

## Asia 2015 6<sup>th</sup> - 8<sup>th</sup> of Jul

AUTOMOTIVE LIGHTWEIGHT

# PROCUREMENT SYMPOSIUM

Jumeirah Himalayas Hotel in Shanghai, China



### SYMPOSIUM FOCUS

- Aluminium
- Carbon Fibre
- Composites
- High Strength Steel
- Magnesium

## HIGHLIGHTS

### • INTERNATIONAL SPEAKERS

AUDI - MAGNA - DGS - GEELY - NOVELIS - JSC - VOESTALPINE, ...

### • LIGHTWEIGHT TECHNOLOGY EXHIBITION

DGS - StrikoWestofen - Kurtz - Novelis – Idra

### • SIMULTANEOUS INTERPRETING

Chinese - English / English - Chinese

### ATTENDING COMPANIES



### MEDIA & ORGANIZATION PARTNERS



Brings together the procurement and supply side of lightweight materials and their advanced processes in accompany with cost balance or reduction....

## AluMag® offers the four following services - worldwide:



Market Research

- Aluminium Extrusion Customer Database
- Foundry & Tool Maker Database
- Automotive Application, Material & Process Analyses
- Various Industrial Application Research & Analyses

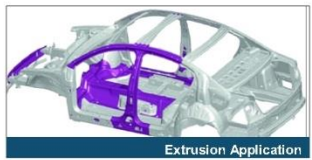
AluMag as your provider of automotive research and forecasting studies, offers you and your business, the market intelligence you need to realize the best strategic decisions



Material - Process - Application Trend Analysis

### Large variety of market access, local & global:

- business database with 6,970+ companies and 18,700+ contacts
- 150+ satisfied customers worldwide
- Arranged 20+ roadshows/events since 2008



Extrusion Application

### Your Benefits:

- Learn about your [potential] clients and competitors
- Obtain an inside view of the market
- Identify opportunities and threats
- Minimize risk and optimize profits
- Position your company successfully
- Based on data off the shelf, secondary re-search and interviews, AluMag generates validated researches



Market Development

- Analysis & Development of Market Opportunities
- Accelerate Market Penetration
- Manage New Product Launches
- Establish a Sales Force Sales on Demand

AluMag guides and supports your organization globally through the different market development phases until we have successfully launched, implemented or executed your project.



Map of activity - SAMPLES

Manage and integrate each aspect of your organization by initiating, planning, controlling, executing and closing out a new project. AluMag offers liaison management services as an addition to our customer's staff by bringing in the resources that define us.



JATCO Head Quarters Meeting in Japan

### Your Benefits

- Analysis and development of Markets
- Realize opportunities
- Accelerate market penetration
- Establish a sales force
- Provide warehousing and distribution services
- Manage new product launches
- Sales on demand



Roadshows / Events

- Organization of Technical & Commercial Roadshows
- Oversea Commercial & Technical Events
- Host In-House Events & Presentation
- Common Technology Booth at Leading Exhibitions

AluMag roadshows, tech-meetings and symposia are the first class events used by exhibitors and guest as a unique benchmark platform.



Daimler Sindelfingen as Roadshow Location

The AluMag think tank events are bringing in decision makers and executives in EUROPE, ASIA and NAFTA.



G M VIP at AluMag Booth SAE in Detroit

### Upcoming Events:

- 2015 Jul: Automotive Light-weight Procurement Symposium in Shanghai, China
- 2015 Nov: Automotive Light-weight Procurement Symposium in Detroit, USA
- 2016 April Common tech- booth at the SAE World Congress in Detroit, USA
- 2016 Jul: Automotive Light-weight Procurement Symposium in Shanghai, China



Strategic Localization

- Warehousing & Distribution Service
- Supplier & Tie-up Localization
- Identification & Trade-off of new Technology
- Foreign Market Business Cases and whose Realization

AluMag has the global expertise to search, identify, evaluate and validate potential strategic business opportunities for expansions and partnerships that will assist your business growth plans regionally and globally



On-Site Greenfield Planning Meeting

### Services for:

- Search, develop and present potential acquisition candidates for regional and global business expansions
- Localization of new manufacturing / service sites for business expansions
- Identification of new technology supplier development related to products, processes and materials
- Search, develop and present potential business partners / suppliers to support regional and/or global supply programs
- Evaluate potential competitor profiles for new or existing business in non-presence geographies
- Evaluate new emerging technologies and processes for business expansions

### Are you:

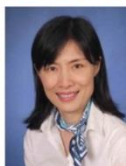
- looking for specific data, information and outlook about product, material, customer, supplier, technologies, ...
- want to discuss your project, increase sales, access new markets, ...
- interested to participate in one of our roadshows / events or organize your customized showcase ...
- looking to localize, expand into new markets, countries, tie-up targets, ...

please contact your AluMag Team to receive a quote or proposal

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**Asia Automotive Lightweight Procurement Symposium**  
**6th – 8th of July 2015**  
Jumeirah Himalayas Hotel in Shanghai, China.



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**AluMag®**  
Europe ■ India ■ Americas ■ Asia  
**THE MARKET DEVELOPER**

## Company Speechs by:

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# Agenda

## Agenda: (Is Continuously Being Updated)

### Monday The 6th Of July – Jumeirah Himalayas Hotel, Shanghai – 6th Floor

06:00pm - 10:00pm

Pre-registration and Welcome Reception

### Tuesday The 7th Of July – Jumeirah Himalayas Hotel, Shanghai – 6th Floor

08:30am – 09:15am

Registration & Morning Coffee / Tea

09:15am – 09:30am

Welcome:

Mr. Jost GAERTNER, Managing Partner at ALUMAG Automotive GmbH

09:30am – 10:25am

Opening Keynote:

Mr. Frank VENIER, Strategy and Innovation; Lightweight Design Centre at AUDI AG

**Lightweighting SUV - The New Audi Q7 In Multimaterial Car Body Design**

10:25am – 11:00am

Break for Refreshments/Coffee/Tea, Snacks, Networking, Tech Exhibition

11:00am – 12:00am

Paper 1 – Part 1:

Mr. Gerhard KRACHLER, Director Advanced Development & Product Strategy at MAGNA STEYR Engineering AG & Co.KG

Paper 1 – Part 2:

Mr. Christian JURICEK, Manager R&D Europe at COSMA MAGNA International

**Magna's Global Advanced Lightweight Competences**

12:00pm – 01:45pm

Break for Refreshments/Coffee/Tea, Lunch, Networking, Tech Exhibition

01:45pm – 02:25pm

Paper 2:

Mr. Andreas MUELLER, CEO at DGS Druckguss Systeme AG

**Localization And Industrialization Of Cast Aluminium Structural Applications**

02:30pm – 03:10pm

Paper 3:

Mr. Li WAN, Vice President at Guangdong Hongtu Technology (Holdings) Co Ltd

**Aluminum Alloy High Vacuum Die Casting Technology And It's Application On Automotive Structural Parts**

03:15pm – 03:45pm

Paper 4:

Mr. Lothar HARTMANN – Managing Director Foundry Machines & Trimming Presses at Kurtz GmbH

Mr. Michael BARTEL – Asia Sales Manager Foundry Machines & Trimming Presses – Kurtz GmbH

Low Pressure Casting

A traditional casting technology helping to step ahead for light weight solutions in engine block manufacturing

03:45pm – 04:15pm

Break for Refreshments/Coffee/Tea, Snacks, Networking, Tech Exhibition

04:15pm – 04:55pm

Paper 5:

Mr. Peter BERNSCHER, Member Of The Board & Director Automotive Body Parts at Voestalpine Metal Forming GmbH

**Lightweight Solutions In The Automotive Industry By Voestalpine**

05:00pm – 05:55pm

Closing Keynote:

Mr. Jochen SIEBERT, Managing Partner at JSC Automotive Consulting Co. Ltd.

**Outlook And Hurdles Of The Chinese Economy And Automotive Industry**

05:55pm – 06:00pm

Summary:

Ms. Ying ZHOU, Project Coordinator China – Japan at ALUMAG Automotive GmbH

06:00pm - 10:00pm

Reception Sponsored By StrikoWestofen

Dinner Speech – Part 1:

Mr. Rudolf RIEDEL – Group Managing Director at StrikoWestofen GmbH

Dinner Speech – Part 2:

Mr. Rainer ERDMANN – Managing Director Asia Operations at StrikoWestofen Thermal Equipment Co.Ltd

**Profits With Light Metal Castings Start In The Melt Shop**

# Agenda

## Agenda: (Is Continuously Being Updated)

### Wednesday The 8th Of July

08:15am – 08:55am

Opening Keynote:

Prof. Fei XIONG Chief Engineer & Director of Auto Lightweight Department at GEELY

#### **Automotive Lightweight Promoting The Application Of Aluminium**

09:00am – 09:40am

Paper 1:

Mr. James LIU, Managing Director and Vice President of Asia Auto at NOVELIS China

#### **High Volume Aluminum Solutions For Lightweighting**

09:45am – 10:25am

Paper 2:

Dr. Jin HOU – General Manager – Sapa Technology Asia

#### **High Performance Aluminium Alloys For Automotive Light-Weighting**

10:25am – 11:00am

Break for Refreshments/Coffee/Tea, Snacks, Networking, Tech Exhibition

11:00am – 11:40am

Paper 3:

Mr. Yoshikazu MUKAI, Executive Vice President & Technical Specialist at Kobelco Automotive Aluminium Rolled Products (China) Co., Ltd – Shanghai Branch

#### **Kobe's R&D Activities For Automobile Lightweighting**

11:45am – 12:25pm

Closing Keynote:

Mr. Martin SHI, Chief Editor at GASGOO International And Senior Analyst at GASGOO Research Institute

#### **The Status And Development Trends Of China Automobile Lightweight**

12:30pm – 12:35pm

Summary:

Mr. Jost GAERTNER, Managing Partner at ALUMAG Automotive GmbH

12:45pm – 01:00pm

Walk To The SNIEC  
Shanghai New International Expo Centre

01:00pm – 01:40pm

Reception With  
Snacks & Finger Food at the SNIEC

01:40pm – 05:30pm

Individual Or Guided Visit At The 2015 "Aluminium China " And "China Diecasting" Exhibitions

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Backup Speech

Mr. Jost GAERTNER, Managing Partner at AluMag Automotive GmbH

#### **Top 16 Global Ranking Of Aluminium And Magnesium Foundries By Revenue**

# EXHIBITOR

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## **TITLE**

The development and application of Aluminum Alloy High Vacuum Die Casting Technology

## **ABSTRACT**

It is aimed to the applications of high vacuum die-casting in the important aluminum-alloy parts of auto. The novel multi-way high speed vacuum die casting technology was researched and developed. The key technology is to vent gas of the die cavity from multiple ways, which means to exhaust the air out of the injection sleeve, die cavity, and the die body. Another key is vacuum valve, an active vacuum valve driven by hydraulic pressure was designed and manufactured, whose function is to open and close the exhausting gates. The others such as plunger tip and its seal, lubrication, gas content test method etc are also studied. At last front sub-frame, an auto structural part developed by Guangdong Hongtu Technology(holdings) Co. Ltd was introduced.



# Guangdong Hongtu Technology Co.,Ltd



广东鸿图科技股份有限公司

证券简称：广东鸿图 证券代码：002101

**精密铸件 源自广东鸿图**

广东鸿图(GHT)  
欢迎您  
Welcome you  
Guangdong  
HongTu

A photograph of the company's main building with a large 'Y' shaped sculpture in front. The GHT logo is visible on the building's facade.

## Development and Application of Al Alloy High Vacuum Die Casting Technology

Li Wan  
2015.6.30

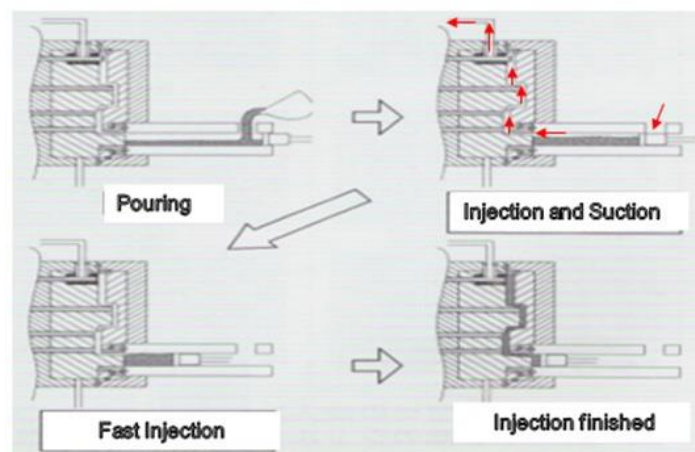


## Contents

- 1 What is High Vacuum Die Casting Technology
- 2 Principle of High Vacuum Die Casting Technology
- 3 Development of Die Casting Front Sub-frame
- 4 Summary



## 1 What is High Vacuum Die Casting Technology

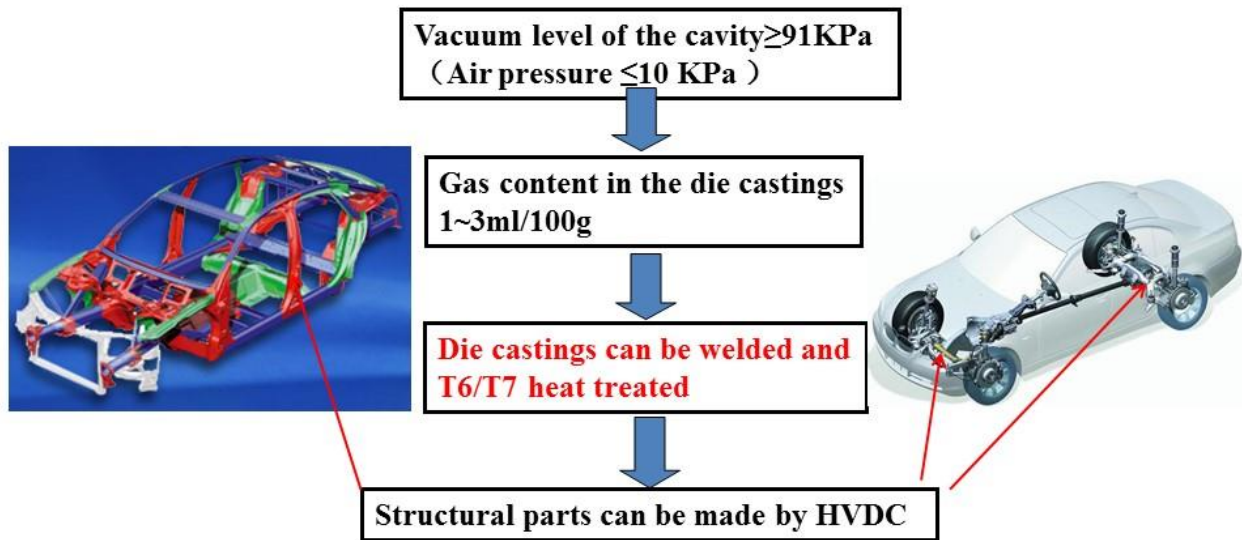


**Schematic of Vacuum Die Casting**

Alloy liquid is injected into the die cavity after the air in the cavity was suctioned by vacuum pump. Gas porosity defect caused by air entrapped can be eliminated.



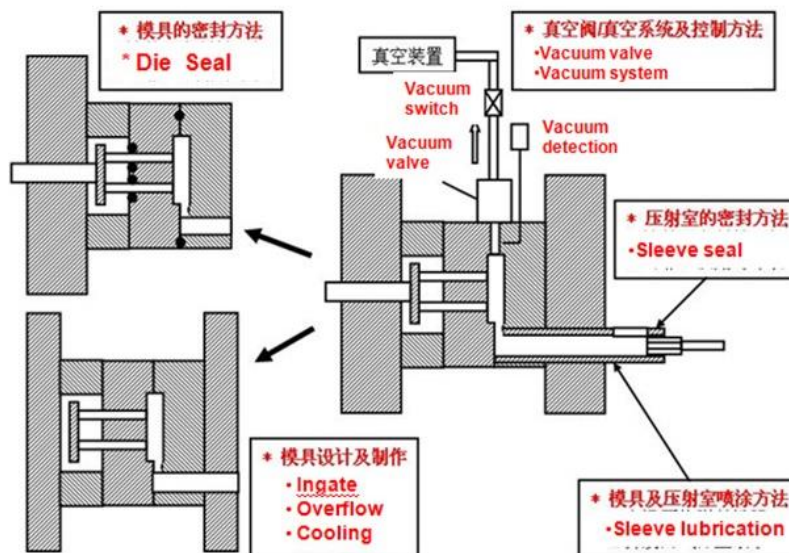
## 1 What is High Vacuum Die Casting Technology



Character of High Vacuum Die Casting



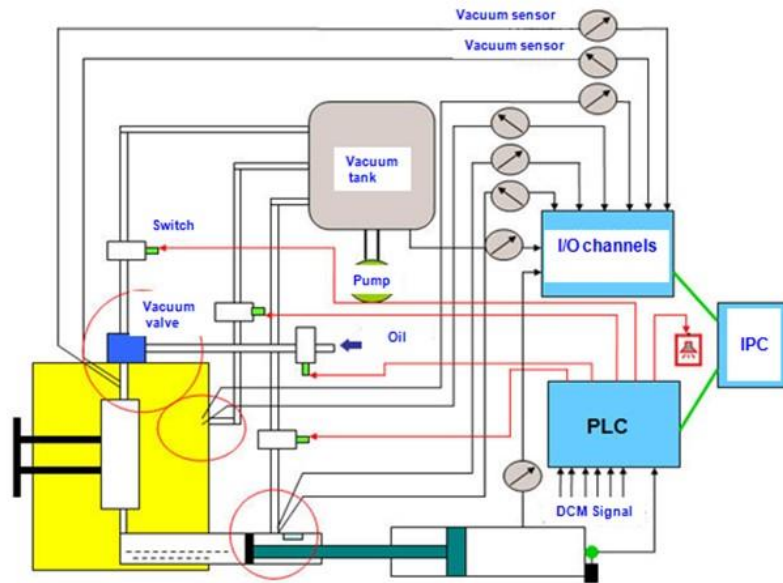
## 1 What is High Vacuum Die Casting Technology



Key of High Vacuum Die Casting



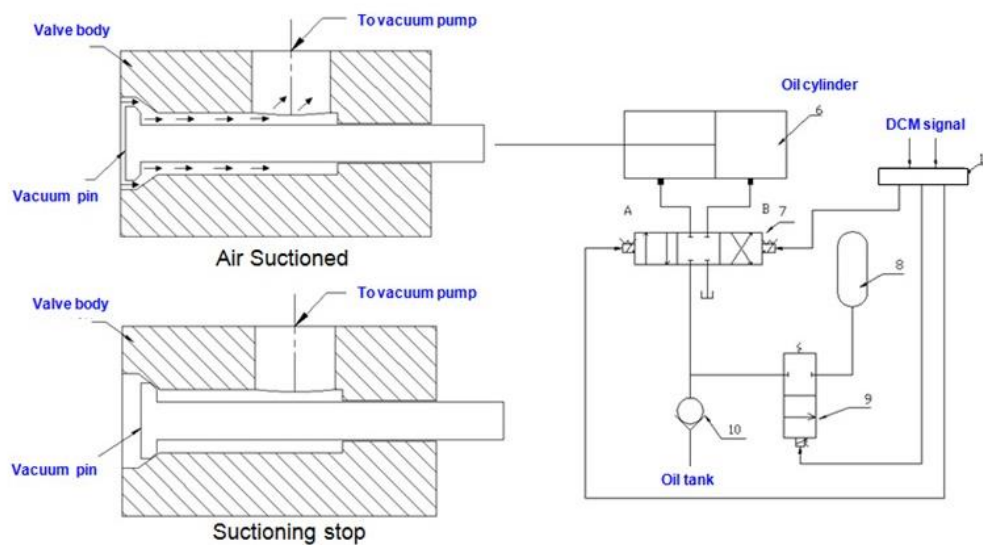
## 2 Principle of High Vacuum Die Casting Technology



Schematic of High Vacuum Die Casting by Multi-channels suction



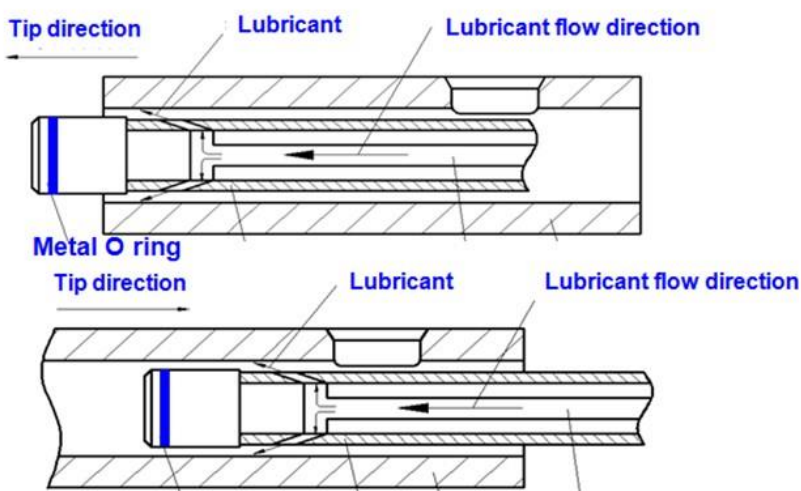
## 2 Principle of High Vacuum Die Casting Technology



Schematic of Vacuum Valve Driven by Oil



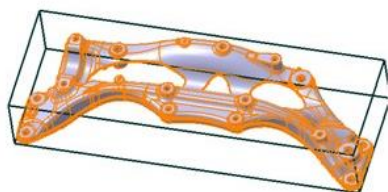
## 2 Principle of High Vacuum Die Casting Technology



Schematic of Tip Seal and Sleeve Lubrication



## 3 Development of Die Casting Front Sub-frame



Part size: 677.79mm X 115.40mm X 232.42mm

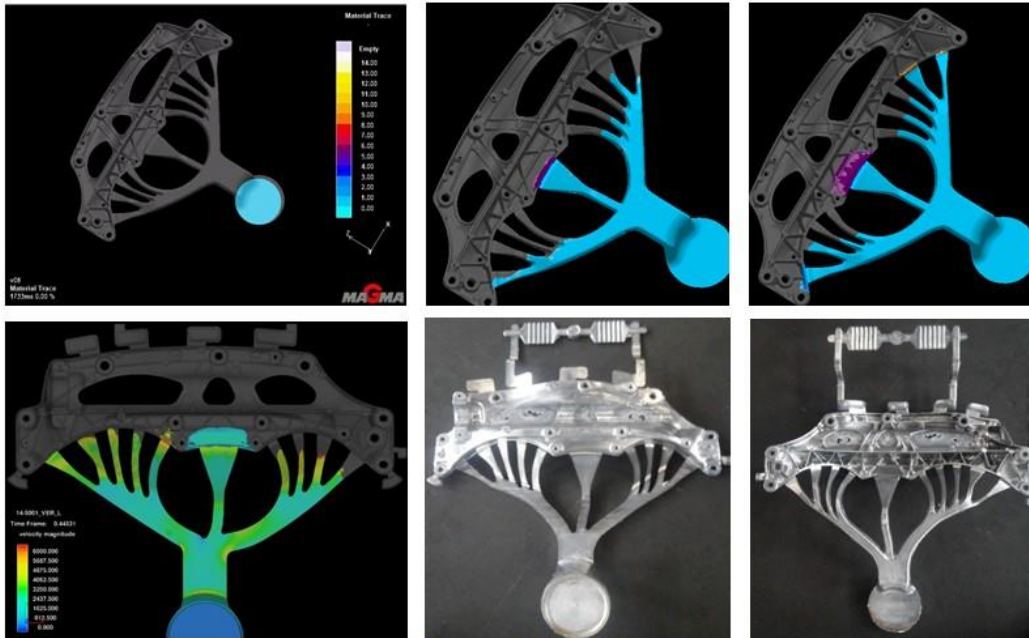


Part weight: 2634.67g Alloy: AISi8MnMg Heat treatment: T5  
 Tensile strength:  $\geq 220\text{MPa}$ , Yield strength:  $\geq 150\text{MPa}$ , elongation:  $\geq 5\%$   
 Gas content: 10cc/100g(Ingate side), 15cc/100g(Overflow side)

### Front sub-frame



## 3 Development of Die Casting Front Sub-frame



Flow simulation



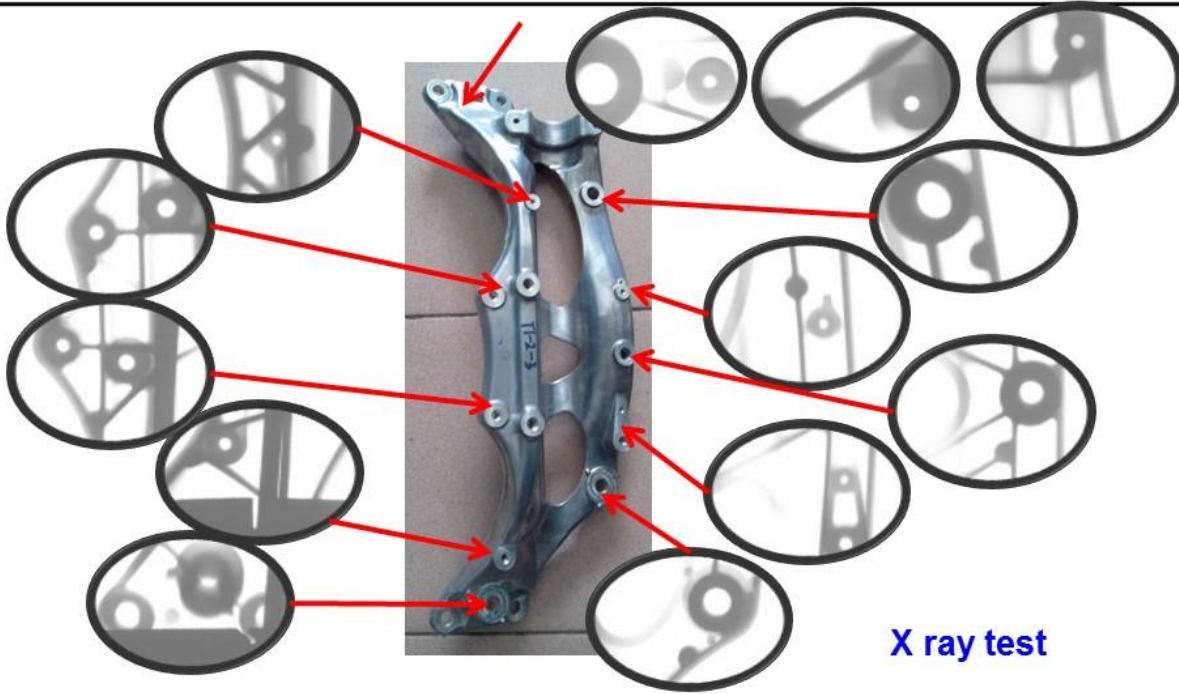
## 3 Development of Die Casting Front Sub-frame



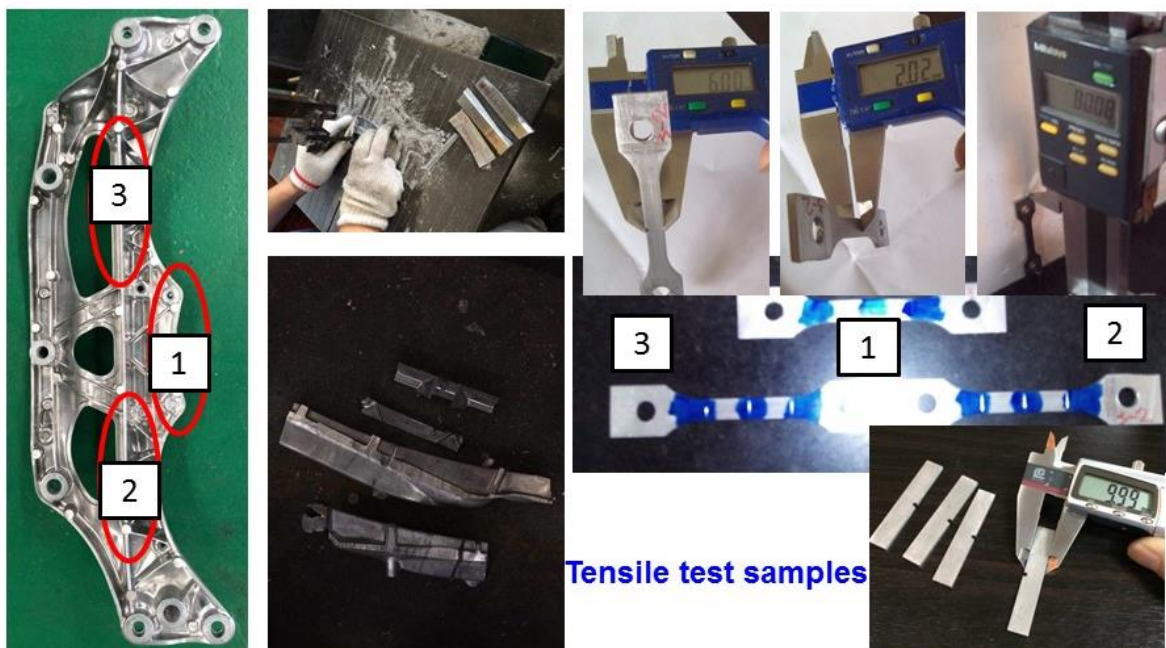
Photos on production site



### 3 Development of Die Casting Front Sub-frame



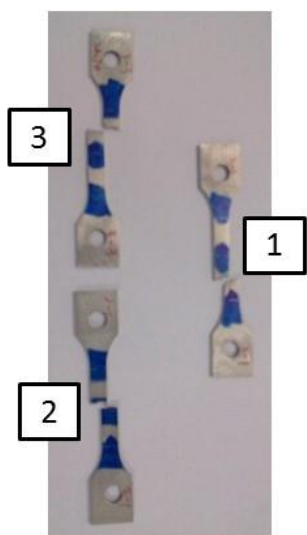
### 3 Development of Die Casting Front Sub-frame





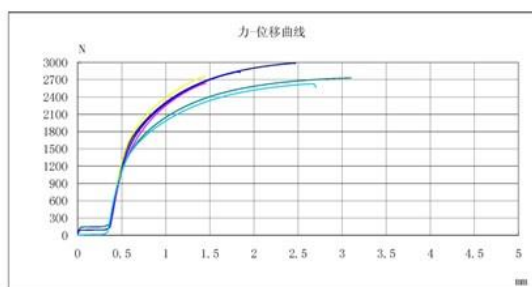
## 3 Development of Die Casting Front Sub-frame

金属材料拉伸-板材试验报告



执行标准	JIS Z2241-1998	供应商	华劲
原始标距	25 mm	试样编号	
材料牌号	H03SF	材料批号	

	试样宽度 (b)	试样厚度 (a)	原始横截面积	最终标距	最大力 (Fm)	抗拉强度 (Rm)	屈服强度 (Rp0.2)	断伸长率 (A)
	mm	mm	mm <sup>2</sup>	mm	kN	MPa	MPa	%
第1根	5.97	2.02	11.97	26.43	2.79	232.81	166.42	5.72%
第2根	5.98	2.00	11.96	26.26	2.64	220.46	158.78	5.04%
第3根	5.90	2.05	12.28	26.42	2.75	224.35	159.97	5.68%
第4根	5.96	2.01	11.98	27.14	2.75	229.15	161.43	8.26%
第5根	6.00	2.02	12.12	26.52	2.83	233.50	160.02	6.88%
第6根	5.97	1.99	11.88	26.37	2.63	221.38	158.66	5.48%



Tensile test results



## 3 Development of Die Casting Front Sub-frame



材 質	工 法	試験方法 1. 含気量 (含気量測定装置GV-700[試管-018]) 含気量: 根据压铸产品測量基準42003-D3
鑄 造 日	鑄造場所	1. 含有ガス量 (ガス量測定装置GV-700 [試管-018]) ガス量測定: ダ品試 42003-D3 による
目 的		2. 発生ガス成分(ガス分析装置AG-1(TF-TRD)) ガス分析: ダ品試 42003-D3-1 による

表1.ガス量測定結果 含気量測定結果

試料	測定質量 (g) 試料質量	全ガス量 (ml) 总含気量	ブランク値 (ml) 等級値	含有ガス量 (ml/100g) 含気量
①	73	10.71	8.41	3.15
②	81	18.95	8.41	13.01
③	59	13.18	8.41	8.08

測定時間:30分

表2. 発生ガス分析結果 产生气体分析結果

試料	発生ガスの分析結果[発生ガスの割合%] 产生气体的分析結果 (产生气体的比例)							
	O <sub>2</sub>	N <sub>2</sub>	H <sub>2</sub>	C <sub>2</sub> H <sub>6</sub>	CO <sub>2</sub>	C <sub>2</sub> H <sub>4</sub>	CH <sub>4</sub>	CO
①	0.0	13.7	9.1	5.5	47.4	7.1	16.0	1.3
②	1.1	50.6	15.0	6.1	9.7	3.1	13.2	1.1
③	1.5	45.9	15.4	5.3	12.5	4.6	13.5	1.1

※N<sub>2</sub>、O<sub>2</sub>、H<sub>2</sub>は鑄造時のエア-や水分の巻き込みであると推察される。  
※CH<sub>4</sub>等Oを含んだガスの発生はチップ潤滑油などが原因と推察される。

Gas content tested in Japan





## 4 Summary

- 1 A novel multi-channels high vacuum die casting technology, including vacuum valve, vacuum system, sleeve lubrication and seal etc, was developed. It owned high venting speed and higher vacuum level of the die cavity.
- 2 High vacuum die casting of front sub-frame was researched. The gating system was optimized through Magma software.
- 3 The mechanical property of casting made by high vacuum die casting can meet the specifications. Gas content tested in Japan is lower than 15cc/100g nearby overflows and 10cc/100g nearby ingates.



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# We Welcome You To Our Next Event

**AluMag®**

**North America 2015** 9<sup>th</sup> - 11<sup>th</sup> of Nov  
 AUTOMOTIVE LIGHTWEIGHT  
**PROCUREMENT SYMPOSIUM**  
 Westin Hotel in Detroit, USA



**AluMag®**

**AluMag SAE 2016** 12<sup>th</sup> - 14<sup>th</sup> April  
 Light Weighting - Emission Reduction - Car Comfort  
 Technology Center, Booth # 763 - Detroit - Cobo Center, MI USA



**AluMag®**

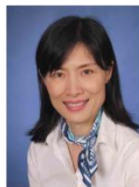
**Europe 2016** 27<sup>th</sup> - 29<sup>th</sup> of Nov  
 AUTOMOTIVE LIGHTWEIGHT  
**PROCUREMENT SYMPOSIUM**  
 Hilton Hotel in Duesseldorf, Germany



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