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## YIZUMI at GIFA 2019

YIZUMI H Series High-end Cold Chamber Die Casting Cell Overseas for the First Time

YIZUMI Awarded Forbes Asia's 200 Best Under A Billion 2018

2018 YIZUMI Die-casting Machine's Overseas Business Grew Steadily



25-29 June  
Düsseldorf, Germany  
YIZUMI Booth: Hall 11, G04

PRECISION  
and  
PRODUCTIVITY  
MAKE the  
DIFFERENCE

YIZUMI 伊之密



### Enterprise P03

YIZUMI H Series High-end Cold Chamber Die Casting Machine  
High Performance, New Paradigm, Full Integration of Europe and US Standards

### Customer Story P17

YIZUMI Die Casting Machines at Norlys, Poland  
A modern company combining rich tradition with innovative engineering ideas

YIZUMI 4500T die-casting cell automatic production system at China Sinotruk

### Product P33

To accelerate this digital revolution Yizumi's Solutions for IIoT and the smart factory

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Yizumi Factory Outlet

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GIFA 2019 Special

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## Believe What You Have Seen in the Light during Dark Times

The complexity of the situation in 2018 was beyond the expectation of many. The trade tensions between China and U.S., U.S. reimposing sanctions on Iran, real estate markets cooling across the nation, and stock market tumbling - all these factors bring uncertainty to the manufacturing industries in China.

It resembles, and in some dimensions exceeds, in important respects the financial crisis the swept the world merely a decade ago.

What happened in 2008 have not been forgotten by the people at Yizumi. Starting from the third quarter, China's economic growth experienced an accelerated decline. By November and December, the total value of imports and exports showed negative growth. A large number of factories in the Pearl River Delta and Yangtze River Delta regions closed down with approximately 20 million migrant workers returning home early. Right before the crisis broke out, Yizumi was planning a new phase of plant construction. The outbreak of the crisis made the management wonder whether the investment should be delayed given the deteriorating economic conditions. The board decided to continue. It later turned out to be a decision, although risky at the time, that helped the company to seize the opportunity and played a significant role in the economic upswing during the late 2009, early 2010 and subsequent productivity growth.

Despite the macroeconomic cycles, the economy as a whole always advances forward. A visionary company should integrate strategic and long-terms goals when planning its future development rather than being deterred from moving forward by temporary difficulties.

While Yizumi creates its strategic plans for the future development at least three years in advance, such plan will not be drastically modified according to the short-term volatility in the macroeconomic environment. Regardless the uncertainty in the overall market environment in 2019, we remain confident of planning for long-term growth based on the comprehensive assessment of various international, domestic, industrial, conditions and external factors as well as the economic standing of the enterprise itself. Yizumi will continue increasing its investment in the field of product technology development and manufacturing to optimize its market position.

In the actual practice, the enterprise will maintain a healthy long-term development and more importantly the healthy KPI in its operation. Only if the key performance indicators such as technology R&D, production efficiency, AR management, and market development strategy remain at a healthy level, the enterprise then can improve its risk resistant capacity.

After all, the competitiveness of manufacturing enterprises in the market relies on their products and services. Regardless of how the macroeconomic environment changes, it all comes down to their capabilities in technological innovation and manufacturing. Yizumi has established a R&D center in Germany to stay connected with the advanced European technology and processes as well as collaborating with the Chinese engineer team to promote product and technological innovation.

In the manufacturing field, we have launched the lean production project, reconstructing the entire manufacturing processes to form a more productive and lean organization model, realize rapid delivery, and fulfill larger production capacity needs with less inventory. In the meantime, we will strive to greatly reduce the volatility factors that impact the product quality during manufacturing by standardizing the primary processes of the manufacturing machinery, and enhance the average productivity per capita.

We don't have a definitive answer to the future economic trends. However, the experiences have told us that the uncertainty may well lead to the next major reform. The economic downturn today could be the opportunity of another transformation and upgrading of the industry. No winter lasts forever, no spring skips its turn.



**YIZUMI at GIFA 2019**  
YIZUMI Booth: Hall 11, G04

# YIZUMI H SERIES HIGH-END COLD CHAMBER DIE CASTING MACHINE

High Performance, New Paradigm, Full Integration of Europe  
and US Standards



Innovation, precision, productivity, stability, and safety are the timeless commitment of Yizumi to superior quality of the H series products. To achieve the goal of becoming a world-class enterprise in the field, Yizumi launched the H series high-end cold chamber die casting machine at the 10th CHINA DIE CASTING held in July 2015 in Shanghai. Because of new product's superb performance, this new product has been well received by both domestic customers in the past 4 years. At GIFA 2019, Yizumi officially introduces the H series high-end cold chamber die casting machines to the customers worldwide.

By integrating more than a decade of experiences the company has in R&D and manufacturing of die casting equipment, the H series die casting machine adheres to the high standards of HPM in material selection, and is a product built to meet European standards as well as conforming to EU and US benchmarks. Below are more details of this new product.

## Improved Stability

H series die-casting machine has further improved the machine stability.

I. The injection section retains Yizumi's remarkable non-floating piston system to ensure the stability of the overall machine performance while upgrading the low speed control mode to accumulator control from the previous system pressure control approach to effectively eliminate product defects such as air bubbles caused by the fluctuation of the system pressure.

II. The injection stroke adopts contactless magnetic scale control to replace the original proximity switch control method and allow you to set speed directly on the operation screen to make the injection position control more accurate.

III. Optimized electrical control system and separated wirings of strong and weak currents effectively avoid the interference of electromagnet field generated by the strong current circuit on the weak current circuit. Additionally, the

use of all-in-one electric cabinet leaves more space for the auxiliary equipment. This not only increases the cooperation quality between the machine and other auxiliaries, but also guarantee to provide a cool environment while its operating, as well as to benefit in increasing the machine stability and parts lifespan.

IV. Installation of flow adjustment valve in the clamping cylinder section to accommodate the needs of different products for clamping cushion.

V. Through improved hydraulic system and cooling system, it effectively reduces the working temperature of hydraulic oil and extends the service life of hydraulic components, seals, and hydraulic oil. (The testing under the same condition indicates that this improvement reduces the operating temperature of the hydraulic oil by 4-6°C).

VI. Optimize the product structure and improve the overall machine rigidity by adoption of the design concept and material standards of North American HPM.

## Improved Productivity

Based on Yizumi DM standard machine, the H series die-casting machine reduces the dry cycle time by 15% -20%. While continuing to maintain the high product yield, it greatly improves the productivity, delivering a better return on value to the customers.

## Strengthened Safety

Moreover, the H series die-casting machine has further strengthened the operation safety.

1) The push-pull protective safety door added in the injection section is easy to operate and effectively prevents injuries caused by the aluminum flash case;

2) The mesh safety toggle cover door in the clamping section will prevent personnel from injury due to accidental access during the operation of the machine;

3) By replacing the traditional manual operated unloading valve with the automatic unloading device in the accumulator, it simplifies the operation while providing better safety assurance to the operating and maintenance personnel;

4) The addition of observation window to the front safety door facilitates the monitoring of production process by the operator;

5) The small protective separator added between the sprayer and the tie bar prolongs the service life of the sprayer by effectively protecting the sprayer's pipeline from corrosion caused by the high temperature gas produced during injection.

## Human-centered Design

The H series die-casting machine has also made significant improvement in operational friendliness and design details. For instance, it is equipped with the larger and more responsive Siemens 10-inch color touchscreen; centralized design of grease fittings to facilitate the daily maintenance of the machine; adoption of high-end reliable aviation grade socket for core.

In addition to a comprehensive upgrade in technology and configuration, Yizumi has also divided the H series into three configurations: standard model, intelligent monitoring model, and smart closed loop control model, to meet the requirements of different customers.

In the next decade, as Yizumi's star product launched in the market, the H series die-casting machine will not only bring customers a better product experience and return on investment, it will also help the customers to gain a competitive edge in the fierce market competition.



## YIZUMI at GIFA 2019

YIZUMI Booth: Hall 11, G04

# Highly Versatile Product-extraction and Slag-release Robotic System

In die-casting industry, it's a common practice to produce a variety of die-casting products with one die-casting machine. As a result, molds need to be changed often. Therefore, other than the ability of replacing manual operation for a better working environment, the robotic die-casting system should also be able to combine the versatility and stability according to actual circumstances to meet the production requirements of different products to the maximum extent. This is an actual need of customers, as well as a test to the system stability and the design strategy. Under such circumstances, the operation stability and adaptability of the product-extraction and slag-release robotic system inevitably become the choice of customers.

Yizumi product-extraction and slag-release robotic system is mainly composed of an extractor, along with the peripheral equipment, product integrity detection and confirmation device, slag-release device, conveyer, and safety guard.

### I. The Body of the Extractor

In the light of the die-casting work environment, Yizumi employs the KUKA/ABB / FANUC robot specially designed for die-casting applications with the highest protection level as its product extraction robot. In the meantime, to compensate the mold opening error of the die-casting machine that may cause the biscuit to break off from the die-casting product, the repeated positioning accuracy of the robot can be up to 0.02mm. It is also equipped with the soft float function to ensure the clamping accuracy.

### II. Extractor Robot clamper

While high quality of the robot system is essential, robot clamper is one of the key components that determine whether the product can be held securely. Yizumi's robot clamper adopts Japanese design concept with independent patent. To meet customers' demand, Yizumi's product offers a clamping range that can hold various die-casting products with a biscuit less than  $\phi 170$  in diameter. Manually change the claw jaws for different products to fulfill the need of picking up different die-casting workpiece. Easy to operate, easy to use.

### III. The Valve Box and Pipeline System of Extractor

The robot clamper must have a wide clamping range with strong and powerful clamping force. Equipped with the product-extraction robotic control system - pickup valve box, Yizumi's robotic arm offers a maximum clamping force of 5970N. The pickup valve box mainly controls the opening and closing of the robot claw. It consists of air filter, pressure relief valve, residual pressure relief valve, pressure switch, ball valve, and air blowing control solenoid valve made by SMC/CKD and other well-known brand pneumatic components manufacturers to guarantee the steady and powerful operation of the product-extraction system.

### IV. Machine Frame for the Product-extraction System

As robots are in the state of constant motion during the production process and have to undertake the vibration of die-casting production, the product-extraction robot system must have a solid foundation. To secure the robot, Yizumi uses bolt connection to ensure that the pickup robot frame has a stable base. It is mounted to the floor through expansion bolts or welding approach and requires the ground to have a 300mm thickness of concrete.

### V. Product Detector

In order to prevent incomplete extraction of die-casting products due to other causes that may damage the die-casting mold during clamping, the die-casting products must undergo a detector over the integrity of the product biscuit and slag to determine if the extracted product is incomplete. The detector approach can be either contactless photoelectric inspection or contact inspection. Depending on the exterior profile of the product, you may increase the inspection spots and adjust the inspection positions. To prevent pipeline scalding, Yizumi offers as a standard feature the blowing air and pipeline protection devices.

### VI. Slag Remove Device

All die-casting products have slag that need to be removed manually which is labor intensive. A robotic slag-release device can remove the slag efficiently. The device has the versatility to remove the slags for the vast majority of die-casting products.

### VII. Product Conveying Device

The product conveying device is used primarily for moving the die-casting products. The product conveying device commonly seen is either belt conveyor or chute conveyor. The standard Yizumi product conveying device is: the positive drive belt conveyor. Depending on your needs, it can come with a cooling fan. Equipped with photoelectric sensors, it can detect and prevent product stacking or collision. The use of frequency conversion motor and frequency inverter makes the moving speed adjustable. Improve the machine operation safety with a moment limiter.

### VIII. Safety Fence

As the moving speed is quite fast in the robotic operation, safety fence is the standard equipment for the robot system. Safety fence is generally composed of electronic control measures including a safety door latch, on-site wiring, installation,

and safety detection, alarm, and reset device. The primary purpose is to prevent workplace accident and provide protection to production safety.

### IX. Control System Cabinet

Yizumi's robotic system employs the control box made by Mitsubishi or Siemens PLC, and standard color touchscreen, offering features such as fast information viewing, various parameter settings, and alarm detection, etc. The electrical components made by Mitsubishi, Siemens, Omron, and other world renowned brands are used to ensure the reliability of the system.

In addition to its versatility, the product-extraction and slag-release robotic system is also expandable and upgradeable to have features such as product cooling, trimming, and marking.

As a unique die casting machine and integrated robotic system supplier, we can offer customers who are in the die casting filed better robotic system solutions to fulfill customers' production demands on multi-functional and multi-leveled intelligent automatic system.



# Yizumi Selected among Asia's 200 Best Under A Billion by Forbes

# Forbes Asia



Yizumi has earned a spot on Forbes Asia's Best Under A Billion List 2018. Yizumi Deputy Managing Director Yu Zhuokun attended the forum and awards dinner held by Forbes Asia in Japan with awardees from other small and medium sized enterprises on the list.

authoritative media since it appeared on the list of China's 50 Most Innovative Companies issued by Fast Company in 2016.

Forbes Asia's list of 200 Best Under A Billion Companies focuses on 200 major listed companies with annual revenues of less than 1 billion US dollars in the Asia Pacific region. The candidates must gain annual revenues between \$5 million and \$1 billion with positive profits and have been publicly traded for at least a year. This year, 24,000 qualified candidates are screened on sales growth and earnings growth in the past 12 months and over three years, and for the strongest five-year return on equity. In the end, 200 best small and medium-sized listed companies in the Asia-Pacific region make up Forbes' list.

Yizumi is qualified to enter the list with sales of \$294 million, profits of \$41 million and a market value of \$550 million.

It is worth noting that Yizumi has once again earned the recognition of international



Deputy managing director of YIZUMI, Mr. Yu Zhuokun ( middle ) receives the award from Christopher Forbes



As one of the few equipment manufacturers in the list, Yizumi has always been at the forefront of the industry, constantly innovating and boldly expanding business. So far it has developed into an all-rounded molding equipment manufacturer. At the same time, Yizumi introduces innovative management ideas to support its rapid growth and provides customers with high-quality products and better user experience.

After Dr. Hans Wobbe joined Yizumi as chief strategy officer, Yizumi initiated the connection with European cutting-edge molding technology, particularly Germany's advanced technology and ideas and has been constantly improving the product design and manufacturing capability to provide technologically-leading, highly cost-effective turnkey solutions for global customers.



## 2018 YIZUMI Die-casting Machine's Overseas Business Grew Steadily



Global operation is an important development strategy of YIZUMI. In 2018, the overseas market of YIZUMI has also maintained steady growth. The die-casting machine division is one of the main businesses of YIZUMI. The overseas market has a record high sales volume, and the new order volume has increased by 70%. With the cooperation of 3 overseas branches and 16 overseas quality agents, YIZUMI die-casting machines have been sold to 33 countries and regions around the world, with export sales ranked first in China for six consecutive years.

### H series cold chamber die casting machine is fully introduced into overseas markets

The products of YIZUMI Die Casting Machine mainly include cold chamber die casting machine and hot chamber die casting machine, which are mainly used in the automobile and motorcycle industry and home appliance industry. In recent years, a series of new products such as H-series cold chamber die-casting machines have been fully introduced into overseas markets, and have won continuous recognition from

customers with their high performance and high standards. Among them, the small and medium tonnage H series products, energy-saving system can save 30%-50%.

The sales volume of heavy-duty die-casting machines of YIZUMI 1000T and above is also increasing. In 2018, YIZUMI heavy-duty die-casting machine achieved great results.



## Overseas

YIZUMI H series 4500T die-casting machine has successfully entered China Sinotruk, and is equipped with peripheral robotic automation system, mainly producing heavy-duty truck gearbox housing; the entire 4500-ton automatic die-casting cell can realize product removal, part inspection and die-casting mold Spraying, preheating and inlaying of cylinder liners, cooling of products, removal of product runners, marking, conveying and subsequent inspection and packaging of products. In addition, HPM II-4500-A has successfully produced 125-pound truck gearbox casings at its customer-Walker Die Casting, a well-known auto parts company in North America. The customer evaluated that "YIZUMI's die-casting machine is running well and the equipment is close to 100% stable".

### New products and new technologies are recognized by customers

In terms of new products, YIZUMI vigorously promoted the new thixomolding machine. Following the successful development of the thixomolding machine UN650MG, YIZUMI has made breakthroughs in the development of heavy-duty magnesium alloy molding equipment.

In 2018, the 1,250 ton magnesium alloy thixomolding machine, which was developed by YIZUMI Germany and the engineers of YIZUMI headquarters, was successfully delivered to a Germany customer for the production of large magnesium alloy structural parts. This is also the world's largest tonnage semi-solid magnesium alloy thixofforming machine.

Semi-solid magnesium alloy injection molding machines are widely used in thin and light 3C products such as mobile phone support boards, protective cases, and computer casings. YIZUMI' S thixomolding machine technology not only can produce these products very well, but also promotes the application of magnesium alloys in large-sized magnesium alloy products such as automobile parts. With the rapid development of new energy vehicles,

YIZUMI' s new thixomolding machine will also have a broader development space.

The trend of steady growth has made YIZUMI more confident in the development of 2019. YIZUMI is committed to becoming a world-class company in its field, providing quality molding solutions to customers around the world. In the future, YIZUMI die-casting machine division will continue to promote the globalization strategy, aiming at the early development of key developing markets, increasing the development of new markets and new customers, and implementing the resident mechanism of engineers in strategic markets to provide customers with more excellent and fast service.

### About YIZUMI

A ChiNext-listed company, Guangdong Yizumi Precision Machinery Co., Ltd. was founded in Guangdong, China in 2002. It has spread its wings all over the world. Specializing in the injection molding equipment manufacturing industry, it offers a one-stop solution as an equipment supplier, integrating the functions of design, research and development, manufacturing, sales and customer service.

As a model enterprise in the equipment technology arena, YIZUMI has currently

established various commercial divisions, namely, injection molding machine, die-casting machine, rubber injection machine, high-speed packaging machine and robotic automation system, realizing diversified development in the equipment manufacturing industry. Under the global operation, the global manufacturing bases of YIZUMI span across the whole of China and outside of China. Besides, the total land area occupied is nearly 300,000 sq. and it has more than 2,700 employees.

YIZUMI has introduced IPD product integrated R&D management mode to improve product upgrades; continuously increased investment in innovation, and achieved fruitful results in scientific research. So far, more than 180 technical patents have been obtained. YIZUMI established a research and development center in Germany, connecting China and Europe molding technology, strengthening international process application innovation, and becomes a member of the IKV and AZL of the RWTH Aachen University.



# YIZUMI-HPM Participates in NADCA Die Casting Congress & Exposition 2018

## NADCA 2018

The NADCA Die Casting Congress & Exposition 2018 opened at the Indiana Convention Center on October 15. At this trade fair, YIZUMI-HPM displayed and sold a II-900-A Cold Chamber Die Casting Machine, which drew the attention of many visitors, including HPM customers as well as its North American competitors. The II-900 ton machine was sold to Pace Industries. Also on exhibition was the Allison 10 speed transmission housing 125 pound casting produced on the HPM II-4500 ton machine which was sold to Walker Die Casting. In addition YIZUMI-HPM exhibited a 400T linkage (partial) and rebuilt II-600 Shot end showing its capability of supplying replacement parts on all former HPM machines, and its ability to retrofit shot control improvements.

The Die Casting Congress & Exposition, held by North American Die Casting Association (NADCA), is the largest specialized trade show for the die casting industry in North America. Only professional visitors are invited to the event and many of them have the decision-making authority.

This year, the trade show was held October 15-17 at the Indiana Convention Center in Indianapolis, with the participation of more than 120 exhibitors. As a senior member of NADCA, YIZUMI-HPM obtained a 2000 sq.ft (nearly 186 sqm) booth at this year's event.

Significantly, the II-900-A cold chamber die casting machine, a high-end product from

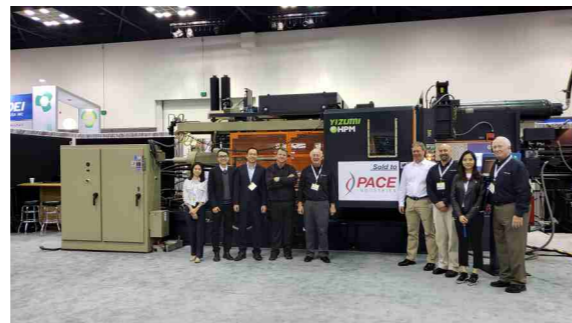
YIZUMI-HPM, was recognized by most North American customers as achieving state of the art shot end performance. The II-900 machine highlights were shot speeds of 360 inches/second, and pressure profiling of the intensifier. In addition shot acceleration time from min to max was 20 ms.

Bill Flickinger, Vice Chairman of YIZUMI-HPM says: "HPM has always been known as one of the leaders in producing die cast machines in North America. YIZUMI-HPM has focused on shot end development work during the last 3 years. This demonstrates a significant improvement in technology." The improved shot end performance combined with our well known and proven clamp design makes the YIZUMI-HPM II model machines one of the best in the world.

The II-900 ton is a high performance general purpose machine capable of running both aluminum and magnesium. Targeting North American customers; the machine conforms to all required North American safety standards and also has many advantages including stable operation and high reliability.

HPM North America Corporation, wholly owned by Guangdong Yizumi Precision Machinery Co. Ltd., has been closely watched by die cast parts producers since it returned to the industry in March of 2011. In June of 2017, the company successfully shipped the largest die cast machine in North

America, a 4,500-ton Die Casting Machine to Walker Die Casting, who is a well-known North American truck and auto parts manufacturer. These recent achievements also indicate customers' trust in HPM products.



YIZUMI booth at NADCA 2018

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Bill Flickinger believes the future is very promising: "We received many inquiries during the NADCA show for new machines. Although 2018 die cast machine shipments appear to be at a lower level than 2017, it appears that machine sales and shipping activity for 2019 will be better. HPM will continue to develop its shot control technology, increasing speeds to 400 inches/second and continue to improve response times."

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## YIZUMI Automation Solution Makes India Debut at ALUCAST 2018

India's biggest exhibition for the Aluminum Die Casting Industry, ALUCAST 2018, has opened on 6th December at IEML, Greater Noida, U.P. (DELHI-NCR). At this event, YIZUMI displayed its Robotic Automation System for the first time in India, and also on display is a YIZUMI DM400SM Die Casting Machine.

YIZUMI is the only exhibitor at the event to display a complete die-casting cell. YIZUMI cold chamber die casting machine DM series are suitable for different industries like auto parts, 3C products, etc. YIZUMI DM series has stable professional performance, high quality, and professional performance and meets different customers' needs. For India market, YIZUMI provides India package which is much more suitable for India market.

Robotic Automation systems of YIZUMI apply for both die casting sector and non-die casting sector, which can be used for different complicate processes such as insert parts supplying, inserting, extracting, cooling and trimming, etc.

The application solution of YIZUMI die casting machine and its Robotic Automation System

can provide more efficient production, stable quality, safe and reliable performance for customers worldwide.

The die-casting industry which accounts for around 7% of India's GDP, is one of the biggest in the world and there is space for growth every year. Around 70% of the die-casting parts produced in India, which is digested by three major industries: motor cycles, auto mobiles and power supply. As the domestic demand in India continues to increase, the market for the die-casting industry will continue to grow.



Since entering Indian market in 2010, YIZUMI has been deeply committed to provide good products as well as good service to local customers. In 2013, YIZUMI set up his own Indian Service Centre in Pune. The good service from YIZUMI's own technical service center and agent in India is one of the main reasons that more and more customers keep buying machines from YIZUMI.

ALUCAST 2018 which is a biennial international conference and exhibition will run through 8th December. Visitors can experience the entire YIZUMI DM400SM Die Casting Automation Solution and much more of YIZUMI's product portfolio at its booth No.HALL-14-HALL-15C19.

# ALUCAST 2018



# YIZUMI Successfully Delivers DM2000HSM Die casting Machine to Indian client



Assembly of 2000H die casting machine completed

YIZUMI, a ChiNext-listed company, has successfully shipped a set of DM2000HSM Die casting Machine to an Indian client, getting another great achievement in India.

As one of the leading enterprises of the die casting industry in India, this client develops and manufactures high quality aluminum parts for customer vehicles. For such a good supplier for the top brands vehicles in India, using numbers of European big die casting machines already, why chose YIZUMI heavy-duty machine this time?

### 1. Good performance and good quality of YIZUMI products:

With rich experience in die-casting machinery segment, YIZUMI is an equipment

manufacturer for first-tier parts suppliers for many well-known automobile companies of China and other countries .

When YIZUMI launched the high-end H series Die-casting Machine 2 years ago, the good performance and stability have won market recognition quickly, especially from the high requirement customers in China and Europe.

As a result, YIZUMI has already sold out numbers of H series machines up to 4500ton, which is the biggest tonnage produced in China. It is believed that YIZUMI H series machine can tremendously improve productivity and quality of the products at customer side like the European machines.



### 2. Good and fast service:

From 2010 when YIZUMI begin the sales in India, YIZUMI is well known for its good service. But YIZUMI still tried to do better for customers,so in 2013, YIZUMI set up his own Indian Service Centre in Pune, which can provide faster service in south-central region of India.

From north to south, YIZUMI's comprehensive service network and pplication knowledge across segments have optimized the production with a very high up-time. YIZUMI's after-sale service has become a calling card for the company, widely recognized by customers in India.

The good service from YIZUMI's own technical service center and agent in India is one of the main reasons that more and more customers keep buying from YIZUMI. But YIZUMI always keep thinking how to do

better. In 2016, YIZUMI Indian factory began its operation in Ahmadabad, Gujarat.

In only one year,YIZUMI Indian factory already produced and sold out more than 100 sets of injection molding machines. Without any doubts, YIZUMI Indian factory will do more and support better to die-casting customers in the future as well.

### 3. High technology and huge potential for future business:

In recent years, Indian market has seen a huge increase in quantity of customer vehicles, and there are more demands for structural parts.

Structural parts are using high pressure die-casting to produce. It not only can reduce production cycle time, but also reach precision forming and lightweight design requirement, lowering production costs. Thus, using die casting technology to produce structural car parts can increase competitive advantages. That is why it is very popular in European die casting industry now.

But at the same time, there are much higher requirement on the ability of turn-key solution including machine, mold, and process. At this point, YIZUMI has showed its different ability compared to the other Chinese suppliers.

YIZUMI has paid big attention to investment in R&D every year as well, not only in machine improvement, but also in new technology and total solution, which can support customer much better, enable them to produce good product now but also have the ability to catch up with the future trend.



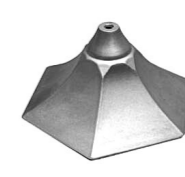
# YIZUMI Die Casting Machines at Norlys, Poland

A modern company combining rich tradition with innovative engineering ideas

Norlys is a Scandinavian company with more than 60 years of tradition in the production of outdoor lighting. The company's production plant is located in the south of Poland-in Nowy Sącz. All the products are manufactured throughout Europe in accordance with ISO9001 quality system certifications. With a global sales network, Norlys' products are available to customers from Europe, Asia, Africa and Australia.

25 years ago marked the new history of Norlys in Poland, in Nowy Sącz where the main production plant was placed. The company has its own foundry of aluminum, press department for the production of steel housings, hot-dip galvanized guns, machining department comprising of CNC machining, powder painting and assembly departments.

Norlys uses an innovative machine fleet in a production plant with an area of over 15,000 sqm. The foundry is one of the most modern of its kind in Europe. Permanent investments on the premises allow the company to maintain production processes at the highest level.



## Cooperation with YIZUMI Die Casting

The high pressure foundry of Norlys was founded at the beginning of 2012, specializing in the production of complex die-casting aluminum alloy parts and CNC machining of luminaires, lighting fixtures, parts for the automotive industry and others. Norlys have modern pressure machines with clamping force 300, 400, 550, 650, 660, and 840T, and will eventually have 8 die casting machines.

The goal of Norlys is to achieve highest quality of the products offered, according to the requirements and expectations of the customer. So Norlys always chooses their partners carefully and always cooperates with the best and proven suppliers.

The Yizumi die casting machines at Norlys are: DM 300 Standard and ARC 650 with real-time control, with reliability and stable process. They work well with peripherals such as the ABB robots, the POMAC spraying unit. And the low-pressure casting device makes these machines high-end devices.

Yizumi machines produce parts of casters for the automotive industry but also lighting fixtures.

## YIZUMI gaining strength on European market

Favorable price with real-time control and high quality strengthens the YIZUMI brand on the Polish market. Noly's believes that the experiences gained from several years of cooperation with the YIZUMI, as well as the Polish representative BM Trade, are the result of mutual benefit.

Yizumi adapts its offer to the European customer, and Noly's is gaining experience in handling these machines and high-quality casting. Any problems are quickly explained by mobile applications with service in Poland and in China. The flexibility of adapting the machine options to the individual needs of the customer is also quickly performed by service in Poland.



# YIZUMI 4500T die-casting cell automatic production system at China Sinotruk

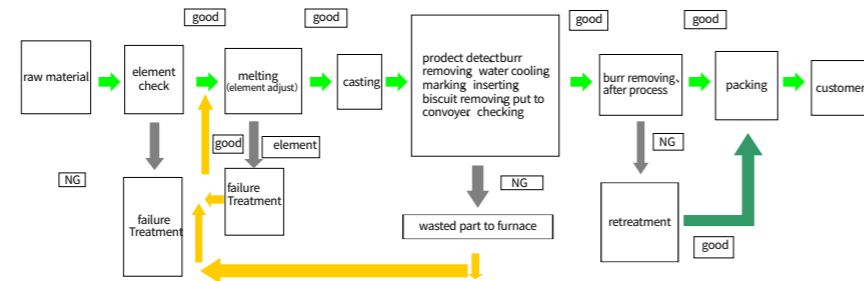
Yizumi DM4500 H series die casting machine has entered CHINA NATIONAL HEAVY DUTY TRUCK GROUP CO.,LTD (SINOTRUK) with Yizumi robotic automation system. This is the Heaviest die casting machine of Yizumi in Chinese market. It is the first time that YIZUMI equipped fully robotic automation system to 4500T die casting machine. Yizumi R&D team has risen to the challenge. It took only 5 months to provide the complete set of automatic production system to customer from understanding customer's needs to designing and making solutions.

## Heaviest automated die-casting cell in China

This 4500T automatic die casting island can achieve functions such as product extraction, integrity detection, mold spraying, part preheating and insert, product cooling, product runner trimming, marking and transferring.

## Spraying system

It uses ABB robot that is special for casting. The system adopts advanced Japanese release agent and spraying technology. The sprayer nozzle is designed by YIZUMI, which is external mixing type and stable cone angle spraying. The volume is adjustable for each nozzle, which is 0-600ml/min, along with 3 circuit control system, which has strong effective atomization and well balance mold coating.

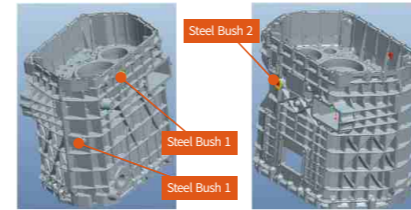


4500T



## Product Extract and Insert System

Due to the large land occupation, many peripheral equipment and huge casting, product extract and insert ABB robot has been used to save more room. The operation radius of this robot is 4m with the installation of the gripper and the insert arm. The effective load can reach 325Kg.



## Difficulties for Product extraction and steel bush inserting system

Difficulty 1: What the 4500H produce is the transmission housing for heavy truck, which is big and heavy. If it uses the normal way of product biscuit gripping, the connection area between runner and product may be deformed or even cracked. It will be impossible to move on to the other processes such as marking, runner trimming and so on.

Difficulty 2: It is required to insert two different bushes, one is for the moving mold, and the other one is for the fixed mold. As each of the cylinder liner insert point is different, it will bring a huge challenge to the design of insert gripper as well as insert movement commissioning.

In order to overcome these difficulties, YIZUMI technical team has gone through a lot of arguments. They have designed a compatible gripper which is able to insert and extract the product. When the die opened, it will take the part out of the mold by gripping the product body directly. The contact surface of the gripper uses special material, which can protect the product body away from damages. After the product is removed and detected, the robot sprayer will come down to the mold area and start spraying. Meanwhile, the extractor robot will continuously finishing the processes such as burr removing, cooling, marking, grab the pre-heated insert part and so on. After spraying, the robot gripper will pick up the

cylinder liner and insert to both movable mold and fixed mold. As the gripper is specially designed and the movement is interference avoidance, the workers only need to change the programs while changing the casting products, which is more convenience. By using YIZUMI designed and produced insert conveyer and pre-heated devices, the workers only need to do the feedings regularly.

## Product cooling

It adopted two station cooling water tanks, one for cooling, and the other one for drying. Meanwhile, the extractor robot can continue other duties.

## Burr removing

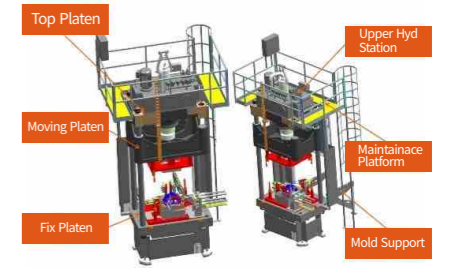
It uses combined device for burr removing. First of all, it uses trimming press to remove the connected burr. Secondly, the collision device and air hammer will be activated to remove the remained burr. This function has strong applicability, which can skip the manual removal process.

## Marking device

It has adopted air marking device, which is able to store over 200 sample icons and can be back up via USB connection. TCP/IP is connecting with Enethnet ports, which is convenience for PLC and computer connections. Moreover, the fixed layer platform has been designed based on the products, which means that the robot can perform other duties while the product is being marking.

## Trimming press

Customized trimminmg press is designed for the big tonnage machine. The mold moving stroke is big, which can meet the requierment of large product runner cutting. Advanced Japanese imported controller system is used, which is safety and low failure rate, it is equipped with air blowing function, which is able to blow wastes from the platform. The air blowing time can be adjusted, and the runner cutting precision is high.



This is the first 4500T Die Casting Island with Automation System designed by YIZUMI. By facing the huge challenge of this project, YIZUMI R & D team has focused on the workmanship. By repeatedly communicate with customer in all details, R & D team has also provided high efficiency and stable automation solutions to their customers.



This is the Heaviest die casting machine of Yizumi in Chinese market. It is the first time that YIZUMI equipped fully robotic automation system to 4500T die casting machine. Yizumi R&D team has risen to the challenge. It took only 5 months to provide the complete set of automatic production system to customer from understanding customer's needs to designing and making solutions.



# 【North America】Walker Die Casting: Make 57kg Unibody Truck Transmission Housing

With HPM4500T Heavy-duty Die Casting Machine

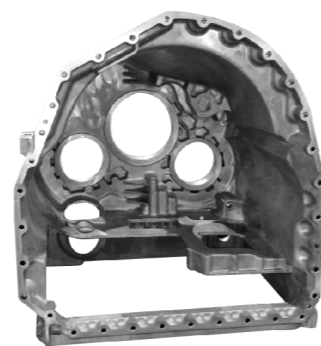
Walker Die Casting, a manufacturing company located in Lewisburg, Tennessee with 60 years of history is making transmission housings for trucks with a YIZUMI-HPM II-4500-A heavy duty die casting machine. Every two minutes, a robot will extract a product weighing approximately 57kg. This is the first 4500 ton machine that Walker has used in its 60 years of history, and presently is the largest die casting machine in North America.

Previously, the manufacture of the 57 KG transmission housing products was made by a gravity sand casting process. The gravity sand cast approach results in lower productivity and higher labor costs. When the demand for the 57 Kg transmission housing increased, Allison came to Walker to investigate die casting this part. This led Walker to a year and half long collaboration with YIZUMI-HPM for the design and building of the II-4500-A die casting machine.

## WALKER DIE CASTING



Technical leader of the project and former HPM president William Flickinger, Walker Die Casting President John Walker and Yizumi Managing Director Richard Yan (from left)



Part: truck transmission housing

### Manufacturing the largest die casting machine in North America

Founded in 1958, Walker has been focusing on the production of large aluminum die castings for automotive, heavy-duty trucks and buses, marine, and agriculture equipment. With 35 casting machines from 800 to 3500 tons (including the previous three HPM 3500T and four 1800T die casting machines), it was well known in North America for its outstanding technical expertise and well recognized by customers as a supplier of large die cast aluminum parts. As a corporate member of the North American Die Casting Association (NADCA), the company's president John R Walker recently chaired the organization.

When Walker first considered making the large truck transmission housing, they considered producing it on their YIZUMI-HPM 3500 ton machines. However, the die size and weight would make this difficult. In addition, to reduce the weight and production cost, the transmission housing originally assembled by several pieces now became a unibody workpiece, which requires a casting machine with larger capacity. In 2015, Walker talked with its old partner (HPM), now named YIZUMI-HPM, discussing the possibility of purchasing a 4500T die casting machine.

It would be the largest machine tonnage ever used by Walker, and the largest produced by YIZUMI-HPM. In addition, the shot cylinder diameter was increased to 13" with a shot speed of 250" /sec. YIZUMI-HPM set up a dedicated project team and spent six months to complete the development and design of the machine. In order to meet the rigid YIZUMI-HPM Standards, YIZUMI-HPM and its owner YIZUMI Precision Machinery located new suppliers for the steel platens, tie bars, and cast alloy steel linkage. Made of forged steel, each of the main three platens weighs more than 50 tons. Walker's project leaders also came to the processing site in China to inspect the quality and specifications of the parts as well as the related certificates. All large critical parts were dimensionally checked on YIZUMI's large coordinate measuring machine. During this

time, Walker was also preparing the facility, including the automated part removal system, furnace, and other auxiliaries.

In June of 2017, the 4500T casting machine was shipped to Walker's factory in U.S. and installed in five weeks. Within 12 weeks, the machine cell was in full production.

After 18 months of work from receiving the order, the project design, manufacturing, transporting, and installation of Walker's 4500T, the die casting machine was finally ready for production in October of 2017, making truck transmission housings for Allison Transmission, the world's largest manufacturer of automatic transmission and hybrid power system for commercial vehicles at a 2-minute cycle time.

### 100% stable operation

With a size of 58.42cm in height, 48.26cm in length and width, and a weight of 57kg, the housing for this truck gearbox itself is a giant workpiece. To ensure the product quality, Walker closely monitors the temperature/injection speed and injection pressure of the molten aluminum for conformity with the set parameters.

Mr. William Flickinger, technical leader of the project and former president of HPM, said that the HPM4500T die casting machine was built in full compliance with U.S. Safety Standards, YIZUMI-HPM high quality design and rigid material standards. The machine also has independent power units for both the clamp and shot end.

"The 33cm diameter injection cylinder can provide a 250 in/s dry shot speed to ensure an injection of the molten aluminum into the mold cavity. Both movable platen and fixed platen have 6 sets of core pulls. Along with the oversized platen and clamping stroke, they guarantee the successful molding of large die castings."

In fact, the performance of the HPM4500T die cast machine has been extraordinary. As said by the Walker's President John Walker, "Since Walker started to use this machine, it has been running quite well. The stability is nearly 100% and machine up time is very high. The productivity is also higher than other brands."

Today, in addition to making truck transmission housing, Walker also use HPM4500T to manufacture other die cast parts. The use of HPM4500T die cast machine not only enable Walker to design and produce unibody large parts for less cost, it also facilitates the installation of more large-scaled dies and expands its capacity to handle additional large die casting orders in the future.

The 2-year cooperation and communication as well as the outcome of the machine stability have greatly boosted the confidence of Walker in YIZUMI-HPM. Recently, Walker has acquired another HPM1800T die cast machine. While the sales volume of large castings is continuously growing, Walker plans to order a second HPM4500T die casting machine in the near future.



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# Chongqing Rightway Industry: Automation Solution for Motorcycle Cylinder Block Production

YIZUMI 1250T Die Casting Cell - Fully Automated Manufacturing

Founded in 2007, Chongqing Rightway Industry Co. Ltd. is a subsidiary of Loncin Motor Co. Ltd., specializing in the development, production, processing, and sales of auto parts, motorcycle parts, and electromechanical products. In July of this year, the company ordered a 1250T die-casting machine and the auxiliary automation equipment from Yizumi for the production of the motorcycle cylinder block.

All these units are now in full operation. insert pre-heating device, product belt conveyor, as well as the central integrated control system for auxiliary electrical power control and power supply. The entire system is able to realize the full automated production in the processes of mold release agent spray, cylinder block insert, picking up the product from the die-casting mold, integrity detection, slag removal, cooling, and runner cut-off.

The auxiliary systems came with 1250T die-casting machine are customized for Yizumi's robotic automation, including primarily the extractor robot system, painting robot system, die open displacement detection and compensation device, photoelectric detection device, fan cooling, high-speed cutting machine, insert conveyor,

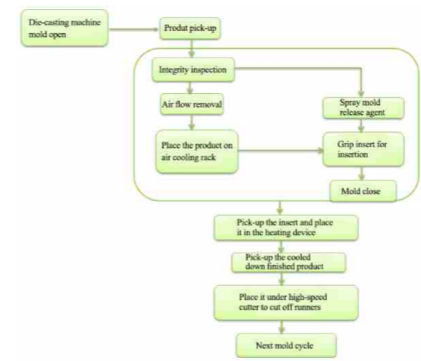


## AUTOMATION



### Project difficulties:

1. Due to the deviation limit set for die-casting mold open position, the mold insert process is commonly completed manually in China. However, this project requires the die-casting mold to realize cylinder block insert automation.
2. Because of the complexity of the die-casting mold structure, the requirements of spray and cooling for certain positions are high. As the die-casting pace limits the possibility for manual gunning, all spray work has to be completed by the spray robot.
3. Since the die-casting product has a complex runner, the normal break-off method does not work well. If using robot to pick it up and saw it off on the high-speed cutter, consideration needs to be given to the conveying of subsequent products and the discharge of waste.

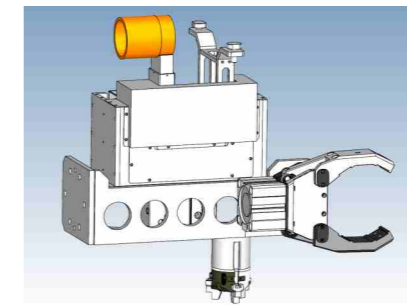


### Solutions:

#### Mold with automated cylinder block insert

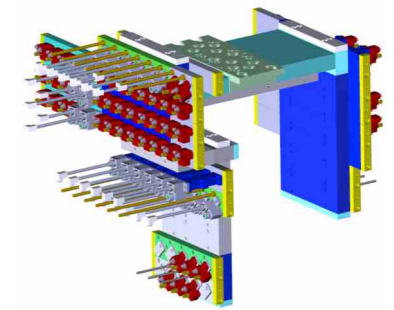
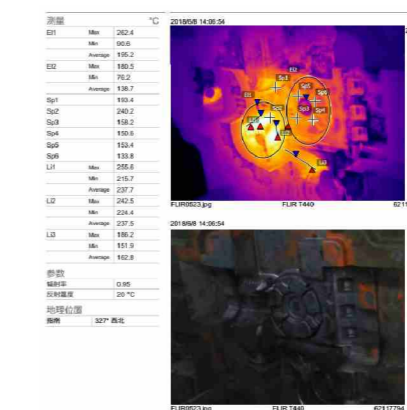
To solve the issues concerning the insert along with the issues regarding the extraction of die-casting workpiece, insertion, and feeding, Yizumi designing team designed a set of special claw combination—robot biscuit jig, electromagnetic insertion gripper, and insert loading jig. After the completion of the die casting, the robot biscuit jig grabs the

runner to pick up the product. The jig can be changed to adapt different products. Insertion of inserts is completed by the electromagnetic gripper. The heat resistant electromagnetic gripper picks up the insert using a powerful electromagnet to meet the insertion requirements with the assistance of the die open displacement compensation device. When the insertion is completed, the insert jig will then pick up the insert and place it in the re-heating device for the next cycle.



#### Mold release agent spray

The mold release agent spray nozzle employs a modulated plate structure designed according to the mold structure and heat distribution in the mold. The spray device uses multi-unit control and the number of nozzles is determined based on the process needs. The actual use of this design shows a smooth operation. It sprays fine mist of mold release agent evenly, fully improving the adhesion effect of the mold release agent on the mold surface. While meeting the requirement, it saves the use of the mold release agent and contributes to a more environmental friendly plant operation.



#### Air hammer+tapping to remove slag

According to the distribution of the product runners, use the air hammer+tapping combination to remove slag. This approach is easy to apply and only requires the pre-edited program corresponding to the replacing product. The product has runners with complex structure and can only use cutter to remove. The high-speed cutter is equipped with a conveyor and protective shields. The robot biscuit jig grabs the runners and cuts them off. The product is then transported outside the island via the belt conveyor, place them in the waste cart, and wait for the next cycle on idle.

The entire system has realized the full automated production in the processes of mold release agent spray, cylinder block insert transport, insert pre-heating, insertion and pick-up of the die-casting workpiece, product inspection, slag removal, cooling, and runner cut-off. When part of the system needs maintenance or shut-down, the rest of the system can remain in normal operation. The system can save labor cost equivalent to 3 workers and requires only one person to maintain the daily operation and routine maintenance, increasing productivity by more than 15%.

Additionally, the entire project has also integrated with a side cooling station and a temperature holding furnace for the die casting machine. Both primary side and secondary side of water and electricity supply to all equipment are handled by Yizumi. The die casting cell can immediately go into operation upon completion and delivery.

# Yizumi's Robot Automation System Lend a Helping Hand in the Automation of Rare Metal Production Plant

A Fully-Automated Production Solution Replaces the Hazardous Manual Operation

Apart from the die-casting field, Yizumi's Robot Automation System (hereinafter referred to as "Yizumi RA") has been widely used in four special processing fields, such as heavy-loading, high impact loading, high temperature and special pollution areas, in recent years. To date, it has even penetrated into the various industries of stamping, casting, forging, etc.

Since last year, Yizumi RA has begun showcasing its capabilities in the production workshops of special rare metals and heavy metals. As some of these metals are toxic in nature, such as cadmium and zinc, they will inflict severe harm to the human body in processing and production. The enterprises are not only facing the recruitment issues, they are also taking up the challenges of environmental protection and improving production efficiency. Therefore, robotic automation is the apparent choice for the transformation and upgrading of the enterprises.

Meanwhile, Yizumi RA has been delivering automated solutions for countless clients in the production fields of rare metals and heavy metals. In the process, it has replaced the hazardous manual operation, achieved unmanned workshop management and met the production requirements of energy savings and environmental protection.

As shown in the case below, Yizumi RA provides an entire suite of automation equipment, achieving many automatic production processes such as product pick-up, spraying, product trimming, coding, palletizing, and so on. The products are

directly stacked into packaging boxes and entered the warehouses for finished products. In this way, it produces a savings of labor costs equivalent to the salaries of 4 employees and enhances the efficiency by more than 10 percent.



## Analysis of Solution's Highlights

### "Freely Versatile" Palletizing System

To achieve a more efficient and convenient production management, Yizumi's Robot has specifically designed a palletizing sucking robot. After completing a series of automated processes such as skim bob and biscuit removing, and pneumatic coding, the absorbed products are placed in the product frame in an orderly manner.

In addition to enable the robot to work flexibly in limited spaces, the palletizing sucking robot can also freely place the products in a stable and orderly manner according to the number of palletizing layers. As a result, it brings about a neat palletizing structure and provides great convenience to the storage and transportation of products in the production workshops.



Y I Z U M I

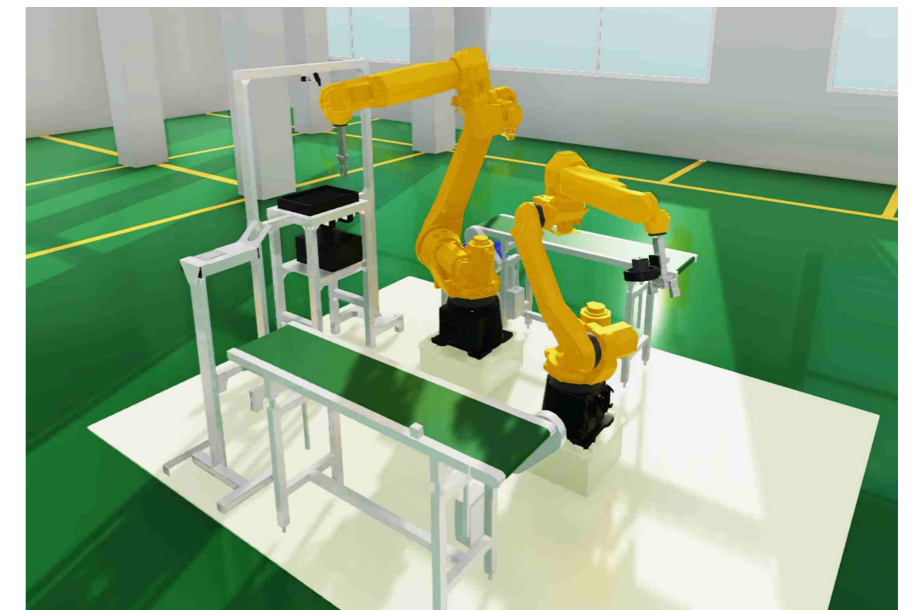
RA

### 3D Visual Inspection Device

The traditional 2D visual inspection device can only identify the position and size of a product on a planal surface, whereas the 3D visual inspection device can efficiently detect the product's flatness and surface angles as well as distinguish the products with the same color, delivering a higher flexible applicability and bigger inspection boundaries.

To achieve the precise grabbing of products in the conveyor belts, Yizumi's Robot has

specially designed a 3D Visual Inspection Device to identify and position the products. The 3D high-matching lens can scan and precisely locate the cadmium ingots in a wide range with a clear image. Under its guidance, the transporting robot grabs the products in a high-speed and stable environment and then, transports them to the hydraulic edge-trimming machines, removing the skim bob and biscuit in a one-time manner. Thereafter, it prints the time stamp on the products in an orderly manner by the pneumatic coder. The entire automated process is thus completed.



# Wenzhou Ruiming: Build a World-class Auto Parts Enterprise

## Planning a 63-acre Industrial Park for Die-casting Business Expansion

In China, one out of every five passenger cars uses an engine cylinder head made by Ruiming.

Since its establishment in 1995, Wenzhou Ruiming Industrial Co., Ltd. has devoted to the research and development of engine cylinder heads. After more than 20 years of business growth, it now has become the national leader in the industry. In 2017, it produced 5 million sets of cylinder heads, representing some 20% of domestic market share. In addition, the overall cylinder head external defective rate is merely 0.3%, among some of the best in the world.

Today, Wenzhou Ruiming has grown to be a leading company in China's automobile engine components manufacturer with independent R&D capability and occupies an area of approximately 58 acres. It has established R&D bases in Liuzhou and Shanghai, supplying products to 95% of domestic, joint ventures, and foreign auto brands. However, the more successful the enterprise is, the stronger sense of crisis it feels. As the Deputy Managing Director, Mr. Chen Yizhao said, the engine cylinder heads are primarily molded through gravity casting. Wenzhou Ruiming has had this process fully developed. While the trend for new energy vehicles and lightweight is emerging, Wenzhou Ruiming will increase its investment in high pressure die casting and low pressure casting processes for new growth.

**Vigorously develop die casting business**

As die-casting is one of the mainstream processes for new energy vehicles and lightweight trend, Wenzhou Ruiming has already had its blueprint. It has successively purchased more than 50 300T to 650T die-casting machines from Yizumi for production of pump casing, rear oil seal cover, and thermostat housing, etc., supplying for customers including Geely, SGM, and BAIC.

“Die casting will be the area that Ruiming will invest heavily in the future.” Mr. Chen admitted that under the dominant trend towards new energy and lightweight, die-casting will be widely used for auto parts, especially the battery pack cover and auto body structural parts. Based on the previous die casting technology reserves, Wenzhou Ruiming is going to launch the large tonnage die-casting equipment project this year by acquiring several 1650T, 2500T, 3500T heavy-duty die casting machines for the production of engine block and parts used in new energy vehicles.



In addition to the investment in new equipment, Wenzhou Ruiming is also aiming to strengthen industrial chain collaboration. Mr. Chen Yizhao said, “Before we decided to purchase Yizumi heavy-duty machines, both parties have gone through intensive technical communication and discussions. We focused on the integration of resources of each partner, including auto customers, mold, die-casting machine, auxiliary equipment, colleges and universities, etc. so that we can make joint efforts to improve our abilities in problem solving.”

In order to prepare for the new opportunity in the auto industry, Wenzhou Ruiming is planning to increase the industrial park by 63 acres and invest some 324 million dollars to build the nation's first-class “Ruiming Group Intelligent Industrial Park for Lightweight Automobile Key Components”.

### Invest USD 30 million to create an intelligent manufacturing system

While the automobile industry continues the innovation and upgrading, intelligent manufacturing has also become a new terrain that auto equipment industry is after. In Wenzhou Ruiming's blueprints, intelligent manufacture is an integrated part. In 2016, it

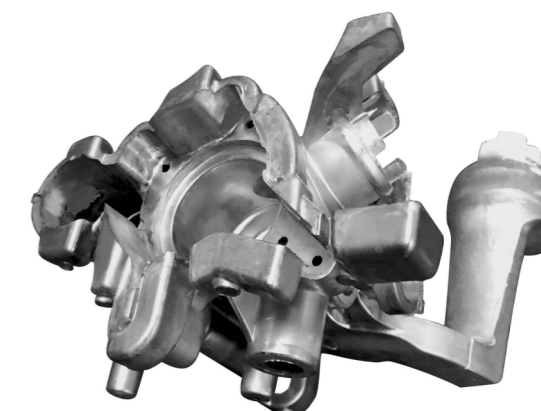
launched the construction of its intelligent manufacturing system that requires a total of USD 30 million investments. Currently, a number of functional modules have been put into use. It is estimated that when the new project is in place, it will raise the enterprise productivity of Ruiming by more than 33%, while reducing the operating cost by more than 27%, shortening the product development cycle by more than 40%, lowering the product defective rate by more than 23%, and improving the energy yield by more than 19%.

Mr. Chen Yizhao said, “Ruiming will also import the MES system to establish a three-dimensional warehouse. By collaborating with the ERP system, it will digitize every stage of the production along the entire process from raw materials to the finished goods, automatically allocate production resources and schedule production activities, and realize the intelligent balancing of production, supply and marketing throughout the manufacturing system.”



“Nowadays, China's domestic manufactured equipment is making fast progress with very stable machine quality. The majority of die casting equipment in Wenzhou Ruiming's machinery fleet are domestically made. Our company has collaborated closely with Yizumi for seven years now. Yizumi's die casting machines fully meet our requirements to the products and productivity, with fast response and great aftersales services. We believe that they will do even better in the upcoming future.”

— Chen Yizhao, Deputy Managing Director Wenzhou Ruiming



A U T O P A R T S

## Ningbo Xingyuan Machinery: Innovative Lightweight Solution for Magnesium Alloy Product

New Design Possibilities for multi-material Auto Parts

# Mg

Lightweight is an endless journey. Where the cost allows, it is always a desire of the auto industry to use something with similar rigidity but lighter in weight to replace the original materials. In addition to the aluminum alloy, the major auto makers are now looking at magnesium alloy. The density of the magnesium is about two-thirds of aluminum. If a car uses magnesium alloy, the weight can be reduced by 30%. Magnesium alloy is also characterized by good impact absorption, casting, and cutting properties. The application range of magnesium alloy is quite comparable with aluminum alloy as more and more enterprises are now investing in this new material. Ningbo Xingyuan ZM Technology Co., Ltd is one of them.

Xingyuan is headquartered in the “Town of Die Casting Tooling in China” -- Beilun, Ningbo. Originally started in aluminum and magnesium die casting tooling business, it now focuses on providing innovative magnesium alloy lightweight solutions for aluminum alloy, plastic, and other composite auto parts. Product range includes auto lamp bucket, radiator case frame, armrest, gearbox, clutch, generator, etc., serving many renowned brands such as FAW, Ford, Audi, and Tesla.

### Lead the market with innovative product design

Today, the demand for automotive magnesium alloy is growing strongly. While the new energy vehicles have the urgent needs for weight reduction, the magnesium alloy applications become especially hot. For instance, GM’s interior door panels, engine mounting bracket, and auto body panels use magnesium alloy. Another famous car manufacturer Changan, their new energy vehicles are also expected to use magnesium alloy for the steering wheel support and seat frames.

“In the past, China’s magnesium alloy die casting technology was not mature. It had to go through the process to solve technical issue before replacing aluminum alloy. Now, the technology, equipment, and tooling are relatively mature and it is the time to experience the explosive growth.” said Mr. Wang Hongping, Deputy Managing Director of the company. Aiming at this window period, Ningbo Xingyuan took the initiative to participate in the early stage of product development with tier one auto parts suppliers such as Gelamo and Mahle for innovative product designs.

This is the company’s new development idea - lead the market, rather than being led by the market. “Before, we only processed according to the drawing that came with the order. Now, we tend to take the initiative to redesign products for customers.” Mr. Wang Hongping said that in addition to replacing aluminum alloy products with magnesium alloy, a greater advantage of Xingyuan is to design an auto part consisting of plastic, iron, and aluminum alloy to be a single casting magnesium alloy part. For example, the recently introduced Ford lamp bracket was originally made of a combination of aluminum alloy, plastic, and magnesium alloy. The magnesium die casting solution proposed by Ningbo Xingyuan not only reduces the weight by 1/4, but also can cast it in a single step process. It saves the costs of materials and assembly while improving the productivity.



### Investing in large magnesium alloy die casting project

Thanks to the innovative magnesium alloy products design capability, Xingyuan’s business has kept a 30% high-growth rate in recent years. Solutions for new products include the headlight bracket for Tesla Model S, the headlight bracket and blower impellers for Chrysler’s Dodge Charger, seat frame with armrest for Audi A4, and will be extended to larger magnesium alloy casting.

Mr. Wang Hongping said that currently not only more and bigger auto parts are made of magnesium alloy; the application is also extended to the structural parts and has the trend to be thinner. As a result, Xingyuan proactively increases purchasing of large tonnage die-casting equipment and has

purchased HPM2000T die-casting machine and several sets of Yizumi 1000T, 800T die-casting machines. In the meantime, it also invested about USD 45.75 million in the construction of a new facility to expand its annual output of lightweight and environmentally friendly high-strength precision magnesium alloy die casting parts to 4.8 million sets and tooling 50 sets. Another USD 3.44 million will be invested to build a R&D center dedicated to the development of high-strength precision magnesium alloy die-casting designing technology, tooling technology, and die-casting technology.



“Ningbo Xingyuan has always been working closely with Yizumi. Yizumi can respond to our needs quickly. The machine performance is also among the best in China. As to the magnesium alloy products, because of the faster solidification properties of magnesium alloy, we pay special attention to the shot speed. The shot speed of Yizumi’s die-casting machine can achieve 8m/s, allowing quick casting of products. The machine performance is also quite stable which ensures the quality and productivity of the magnesium alloy products.”

— Wang Hongping, Deputy Managing Director of Ningbo Xingyuan



# Zhejiang FLY HIGH Holding Group Co., Ltd: The World's Largest Aluminum Radiator Manufacturer

(Holding a global market share of 30%, the next goal for the company is to be the No. 1 supplier in the grill machine industry)

Yongkang, also known as the “China’s Town of Hardware”, is the home of the Zhejiang Wisdom Industry & Trade Co., Ltd. - the world’s largest aluminum radiator supplier. Zhejiang Wisdom is a core enterprise of the Zhejiang FLY HIGH Holding Group Co., Ltd. The company makes more than 20 million pieces of radiators annually, representing 30% of global aluminum radiator market. In addition, it maintains an annual growth rate of 30%, continuously holding its leading position in the industry.

How does Zhejiang Wisdom become the world’s No. 1 in the fierce competition? Group General Manager, Mr. Xiao Haibo believes that the enterprise’s optimal cost strategy is the key to this success, “Our goal is crystal clear - that is to produce the world-class products at the lowest total cost, to deliver the products quickly, and to create value continuously for our customers.”

## The secret of “Wisdom Speed” : Optimal cost strategy

To achieve the optimal cost, Zhejiang Wisdom’s approach is to optimize the cost and productivity of die-casting process. When the industry was commonly using 1000T die-casting machine and 2-cavity mold to manufacture radiators, Wisdom achieved 2-cavity mold manufacturing with 800T die-casting machine by improving the product structure and optimizing the die-casting processes, thus reducing the cost.

As to the die-casting core equipment – die-casting machine, Wisdom has its own tricks. “The radiators are characterized by the 0.6mm thin blades. Therefore, we need the equipment with high explosive power.” Yizumi’s die-casting machine dedicated to aluminum radiator was selected by Zhejiang Wisdom with its actual shot speed higher than 5m/s. It can produce 2 blades in a 30-

second molding cycle with the 2-cavity mold. A single set of equipment can produce over 4,000 blades daily with a yield higher than 97%.

Compared to the 50-second molding cycle with 2-cavity molds in the industry, the unit time output of Zhejiang Wisdom is undoubtedly higher than others. As we learned, the company can now produce 80,000 blades per day, two times higher than the 30,000 average daily output in the industry. Wisdom’s advantages in cost and production scale are obvious. As a result, it created the stunning “Wisdom Speed.” In 2014, the company’s new facility in Yongkang started to operate, expanding the production capacity rapidly to an annual output of 20 million blades.



## New Goal: To be the No. 1 supplier for the grill machine industry

After the great success in the aluminum radiator market, Zhejiang Wisdom also encountered the bottleneck of the enterprise development. In recent years, it has been seeking new opportunities as the new breakthrough points and diversifies its business. In 2013, by successfully establishing strategic relationship with the domestic small appliance giant, SUPOR, and the French small appliance giant, SEB Group, it entered the field of small household appliances, exploring the die-casting market for household frying and grilling appliances. In 2016, it started R&D on the household frying and grilling units, and quickly developed 15 models of 3 major types of home appliances, including the tabletop BBQ grill, deep pot fryer, and double-sided heating baking pan. These new products are well received by the customers worldwide after their successful introduction to the market.

In the future business landscape of Wisdom, the development space of small household appliances is expected to exceed the aluminum radiator business. As Mr. Xiao Haibo said, “The social demand for small home appliance is strong. Our company is currently at a stage of rapid growth. Currently, it can make over 10,000 cooking pots daily with a monthly production capacity of more than 300,000. Orders are continuously increasing.”



The rapid rising pattern of small appliance business is similar to the development of aluminum radiators: by starting with the die-casting technology, minimizing the total production cost, ensuring the product quality and productivity, taking the advantage of scale production, and delivering fast, distance the company from the peer enterprises and stand out from the crowd rapidly. Looking ahead, Zhejiang Wisdom has a clear vision. Mr. Xiao Haibo says, “We will continue to increase the investment in small household appliances, including investment in R&D and die-casting machines. We will strive to be the No. 1 manufacturer in the frying and grilling business.”

“We want our products to stay competitive. If the equipment performance cannot meet the standard or operate stably, then the products will lose their advantages. The die-casting machines made by Yizumi meet our requirements in terms of shot speed, cycle time, and operating stability. Especially the ability to complete the 2-cavity molding within 30 seconds, it offers higher productivity than the peer manufacturers. Yizumi’s die-casting machine allows us to find the optimal parameter configuration in the molding of radiators, and ensures the product quality and production efficiency.”

—Xiao Haibo, General Manager of Zhejiang Wisdom Industry & Trade Co., Ltd.

A L U M I N I U M



## To accelerate this digital revolution

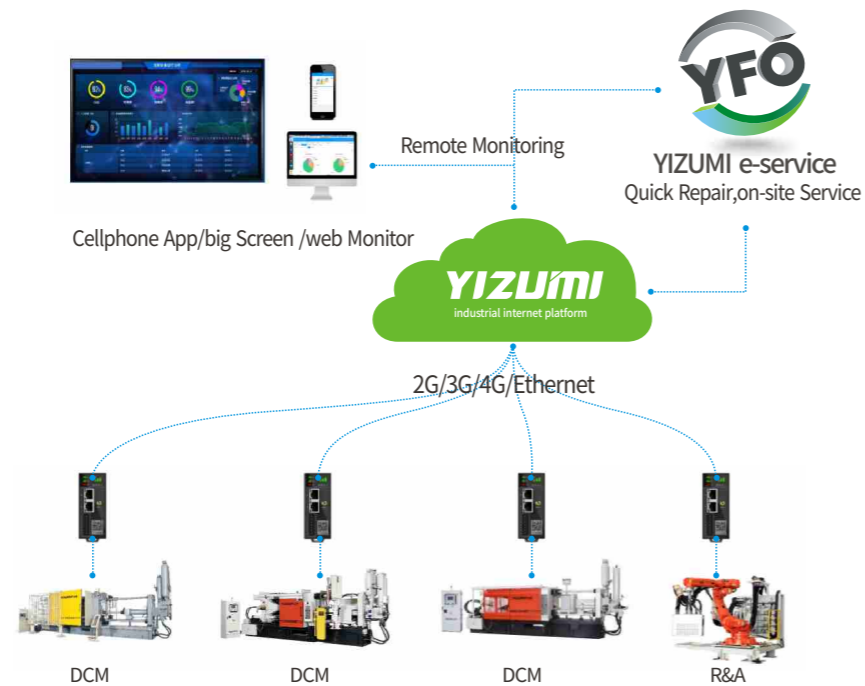
# Yizumi's Solutions for IIoT and the smart factory



The transformation and upgrading of the manufacturing industry have become a leading trend. In the foreseeable future, the manufacturing industry will march toward standardization, automation, digitalization and intellectualization so as to support the manufacturing processes with high quality, low cost, high efficiency, green energy and flexibility.

As a model enterprise in the equipment manufacturing industry, in recent years, Yizumi has constantly strive to improve on its intelligence integration technology. With these connections to the industrial assets and machines, new technologies enable the application of advanced analytics to machine and operational process data to gain insights into the operations, optimize them intelligently to boost productivity, increase quality, reduce energy and material consumption, increase flexibility, and ultimately create new business values.

Yizumi have also built an intelligent service named E-Service24. The E-Service24 aimed to deliver fast remote maintenance and online support for the customers.



# Industrial + Internet



To further fulfil the needs of intelligent production in the manufacturing industry, Yizumi has rolled out an industrial internet platform, which is aimed at the production management of the metal die-casting industry. It applies the new generation of information technology such as Internet of Things, cloud computing and big data in a bid to resolve the sensitive issues of equipment monitoring, efficiency statistics, equipment maintenance, troubleshooting, monitoring and traceability of process specifications, improving production efficiency and product quality.

As the first industrial internet platform launched in China for the die casting industry, it has many advantages:

- Fast Deployment** .||| Plug and play, wireless network connection, cloud serving system, on-demand optional functions, zero fixed asset investment.
- Rich Functions** .||| Remote condition monitoring, alarm, maintenance remind, data statistics, and other functions that can help improving the OEE.
- Security** .||| Encrypt Cold Data, Open API authorized OAuth 2.0 and Https.
- Extensibility and openness** .|||

The API interfaces allow the customers to connect with the third-party system e.g. ERP, MES, etc. conveniently. Smart phone access, easy to use.

**Advanced Technologies** .||| Employs cutting-edge technologies such as cloud computing, edge computing, industrial internet, etc., achieving high availability and reliability of the system.

**Intelligent Services** .||| One-key repair of equipment failure, real-time monitoring of maintenance progress, reducing the impact of equipment downtime.

Meanwhile, Yizumi has also provided the Condition Monitor System (CMS), Advanced Planning System (APS) and other rich functional applications for the customers based on this platform. The users can view the real-time status, OEE, output, equipment alarm and other information of the equipment via terminals such as mobile apps and computers, significantly reducing the technical threshold, construction and operational costs for customers to achieve intelligent production.

In the future, it will further enrich the platform functionalities, focusing on the production management, building various industrial systems with equipment monitoring, repair and maintenance, intelligent product scheduling, quality management and other features, enhancing the digitalization and

intellectualization of the production management. In this way, it will achieve the transparency of the production processes, traceability of key data, preventive alarm system for unusual conditions, intelligent dispatching decisions so as to allow the production management to be more scientific, highly efficient and simpler.



# Introduction of Integrated Automated Material Upload and Unload Systems in Machining

China's manufacturing industry is undergoing a critical transformation from "Made in China" to "Smart Manufacturing in China". Promoting "machines replacing people" is the primary direction for intelligent manufacturing. In recent years, to respond positively to the Nation's intelligent manufacturing strategy, Yizumi robot division made great efforts in the area of integrated industrial robotic applications. While the manufacturing industries are experiencing pain points in high labor cost and labor force shortage, Yizumi has introduced the robotic die-casting island and integrated auxiliary automation system, as well as integrated material loading and unloading automation system for machining. These machines have found their places in more and more enterprises, providing a package solution for the transformation and upgrading of the enterprises. Using the industrial robot application in the material loading and unloading process as the example, this article will give an overview of the Yizumi integrated material loading and unloading automation system for machine process from the aspects of its background, advantages, and development trend.

## Background +

With the progress and development of the society, products are accelerating their upgrading speed. The traditional approach of loading and unloading materials for machine process with dedicated device or manually has revealed many disadvantages. On the one hand, a dedicated device occupies large floor space. While it has a complex structure, the machine is uneasy to maintain and offers less flexibility. This makes it uncondusive to the automated production line, the adaptation to the change of product varieties, or product structural adjustment.

On the other hand, manual operation not only results in high intensity of labor, it can also cause work-related accidents. Using manpower to load or unload materials leads to relatively low productivity, poor stability of product quality, and cannot meet the needs of mass production.

In order to solve the above issues effectively, robot steps into the field of automation applications in machine operation.

## Advantages +

The automated machining solution provided by Yizumi robot can realize the full automation of the production. Consisting of processing center, industrial robot, device for workpiece storage and positioning, workpiece automatic identification system, and automated conveyor, the system can automatically complete the workpiece loading and unloading, flipping, and process switching. Compared with the traditional

manual or dedicated device operation, the advantages of integrated material loading and unloading automation system can be summarized as follows:

(1) Improve productivity significantly. The system can realize automated mechanical parts processing on either standalone processing cell or 24-hour mass production line. It is suitable for settings with automated workpiece transporting, especially for industrial applications equipped with highly automated assembly line to improve the productivity and degree of automation further.

(2) High flexibility and easy process adaption. The system offers high flexibility and stability. The simple structure makes the maintenance easy to perform. It can fulfill the production needs for different types of products. Users can change the production process rapidly by revising the operating program and using different jigs. It can be ready for operation quickly through an easy debugging, eliminating the need for staff retraining.

(3) May improve the product quality. The system provides a high stability of product quality as the entire process from loading to unloading is completed by robots. Product quality is therefore greatly improved by eliminating human impact on production quality and any intermediary.

## Development trends +

(1) Collaborative robot will be the mainstream standard.

The direct collaboration between humans and robots will be an integral part of the industry automation in the coming years. Extensive use of collaborative robot in loading and unloading materials for machining will become the mainstream. Through man-machine collaboration, the entire process is more flexible and adaptable. Yizumi robotic automation company is committed to the development and application of such collaborative robots for different collaboration scenarios and production fields.

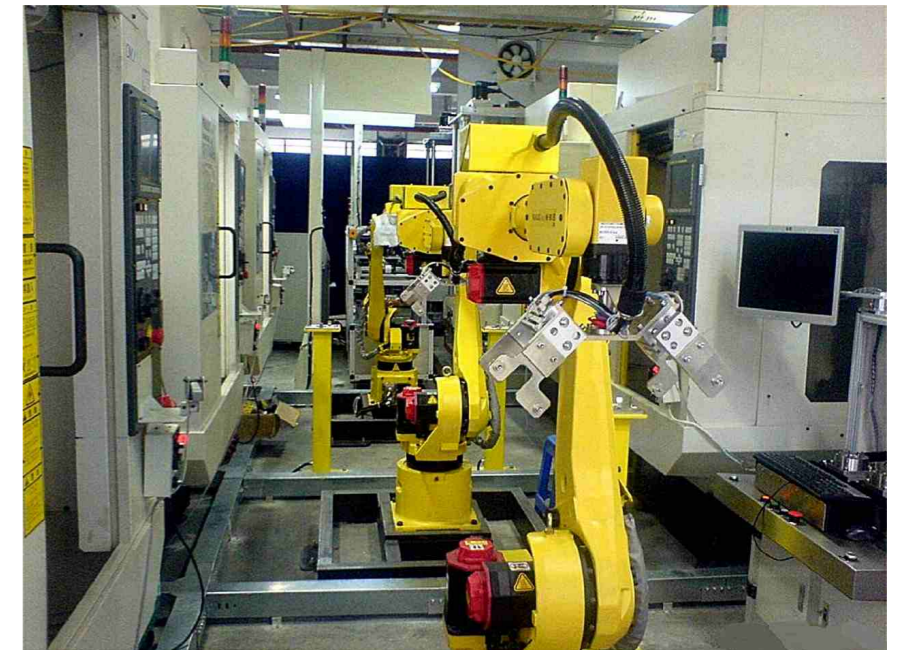
(2) Unmanned factory

In the next few years, as the domestic demand for industrial robots continues to surge, a complete robotic industrial chain that integrates design, R&D, unit equipment, complete set of equipment, and after-sales services is expected to be gradually

established. This will undoubtedly provide greater opportunities for robotic automation integration applications. By seamlessly connecting robotic integrated systems with ground logistics systems, it can link the manufacturing data directly to the IOT, realizing digital logistics management for intelligent production of interconnected plants and unmanned factory operation.

In this intelligent era, only technology innovation can keep the enterprises competitive. Yizumi Robot will continue to innovate in the application field of robotic system integration. By incorporating the latest technologies in the robotics industry, it is committed to develop more intelligent equipment that is suitable for the national

conditions, promote the development of the machining and manufacturing industries, and enhance the competitiveness of China's manufacturing industry.



# ROBOT

# The Integration of Automation System for Gearbox Housing Manufacturing

## G e a r b o x H o u s i n g

If an engine is considered to be the heart of a vehicle, then the gearbox will be the “brain” for power transmitting. A gearbox consists mainly of housing, transmission mechanism and control mechanism. The primary function of the gearbox in an automobile is to provide speed and torque conversions from the engine to change its rotating speed and output torque. Depending on the difference between manual and automatic transmission, they can also be divided into MT, AT, and CVT gearboxes. As the shell that protects the internal gears, the gearbox housing is one of the important products in the die-casting industry.

The mold for gearbox has a complex structure. The casting product is heavy. Manual operation creates large workload where product quality and continuity are not warranted. Replacing humans with robots therefore becomes the immutable trend. Currently, Yizumi has supplied gearbox housing integrated automation system to a number of renowned die-casting enterprises. Relying on its strong technical strength and product quality, Yizumi is well received by the customers.

In 2018, Dongfeng (Shiyan) cooperated with Yizumi and requested Yizumi to supply a complete set of 2500T die casting machine along with various auxiliary automation equipment as a turnkey project. The full

name of Dongfeng (Shiyan) company is Dongfeng (Shiyan) Nonferrous Casting Co., Ltd., a subsidiary of Dongfeng Motor Corporation (<http://www.dongfeng-global.com/>), one of China’s largest auto groups.

Dongfeng (Shiyan) Nonferrous Casting Co., Ltd. is specialized in aluminum and magnesium alloy die casting products with the annual production capacity of more than 10,000 tons. The products are provided to several automobile companies of Dongfeng Motor.

### Automated die-casting Cell

Starting at the beginning of the project, Yizumi team worked closely with the engineers from Dongfeng (Shiyan) and visited the scene many times for technical communication. Especially for the auxiliary equipment automation integration, different gearboxes require different molds. The corresponding structures for air flow and runner also change. The engineers from Yizumi conducted detailed analysis on the product. After the in-depth study of the mold structure, they finally determined the automation solution that suits the customer’s needs.

The process for the entire die-casting cell is as follows: Product pickup –Inspection–Air flow removal–Cooling–Marking–Runner

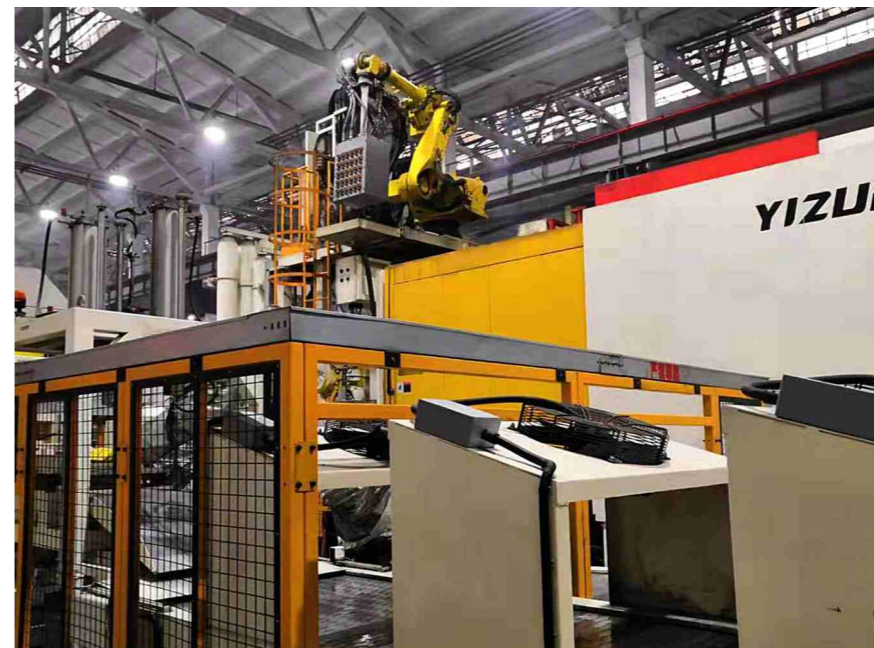
removal–transported out. While the robots provide continuous and stable operation, the operators are totally relieved from the duty. The production efficiency therefore is effectively improved.

#### (1) Product air flow removal

The methods available for air flow removal generally include bumping, knocking with air hammer, and pressing impact with ejector. We found that the air flow structure of the customer’s product is complex, and the air flow removal task could not be completed with a single device. Later, we effectively solved the problem through a flexible combination of air hammer and bumping unit. It also improved the takt time.

#### (2) Product biscuit removal

The biscuits of the product can be removed through hydraulic edge trimming, sawing off or breaking off. The biscuits of the customer’s product locate on the same plane as the surface connection, forming almost a straight line. The best approach is to hold down the product and break off the biscuit from the top down. The method not only eliminates the need for mold replacement and maintenance while the product will be automatically discharged to the conveyor belt after the biscuits are removed. The robot travel time is therefore reduced.



#### (3) Product cooling

The product is either cooled by water or air. Each method has its own advantage. As the customer’s product requirements for precision is very high, although water cooling can bring down the temperature faster, the contraction can also cause the product to deform slightly. We eventually chose the air cooling.

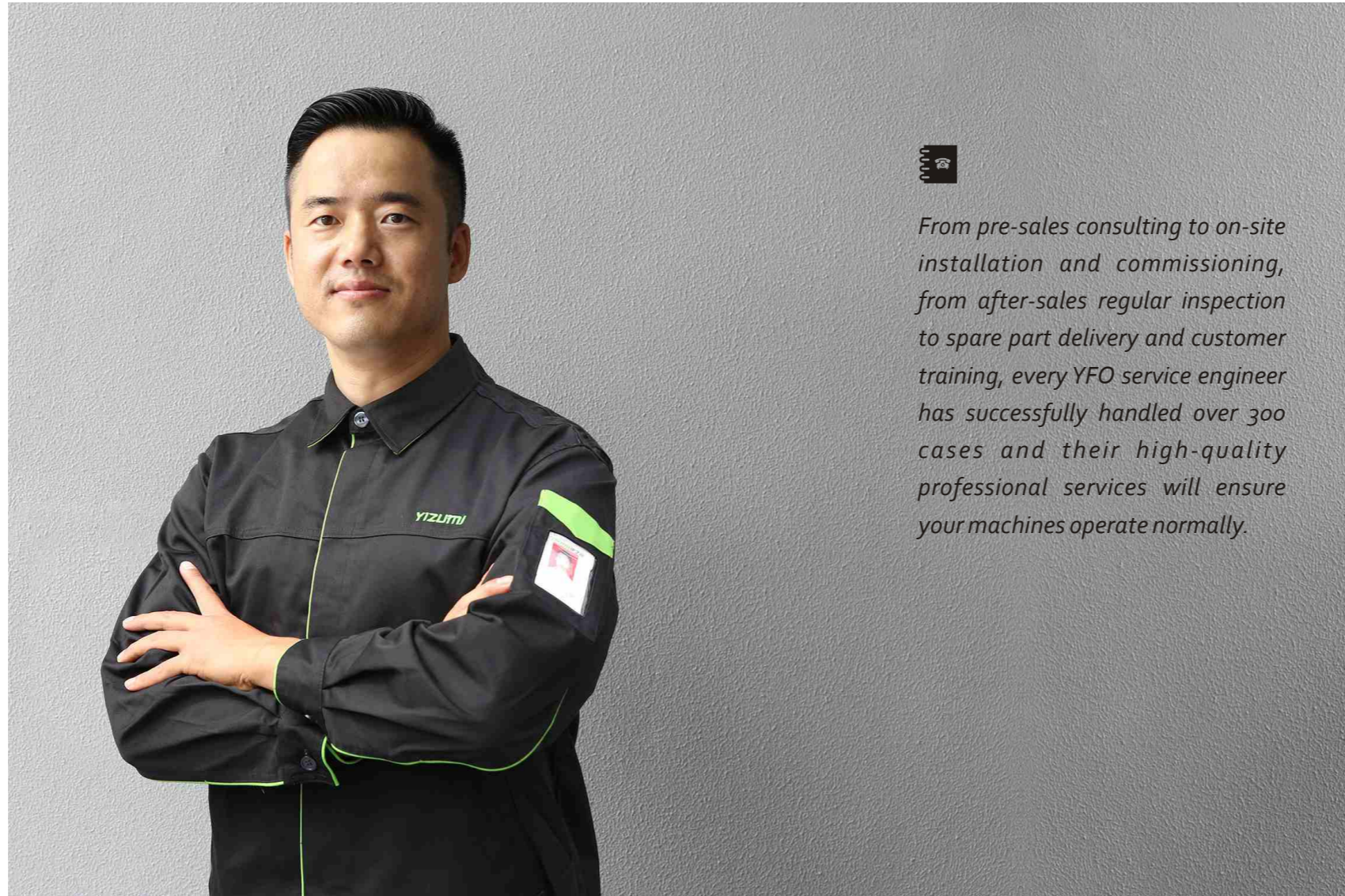
Today, the YIZUMI 2500T die-casting cell at Dongfeng (Shiyan) has been running stably for more than half a year. The customer is quite satisfied with its overall performance. For Yizumi, it is always the top priority to ensure customers’ product quality, improve the production line uptime, and shorten the cycle time. In the future, Yizumi is going to invest more vigorously in the R&D and promotion of automation, informatization and intellectualization in order to offer solutions to customers in different industries and using different processes.

A U T O M A T I O N S Y S T E M I N T E G R A T I O N

# YFO-based Instant Prime Service

Timely, Professional, Customer First

YFO (Yizumi Factory Outlet) model ensures high response speed and controllability of the service and it is also Yizumi's new global service strategy for the future. As regards the service concept, we not only ensure the safety of customer's production activity, but also endeavor to fulfill the ultimate goal of reducing the risk of downtime through every detail and improving customer's productivity.



*From pre-sales consulting to on-site installation and commissioning, from after-sales regular inspection to spare part delivery and customer training, every YFO service engineer has successfully handled over 300 cases and their high-quality professional services will ensure your machines operate normally.*

## The worldwide part supply network ensures smooth, prompt and accurate part distribution

- China** A total of 35 spare part centers and maintenance part warehouses
- Abroad** Spare part warehouses in 15 overseas countries



## YFO one-stop spare part service solution Save your time, worry and money

- Shorter waiting time**  
Unified service channel, hour-level spare part delivery service available
- Cost-effective**  
Key spare parts are purchased from manufacturers, ensuring the price transparency and economy.
- Some spare parts imported**  
More durable and applicable.



<b>365/24</b>	<b>72</b>	<b>8,000 +</b>	<b>10+</b>	<b>5,000+m<sup>2</sup></b>
24-hour hotline available for 365 days, nearly 200 maintenance experts ready to respond to your needs.	YFO service network in 35 Chinese cities and 37 overseas countries provide better access to service.	So far the service team has provided YFO service support for over 8,000 machines to ensure they function normally.	Over half of YFO service engineers have over 10 years of professional experience.	Powerful spare part warehouse system covers warehouses in 35 Chinese cities and 15 overseas spare part centers, total warehousing area up to 5,000m <sup>2</sup> .

# Eight YFO Commitments

## Focus on machines; greater focus on customer experiences

8 specialized services allowing you to have a better customer experience



### Presales Consultancy & Technical Support

Delivering exhaustive die casting machines and auxiliary equipment selection solutions, professional configuration and optimization solutions of its manufacturing technologies.



### Professional Technical Training

Exquisitely designed, nationwide standardized courseware menu selection system, the national instructing team will personally visit the sites to customize the trainings.



### Professional Parts Supply

5 warehouse agencies and 2 service centers with warehouse inventories overseas, spanning across Asia, America and Europe, achieving a 24-hour turnaround of common parts delivery.



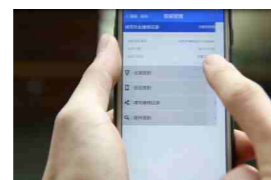
### PLC Remote Service Mode

Remote process support within the whole world. It can rapidly resolve the customized requirements for the customer processes.



### GPS Vehicle Monitoring System

Over 50 service vehicles with real-time online monitoring control nationwide. Timely nearby dispatch services ensuring its response speed.



### e-service 24-hr Online Services

One button to report any repairs with the mobile apps. Swiftly search for malfunctions, building the mobile after-sales experiences for the customers.



### Technology Service Center

The service center, which is directly under the management of Yizumi's headquarters, the service engineers deliver timely and effective services. Meanwhile, there are 2 technology service centers in India and Vietnam.



### Permanent Engineers' Services

In view of the key markets already developed, Yizumi will dispatch the Chinese engineers to reside at the markets permanently, providing timely and highly efficient services to the customers.

# YIZUMI e-service

Delivering a real-time service system for its clients

Through YIZUMI e-service, you can have a full-day, online support, mobile and rapid remote repair and maintenance as well. Regardless of where you are, it can deliver a rapid, convenient, online after-sales service, ensuring the equipment to be maintained in the best condition for the long term.

- Rapid
- Reliable
- Effective
- Visual
- Recordable
- Can be evaluated
- Cost effective

YIZUMI e-service can deliver the followings to you .....



Mobile Operation: Smart Phone/Tablet/PC Multiplatform available.

Download the APP, enter equipment serial number /scan equipment QR code and the registration is completed.



IOS

Android