



Special
Feature

Special Feature: CITIC Dicastal

“There are a number of companies within CITIC Limited that are unlisted and as such don't report publicly. We have heard clear feedback from our shareholders that you wish for more information. Therefore, we've decided to spotlight one business each year. We begin with CITIC Dicastal, the largest automobile aluminium wheel manufacturer and exporter in the world.”

Chang Zhenming, Chairman's
Letter to Shareholders 2015

Revenue

16,198 / ↑7%

RMB million

Net profit

725 / ↑14%

RMB million

Assets

14,150 / ↑11%

RMB million

Wheels (sold)

37,540,000 / ↑9%

units

Castings (sold)

69,000 / ↓5%

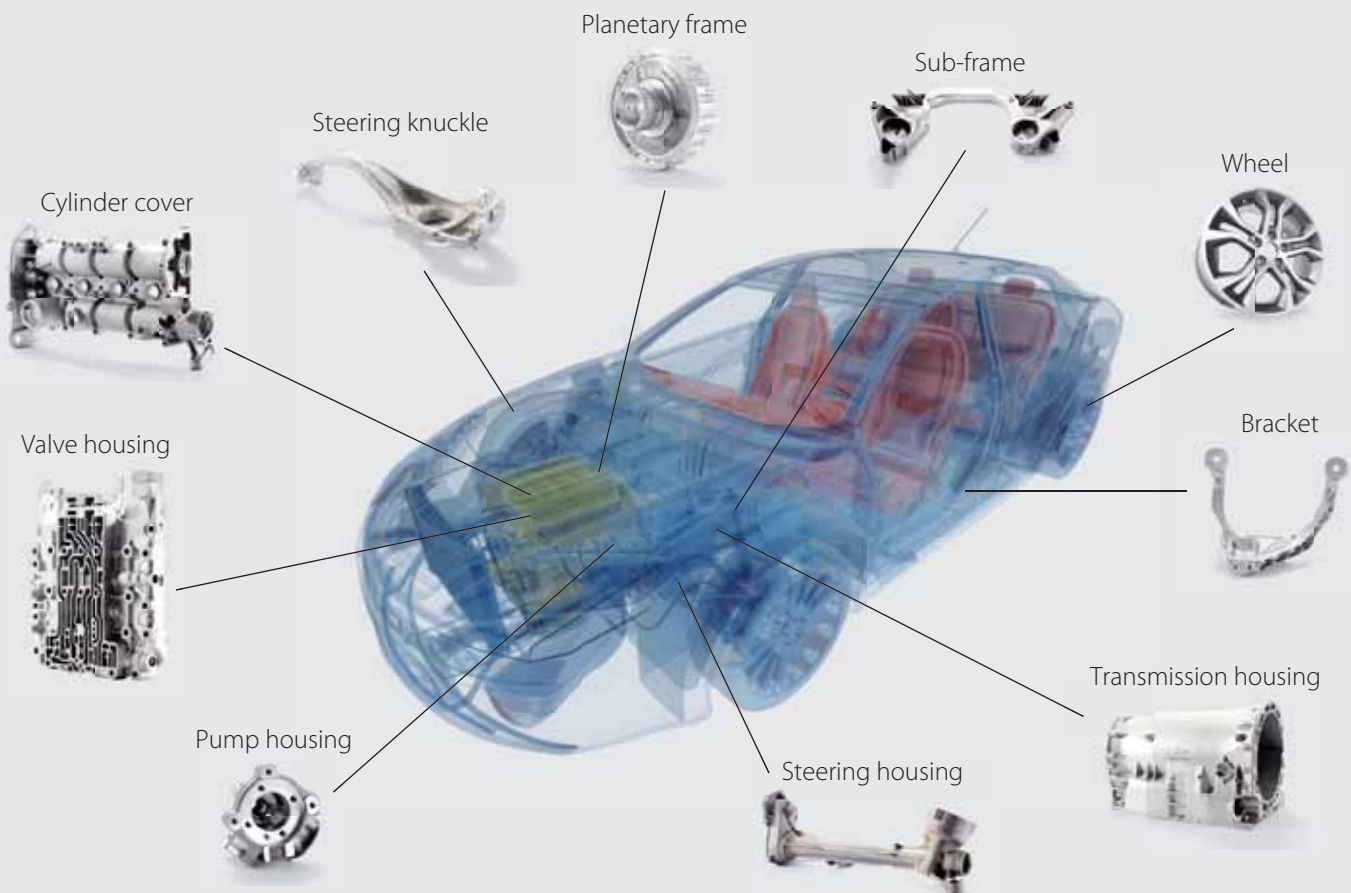
tonnes



CITIC Dicastal ("Dicastal") is the world's largest producer and exporter of automotive aluminium wheels. The company also manufactures a full range of lightweight aluminium cast components for automotive powertrains, chassis and body systems. With engineering, research and manufacturing teams across the globe, Dicastal focuses today on accelerating the development of the lightweight components and integrated processes that will drive the future of transportation in the automotive industry — and beyond.

Dicastal has 21 manufacturing bases across China, North America and Europe, and employs more than 6,000 staff around the world. A wholly-owned subsidiary of CITIC Limited, Dicastal is headquartered in Qinhuangdao, Hebei Province in Northern China.

Products





As a supplier of lightweight aluminium wheels and cast components, Dicastal manufactures products designed specifically for automakers' individual models. Products are tailored to customer orders from Europe, the US, Japan, Korea and China. As a result, Dicastal today has over 1,000 product designs.

During product development, Dicastal works directly alongside automakers in the design process for new vehicles. From initial concept development all the way through to production, this process (called "synchronous design") allows automakers' wheels and other components to become optimally integrated into the overall design of new cars. Dicastal is among only a small number of suppliers certified by automakers to deliver this service in China.

Because most Dicastal products are manufactured through synchronous design orders, the company is able to begin product development three to five years ahead of production, allowing it to optimise its production planning and margins with sales orders locked in well before launching in the market.

In the final step of quality testing, Dicastal's large range of products has also equipped it to evaluate parts for all major automakers. The company has even introduced a range of new tests in the China market. Dicastal is in fact the only supplier in China authorised to certify wheel quality for GM, Ford, BMW, Mercedes-Benz, Volkswagen, Toyota, Nissan and Mazda.

After years of designing in sync with its customers, Dicastal has built a distinct competitive advantage over its peers. Today, it enjoys long-term strategic relationships with leading automakers in China, across Asia and around the world.



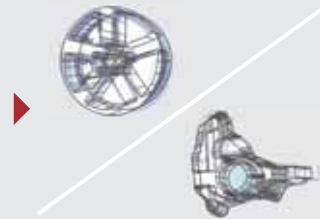
Synchronous design certification: General standards

1. Meet automaker-specific standards for manufacturing process, quality and scale. Each automaker individually certifies suppliers according to its own standards and works alongside Dicastal in synchronous design
2. Maintain advanced research and design capabilities
3. Global capacity for mass production
4. Efficient platform for global distribution and after sales support

Product development



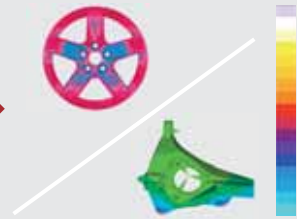
Concept Design



Three-dimensional Space



Structural Analysis



Process Simulation



Mould Development



Sampling and Testing



Series Production





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Our Journey

Mr Xu Zuo, President
a member of the founding team

Thirty years ago, anywhere you went, chances are your wheels would have been made of steel. Aluminium alloy was still uncommon for car wheels — the kind of feature found on sports cars or luxury sedans but not on your average passenger vehicle. Only a handful of manufacturers worldwide were even making them and, in China, a market didn't even exist.

We recognised aluminium for the game changer it would become. So as China continued to open up over the late eighties, we decided to go all in. Our dream: we would make this market in China and, one day, our wheels would run around the world.

Back then, the automotive sector was just beginning to develop in China, and the demand was tiny for a premium like aluminium wheels. So as a new supplier in a developing economy, setting up a plant for steel wheels was the obvious path, the easy conclusion. But we took a long view, and we bid on the potential that aluminium promised.

Any way you cut it, aluminium is superior to steel as a material for a car wheel. It's one third the mass, stronger, and more anti-corrosive. It also retains less heat and is far more formable, allowing almost unlimited freedom in stylisation. Unlike steel, it can also be better polished or



otherwise finished to such a high degree that it can give wheels that mirror-like sheen so popular today in the premium segment. Perhaps best of all, the lower mass also makes it more fuel-efficient than steel. When we got started, all of these reasons were what drove us and, at the same time, more and more automakers, to favour the aluminium wheel. And now, three decades on, aluminium wheels have become ubiquitous worldwide.

Looking back, it's easy to see our success today and forget how hard we worked, to think we saw a trend and just rode it out. But when we began, we had no blueprint, no map to follow. While the average aluminium wheel weighs about eight kilograms today, the first wheel we successfully produced was the result of thousands of tonnes worth of attempts and countless hours of research. That wheel wasn't just aluminium — it was blood, sweat and tears.

This early experience imbued in us a fundamental commitment to always keep growing — not just





commercially but technologically too. For the next decade, we worked relentlessly to build our domestic business, growing the company from a single plant into a national network and staying always at the forefront of the industry in China. Then, in 2001, we reached a turning point. China had just entered the WTO, and overnight our export opportunity had changed. Suddenly, we could compete on the global market. And true to our entrepreneurial roots, we immediately accepted the challenge and seized this new opportunity.

Our first step was to ramp up production capacity as much as possible, as quickly as possible. So we began partnering with quality manufacturers, and our ability to scale production for export around the world began to rocket year after year. Then we invested in building capacity for state-of-the-art production, along with world-class R&D. And in 2008, seven short years later, we had become the world's largest manufacturer of aluminium wheels.

In just two decades, our dream was becoming a reality. But we didn't stop there. In 2011, we diversified our product line to add a full range of lightweight cast components by acquiring a leading German auto

components manufacturer, KSM Castings Group. For us, this was a milestone because we added a whole shelf of new products to our line-up and enhanced our global position, particularly among European automakers. But for KSM too, it brought them onto the world stage. And today, we research and manufacture side by side in China and around the world.

When we were starting out, I remember looking out our building and seeing just one car parked on the dusty road. Today, I look out, and I see a gleaming lot the size of two football fields filled to the brim with hundreds of cars by all variety of automakers. I see not just the success of our own company there. But really, the growth of the auto industry in China and across the economy, the booming prosperity we've all enjoyed and helped to create.

We've come a long way, but our journey is far from over. When I keep looking out that window, look past that parking lot and train my eye on the horizon beyond, I can just about see the makings of our future. Dicastal has grown beyond automotive; we're advancing all types of transportation, and innovating mobility for tomorrow.





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Key facts on Dicastal manufacturing

Aluminium wheels

- Manufacturing bases: 13 sites, both wholly-owned and through joint ventures, primarily in China, North America and Europe
- Total annual production capacity: 43 million units
- Average capacity utilisation: 94% annually over the past three years

Lightweight cast components

- Manufacturing bases: Eight plants spread across Europe, China and North America
- Total annual production capacity: Approx. 70,000 tonnes

Business Model

Manufacturing is a capital-intensive business that traditionally has required companies to invest heavily in new production facilities in order to expand. When Dicastal decided to export its products following China's entry into the WTO in the early 2000s, the company knew its success hinged on two critical factors: the ability to scale up rapidly and globally, and the flexibility to allocate limited resources to new plants and equipment. Too much, the company could be weighed down without a budget to support other developments. Too little, and it would only be able to achieve incremental growth. Facing an unprecedented opportunity, Dicastal tried a different approach.

In 2003, through equity investments Dicastal began partnering with other manufacturers. These companies, vetted extensively by Dicastal, agreed to share their production capacity to produce Dicastal wheels. Dicastal therefore was able to leverage this network of partners to amplify its own capacity quickly, across geographies and without fixed investment. As it progressively signed on new partners and successfully built up its capacity over the years, Dicastal has confirmed that this is the optimal model for its business.

Quality control

Central to the success of this business model is the guarantee that all products are able to meet the same quality standards. Dicastal achieves this by centralising all core operations: product development, brand management, quality control, production planning, sales, logistics and after sales. The company's satellite facilities only manufacture designs developed at headquarters, based on strict allocations and in adherence with strict quality controls. Each of these manufacturing facilities has ISO/TS16949 quality certifications in addition to meeting the individual standards set by both Dicastal and major customers, such as the Volkswagen Group Formel-Q, Ford Motors Q1 and Honda Motors QAV.

Dicastal's experience has proven that centralised production augmented by a global network of support facilities provides economies of scale, frees up capital for more strategic investments and ensures consistent process and product quality wherever products are made. This has been a pivotal factor supporting Dicastal's development over the past decade. The evidence for the success of this model is the Company's continually growing sales and high customer satisfaction, shown by the increasing number of orders it receives.



Production Capacity

Currently, Dicastal's total annual production capacity of aluminium wheels is 43 million units. Over the past three years, its average capacity utilisation rate has remained above 94%.

Automobile aluminium castings are produced by Dicastal's subsidiary KSM Castings Group, which it acquired in 2011. Founded in Germany, KSM Castings is one of the largest aluminium chassis segment suppliers in the world and a leading powertrain segment supplier in Europe.

Raw Material

Aluminium alloy, a blend of aluminium ingot and a variety of other metals, is the principal raw material used in Dicastal's products. To reduce transportation costs and ensure a consistent and stable supply, Dicastal maintains strategic partnerships with selected domestic aluminium suppliers who sell exclusively to Dicastal, thereby ensuring quality as well as efficient pricing. Supply volumes and prices are set in annual purchase agreements.



Inventory

Dicastal receives orders from automakers to produce wheels and parts. The company manufactures and delivers based on customers' just-in-time (JIT) requirements and does not usually stock finished goods longer than 60 days.

Product Pricing

After automakers approve a Dicastal design proposal for a new product, the automaker then signs a framework agreement with Dicastal, including a budget for product development. At this stage, Dicastal also offers a quotation for production costs.

The pricing of a substantial portion of the company's products is pegged to the price of raw aluminium, which is generally determined based on the average trading prices on global metals exchanges during a given period in the client's region. The price is duly adjusted according to the price of raw aluminium after mass production commences (typically three to six months). Fluctuations in the aluminium price are settled during series production.



Key projects

Aluminium Wheels

Michigan manufacturing facility A US\$150 million investment, this facility will improve Dicastal's service to customers in North America. Construction began in 2014, and the facility is scheduled to become operational by the end of 2016, when it will have a designed annual capacity of three million wheels.

Lightweight Cast Components

KSM (China) Phase II An aluminium casting plant, KSM Phase II, will increase domestic production capacity. Construction began in March 2015, and this facility is targeted to become operational in 2016.

KSM (Chengdu) Manufacturing Base Representing a total investment of RMB1 billion, this facility will increase production capacity for aluminium castings. Construction is scheduled to begin in the first half of 2016, and the facility is targeted to become operational by 2018.

Integrated Manufacturing

Qinhuangdao Mould Centre An integrated facility built to enhance production quality of both wheels and castings, it will have a designed annual capacity of 2,700 sets. Construction began in 2015, and the new plant will become operational in early 2017.



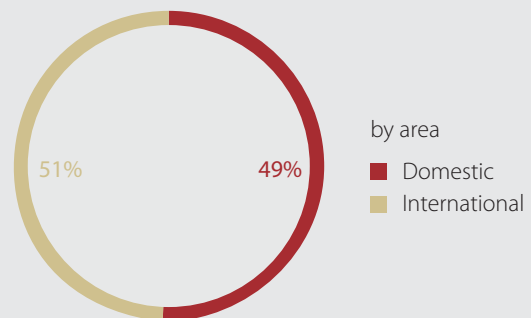
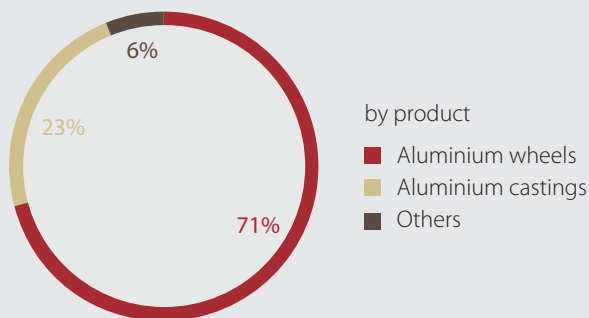
Sales & Customers

Dicastal maintains a comprehensive database that not only includes specifications for a range of automakers but also modifications for all major automotive markets. This unique pool of knowledge means that Dicastal's engineers can efficiently customise new designs for its customers anywhere.

Customer service, as well as all operations, sales, and logistics are managed at a 24/7 control centre at Dicastal's headquarters. The Company's global distribution network also fulfils orders from manufacturing sites around the world and the JIT needs of customers by keeping warehouses near their own sites of assembly. After-sales service also includes local on-site technical support and coverage for spare parts for customers.



Sales revenue of 2015



Dicastal's major customers for aluminium wheels include the 12 leading global automakers, as well as 6 Chinese automakers. Dicastal is also a global strategic partner of General Motors and Ford.

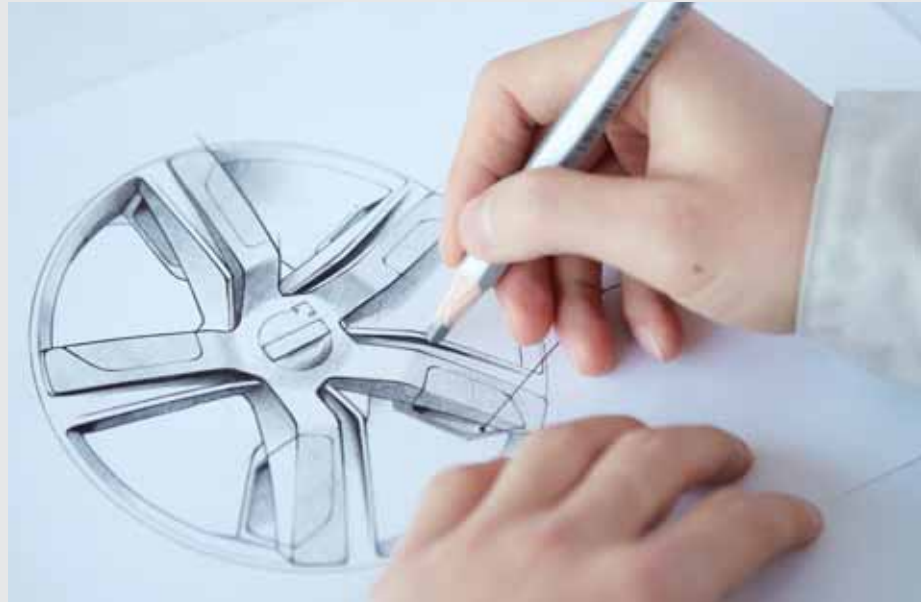
Major customers for lightweight cast components include Daimler, Volkswagen and parts manufacturers such as TRW, ZF and Bosch.



Major customers for aluminium wheels

GM	Toyota
Ford	Honda
Fca	Hyundai-Kia
Mercedes Benz	FAW
BMW	SAIC Motor
Audi	Dongfeng Motor
Volkswagen	Guangzhou Automobile
Renault-Nissan	Beijing Automotive
Peugeot	Changan Automobile





Research and Development

Working around the clock and across the globe, Dicastal's research division comprises more than 400 automotive engineers based at our headquarters and across Japan, Europe and North America.

As a leading supplier of both aluminium wheels and other automotive components, Dicastal has contributed significantly to raising production standards across the industry. It has developed a number of proprietary lightweight solutions in advanced aluminium casting, forging and casting-spinning techniques. Dicastal is also the world's only auto components supplier that integrates light-weight solutions and all-around surface engineering throughout the manufacturing process.

Currently, Dicastal's research priority is the development of advanced lightweight materials and integrated production processes that will unlock higher efficiencies in both product durability and manufacturing. In lightweight technology, for example, the company is exploring a range of new applications for magnesium alloys and carbon hybrids that decrease mass while increasing strength. It is also developing smart production systems in partnership with GE and Siemens to optimise production efficiency.

Recently, Dicastal has also begun to roll out proprietary technology that will help achieve one of its longstanding research objectives: the end-to-end integration of automated real-time data collection throughout the manufacturing process. Already featured at new manufacturing sites such as the wheel production plant in Michigan, USA, this innovative technology, which is unique to Dicastal, is expected to define a new industry standard in how aluminium wheels and components are manufactured now and developed in the future.

Beyond proprietary research, Dicastal also collaborates with several academic and industry institutions on primary studies of metallurgical and other material advancements.

Unlocking Dicastal Intelligence: The Breakthrough Moment

Mr Huang Xiaobing, Chief Information Officer



Dicastal Intelligence is a research platform that applies laser bonding, data-matrix (DM) coding and Internet of Things (IoT) to enable large-scale data collection and analytics.

Immediately after a component is moulded, we assign it a unique ID and laser it with a DM code before it continues to production. Each ID marks the entire life and journey of Dicastal products — from their formation and distribution to final assembly in all types of cars around the world.

During the production stage, sensors integrated directly into our manufacturing lines collect real-time data on every minute variance of each component. This data is then tagged to their QR code and routed to a centralised digital management system (DMS).

By now you must be thinking: ‘How is this a big deal?’

With an ID, we can quickly access targeted data on each component. This unlocks two major new channels of information. Operationally, our customers benefit from access to full traceability of each component. It also enables fast analysis and error identification during assembly and, if needed, automatic filtering and removal of the faulty parts.

Dicastal, on the other hand, is leveraging big data analytics to mine all this data so we can develop smarter production methods that eliminate more inefficiencies, improve product quality and better automate troubleshooting.



So why is no one else doing this?

For starters, you can't just stamp things onto aluminium. If you tried that, the extreme changes in temperature, pressure and all variety of finishing techniques would simply render the stamp useless. Laser bonding gets you around the heat and pressure changes.



But finishing presents other challenges, so we had to find just the right spot for each code. We've spent years developing the models we now use to precisely place codes in unique locations on each product design. We have also derived a specific way to collect data in real time without compromising efficiency on our existing production lines. Already, Dicastal Intelligence is integrated into a third of our global production capacity for aluminium wheels.

Breakthroughs like Dicastal Intelligence are helping to advance the broader revolution in smart production taking place today all around the world. This is a story we share, and at Dicastal, our commitment is always to keep bringing that future closer, one wheel at a time.