinc, ensuring production waste is captured and fed back into the supply chain. This provides auditable evidence of resource responsibility for sustainability audits.

**Ensuring Regulatory Compliance:** RoHS compliance documentation is provided as a standard part of the quality framework, with test reports certifying the absence of restricted substances.

For buyers managing automotive or energy programs, this level of traceability reduces qualification risk and shortens internal approval cycles.

**Mold Capability:** The Technical Foundation

Die casting quality begins with mold design determining shrinkage, gas entrapment, warpage, and surface finish. DAZAO's patented approaches include gating strategies reducing turbulence, cooling designs eliminating hot spots, and ejection systems protecting delicate features. Ten mold engineers use simulation to predict metal flow, validate cooling. They review CAD models for castability issues—proposing improvements. CNC equipment produces cavities within  $\pm 0.005\text{mm}$  accuracy.

### Post-Casting Machining & Finishing: Where Castings Become Functional Parts

On the shop floor, the casting itself is rarely the final challenge—the real risk appears when machining fixtures reveal slight warpage that was invisible at first glance. A die-cast part is a near-net-shape achievement, but true functionality is unlocked in the steps that follow. Post-casting processes transform a raw casting into a component ready for reliable assembly, addressing the precision and durability demands that the casting process alone cannot meet.

### Why Machining is Non-Negotiable for Functionality

While die casting excels at creating complex geometries, final precision of sealing faces, threaded holes, and critical mating interfaces is achieved through CNC machining. This introduces a challenge: as-cast surfaces must serve as reliable datums for CNC. When these casting datums are unstable due to deformation, it creates uneven machining stock distribution. The consequence is not just tolerance miss—it often leads to complete part scrappage.

This industry issue is where DAZAO's integrated model provides decisive advantage. By housing both casting and CNC machining in-house, casting and machining engineers engage in continuous dialogue from design review. They jointly define and control critical casting surfaces that become machining datums. This eliminates finger-pointing plaguing projects split between separate separate facilities.

### Securing Geometric Integrity: Finalizing Features for Flawless Assembly

The goal of post-casting CNC machining is to guarantee assemblability. DAZAO's machining expertise is focused on finalizing the features that determine how a part fits and functions:

**Sealing Faces:** Achieving the flatness and surface finish required for leak-proof integrity.

**Threaded Holes:** Providing precise, clean threads for secure fastening.

**Locating Features & Mating Interfaces:** Machining pins, slots, and surfaces to tight tolerances ( $\pm 0.02\text{mm}$  or better) to ensure parts align correctly every time.

This disciplined approach ensures that the stability gained from precision molding is carried through to the final, functional component.

### Engineered Resilience: Selecting Surface Finishes for Real-World Performance

Surface finishing isn't just about appearance. In die casting programs, finishing is often what makes a part survive its real environment—corrosion, wear, conductivity requirements, or consistent look and feel across an assembled product line.

DAZAO supports common finishing routes used on die-cast parts, including:

Chemical film (a thin protective conversion layer often chosen when dimensional change must be minimal)

Anodizing (popular for aluminum parts where corrosion resistance and durability matter)

Plating (used when conductivity, corrosion protection, or cosmetic uniformity is required)

Powder coating (chosen for robust coverage and durable appearance on complex geometry)

The key point for buyers: finishing should be selected with function in mind—and it works best when it's planned as part of the overall process chain, not bolted on at the end.

Real-World Applications: Where DAZAO's Die Casting Excels

DAZAO's integrated die casting platform is engineered to meet the stringent demands of advanced manufacturing sectors:

Automotive & New Energy: Engine brackets, transmission components, structural parts, and housings for electric vehicle batteries and powertrains, where weight, strength, and thermal management are critical.

Industrial Machinery: Durable gearbox housings, pump bodies, and valve bodies that must withstand high pressures, loads, and cyclic stress.

Consumer Electronics & Medical Equipment: Precision, thin-walled housings for devices, frames for diagnostic imaging equipment, and components requiring biocompatibility or cleanroom-level integrity.

What DAZAO Shows Global Buyers to Verify Die Casting Excellence

1. Proving Repeatability with an End-to-End Workflow

For buyers, "excellence" becomes real only when delivery is repeatable. DAZAO's die casting model is positioned as an end-to-end loop, designed to reduce handoff risk:

mold design □ die casting □ post-casting CNC machining □ finishing

That chain eliminates common failures: tolerance assumptions lost between suppliers, machining fixtures designed without casting reality, or finishing issues discovered too late. For [China leading die casting manufacturer](#) selection, this workflow is what procurement teams seek for predictable qualification.

2. The "Quality Deliverables" Buyers Can File and Audit

Modern supply chains don't just accept parts—they accept proof. DAZAO supports die casting programs with the kinds of deliverables that help engineering and quality teams approve faster and repeat with confidence:

Inspection reports with every order (so conformance is reviewable, not implied)  
Material certifications & CoCs (so material identity is traceable, not assumed)  
Traceability details such as heat number when required  
RoHS reports available upon request (for compliance-driven programs)

This is the practical difference between “tight tolerance” as a drawing claim and “tight tolerance” as an audit-ready outcome: the part arrives with what internal systems need to accept it.

#### From Casting to Assembly-Ready Components

Founded in 2000, DAZAO's legacy is built on making high-volume metal parts stable to produce, easy to machine, and straightforward to approve. For buyers, "die casting excellence" depends on forming consistency in the mold, controllable machining for critical features, and acceptance packages supporting review and traceability.

DAZAO treats die casting as an integrated workflow rather than standalone process. Precision mold engineering supports repeatable filling and cooling; controlled die casting keeps variation in check; post-casting CNC machining finishes functional features such as sealing faces, threaded holes, and locating interfaces. Finishing options—chemical film, anodizing, plating, powder coating—are applied for corrosion resistance and visual consistency.

This approach reflects DAZAO's "Quality First, Customer First" principle and "Try once, trust forever" promise. To start a program, customers can submit a 3D model for DFM feedback, then validate with prototypes in 3–5 working days and T1 samples in 10 days. Learn more at [www.partengineer.com](http://www.partengineer.com)

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