

Light Alloy Die Casting

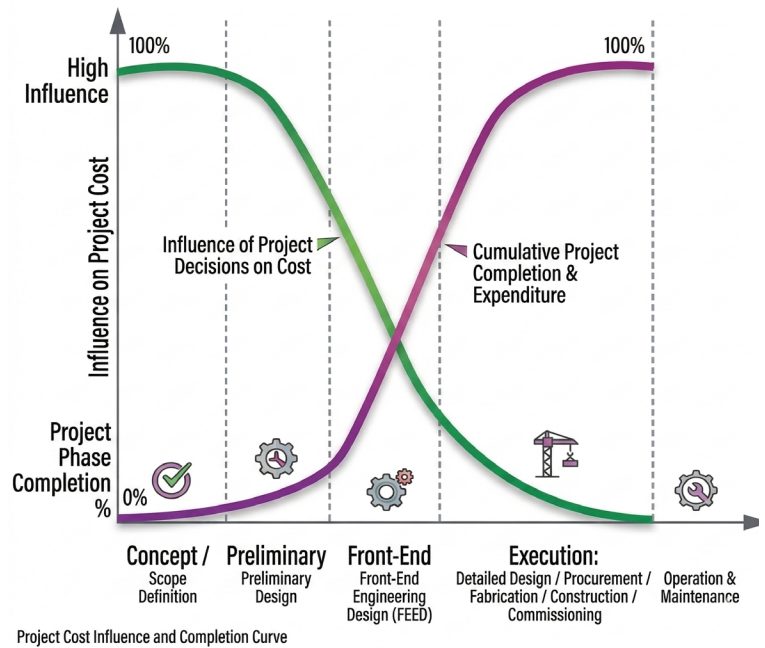
One-Stop Fastening & Connection Solutions



Industry Challenges

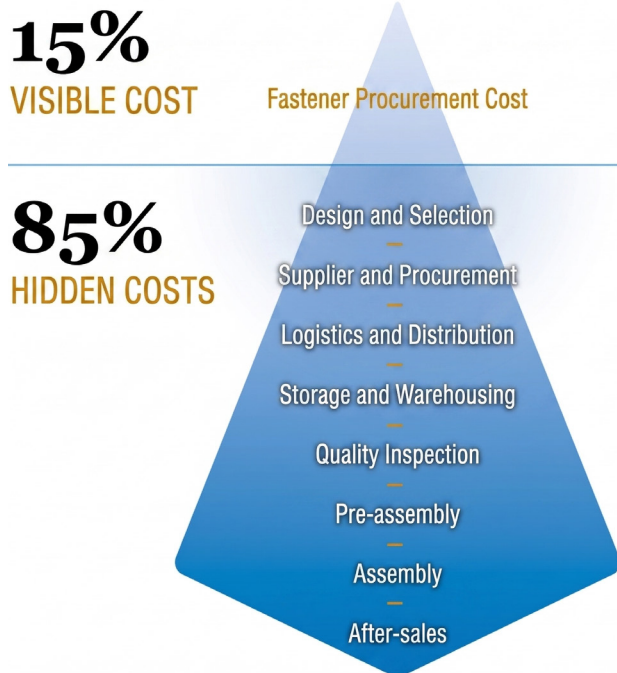
Project Cycle Cost Impact Model

In today's rapidly evolving society, the core challenge facing enterprise R&D lies in this paradox: the early-stage decision-making window is extremely narrow, yet it locks in the majority of costs; while substantial investments are made in the later stages, the cost of correcting mistakes becomes prohibitively high—resulting in a serious mismatch between risks and returns. This requires enterprises to make accurate judgments at the very early stage to address market uncertainty.



The 15-85 Law

Another challenge facing enterprises today is this: excessive focus on explicit procurement costs, while ignoring the implicit costs that account for 85% of the total. Enterprises often lack systematic coordination across design, supply chain, after-sales and other links, leading to high manufacturing costs, rework, quality and after-sales issues caused by early-stage decision-making errors—ultimately driving up the total cost of ownership (TCO) significantly.



Services Offered by ZCJ

Total Cost Optimization Expert from Prototype Design to After-Sales



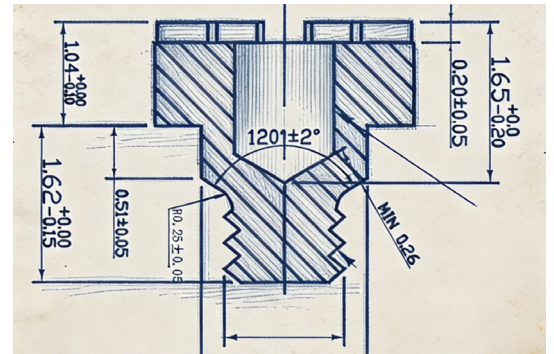
Rapid Prototypes



Professional Training



Professional Testing Services



Professional Design Consulting

CURRENT SCHEME

OPTIMIZED SCHEME

INCREASE ROOT RADIUS TO R0.8

CORNER RADIUS REMOVED

OPTIMIZATION PROPOSAL I:

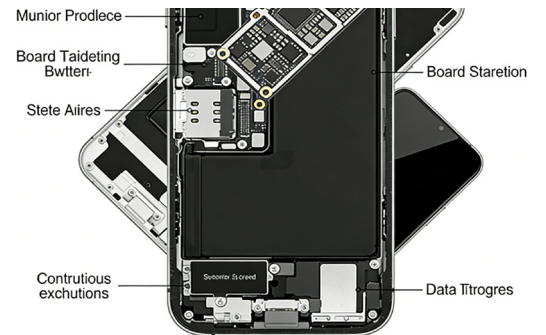
- CHANGE FROM HOT FORGING TO COLD FORGING PROCESS; FORMING CAVITY INCREASED
- MATERIAL CHANGED TO 10B21
- TOOLING COST: 78,000 RMB
- MOQ: 100,000 UNITS, TOTAL PRODUCTION 500,000 UNITS.

PROPOSAL II:

- 1: REMOVE 4 R5.0 CORNERS, MAKE INTO STRAIGHT SIDES.
- 2: INCREASE ROOT RADIUS TO R0.8.

IF ABOVE CONDITIONS AND PROCESSES ARE MET, UNIT COST REDUCED BY 0.75 RMB, TOTAL COST SAVINGS: 375,000 RMB

Continuous Process Improvement



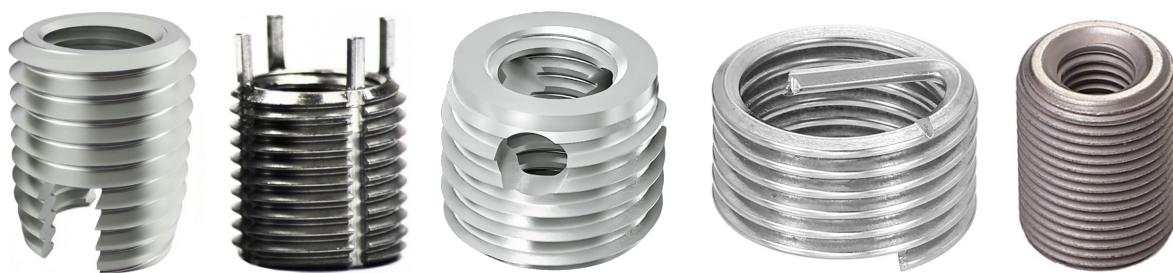
Professional Teardown & Analysis



Sealing Plugs (Expansion Type, Press Fit Type, Standard Type)



Thread Rolling Tapping Screw



Thread Reinforcing Inserts for Light Alloys (Mg, Al)



Glued Mg Alloy against Galvanic Corrosion

Thread Inserts

Thread inserts are mainly used to enhance the threaded connection performance of lightweight structural parts.

Although they do not directly form the "apparent musculature" of EVs or robots, they play a vital role in ensuring high-precision, long-life and lightweight internal structural connections.

Thread inserts made of carbon steel and stainless steel can achieve strength grades above 8.8.



Galvanic Corrosion Protection

Anti-galvanic corrosion adhesive is used when high-strength aluminum alloy bolts are connected to magnesium alloy die castings.

Its principle lies in the small potential difference between Al alloy and Mg alloy, while the adhesive coating on the bolt head provides physical isolation.



Sealing Plugs

Both the expansion type and press-fit type plugs can achieve nearly 100% perfect sealing.

Traditional plugs are suitable for locations that require disassembly, whereas the aforementioned types are ideal for applications demanding high reliability and no repeated disassembly, with a sealing rating up to IP68



Thread Rolling Tapping Screws

Thread rolling tapping screws generally improve assembly efficiency and reliability.

Only holes need to be drilled in the light alloy die-casting substrate. Screws can be directly driven into the substrate to form threads, which will deliver excellent locking performance while enhancing efficiency.



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