CMA kicked off its annual conference highlighting the application of magnesium

On Oct. 16, CMA's opened its annual conference in Tianjin. Ren Xudong, executive vice president of China Nonferrous Metals Industry Association, and Chen Xuesen, director Raw Material Industry Department, Ministry of Industry and Information Technology, attended the conference and made speech. Prof. Pan Fusheng, director of National Engineering Research Center for Magnesium Alloys, made a special report on the national magnesium alloy development planning during the 13th five-year plan. He Jilin, academician of Chinese Academy of Engineering, and Wen Xianjun, vice president of China Nonferrous Metals Industry Association also attended the conference. There were more than 200 delegates attending the conference.

At present, many problems hit magnesium industry downturn, as indicated by slow supply and low price. The conference promoted the application of magnesium alloy deep processing materials as the theme. Participating experts and enterprise representatives exchanged viewpoints, released innovation vigor, further promoted the innovation and processing technology and equipment for high-end products, and added momentum to the transformation and upgrading of magnesium industry.

Ren Xudong, executive vice president of China Nonferrous Metals Industry Association, pointed out that downward risk and uncertainty facing world economy have eased. European and American economic begin to recover, but structural contradictions are still prominent in China’s economy. Non-ferrous metal production, in the past 10-plus years, moved from two digit growth to single digit growth. Impacted by large environment, magnesium industry in China also shows 'new pattern'. From Jan. to Aug. 2014, China's primary magnesium output stood at 565.3kt, up 5.57% y-on-y. Shaanxi, Shanxi, and Ningxia still are the main primary magnesium area. Output in Shaanxi grew moderately, but both Shanxi and Ningxia dropped down. Even though, with the development of science and technology, positive signal emerged out for magnesium alloy materials, especially from 3C, automotive and other consumer areas which breeds greater breakthrough for large growth."

Ren Xudong said China has ranked No.1 in terms of production, export and consumption for many years. Compared to other nonferrous metals, magnesium resource is very rich, and can guarantee the sustainable development of magnesium industry. Magnesium performs excellently with broad application prospects, and magnesium industry in China, with the world development, actively participates in the global market competition. But there still remain in the level of magnesium raw material power country. Ren Xudong proposed that "we must accelerate the structure adjustment, strengthen the research and development of science and technology orienting application, take the market as the goal, fully mobilize all positive factors, strive to build a power country of magnesium industry, and contribute to building a power country of nonferrous metal industry.

Xu Jinxiang, director of CMA, said in his report that "we will stress innovation as core position in the national industry and the overall development of enterprises, strengthen the dominant position of enterprises in technological innovation, encourage enterprises to set up R & D institutions, and lead them to construct innovation alliance."
During the conference, several magnesium enterprises also held a signing ceremony, and signed letters of intent for cooperation. CMA and Tianjin Wan Ju Asset Management signed “memorandum of electronic commerce project cooperation for China’s magnesium industry; Tianjin Wan Ju Asset Management and Yingkou Yinhe Magnesium Alloy signed the letter of intent for strategic cooperation; Jiangsu Rongmei Magnesium Alloy Wheel and Inner Mongolia Zhongyu Magnesium Alloy Forged Wheels signed the transfer agreement for the magnesium alloy automobile wheel forging production technology and patents.

**CMA begins to map out 2015-2020 year development plan for China’s magnesium industry**

Xu Jinxiang, director of CMA, informed the attendees during CMA’s 2014 annual conference of some ideas about 2015-2020 year development plan for China’s magnesium industry.

Xu said that CMA, according to some requirements and deployment from relevant ministries, commissions and China Nonferrous Metals Industry Association, launches the 2015-2020 year development plan for China’s magnesium industry.

Mr. Xu said the 13th five-year plan period is critical for magnesium industry to accelerate the transformation of development mode and realize powerful magnesium country.

Magnesium, as a strategic resource with unique special status and as new structural material, will usher in the hopeful period of strategic opportunity, and play a greater role in lightweight, transport energy, materials, environmental protection industry, consumer electronics, marine engineering, aerospace, defense industry and other fields. Especially, the "energy saving and new energy automobile industry development plan (2012-2020)" proposes that average fuel consumption for passenger car by 2015 will dropped to 6.9 L / 100 km, and further to 5 L / 100 km by 2020. This means that by 2020, per vehicle lightweight rate will reach 16.5-22% and this trend will provide a broad application space for magnesium alloy parts.

**The main development target (2016-2020)**

During this period, obvious progress will be made for magnesium industry structural adjustment and industrial transformation and upgrading. Quality and efficiency of industrial development will have obvious improvement.

1. **Industry production target**

   It is expected that in 2015, China's magnesium production will exceed 800kt; by the end of 13th five-year plan, or by the end of 2020, China's magnesium production will reach 1300kt, with an average annual growth rate of more than 10%. (no more than currently existing capacity; actual utilization rate of current capacity at about 50%; during 12th five-year pan period, the average annual output at 700kt, against over 1000kt during 13th five-year plan period.)
2. Energy-saving emission reduction target
During 13th five-year plan period, energy saving and emission reduction of China's magnesium industry will achieve greater progress, and energy consumption per unit product will further reduce. In 2020, the comprehensive energy consumption of China's magnesium will drop to 3500 kilograms of standard coal / ton, down 13% compared to the 12th five-year plan period, indicating average annual coal saving at about 500kt, carbon dioxide emission reduction at 1300kt, and average annual electricity saving at 150 bln.KWH.

3. Technological innovation
To construct enterprises as the main body of the perfect technical innovation system; invest, accounting for 2% total revenue, in research and development; focus on the development and promotion of high efficient green technology and energy-saving emission reduction technology for new smelting, casting, and alloy production; research and make, at industry scale, wide strip and high-technology products including profile, castings, forgings and other deep processed products; make domestic technology breakthroughs in key equipment; develop application in the field of biological material and the new energy.

4. Structure adjustment
To optimize industrial layout and organization structure; product quality meets the basic needs of strategic emerging industry; further improve industry concentration.
- Optimize layout; strengthen industrial agglomeration effect; transfer magnesium smelting enterprises to western regions where resources and energy have more obvious advantages; will be formed many smelting raw material bases in Yulin (Shaanxi), Yuncheng(Shanxi), Xinjiang, Ningxia, and Inner Mongolia.
- Multiple processing bases will be formed by main enterprises of deep-processing and application of magnesium products in Yangtze River Delta, Zhujiang Delta, Chongqing, Bohai area, Northeast China and the Central Plains area.
- Further optimize industrial structure and develop enterprises at large scale. By the end of 13th five-year plan period, output of magnesium alloy processing products will be expected to reach 600-700kt, and at least 10 related production producers, each with more than 20kt of output annually, will come into being. At the same time, China will promote the optimization and upgrading of smelting enterprises, and actively guide enterprises to carry out large-scale development, and strive, by the end of 13th five-year plan period, to cultivate more than 6 production enterprises, each with more than 50-100kt of output annually, as leading enterprises with large scale and high level, and further improve China's international competitiveness for magnesium smelting enterprises.
- To deepen the adjustment of product structure, and actively transfer and extend to high added-value product.

During the 13th five-year plan period, magnesium industry will vigorously promote the product structure for high value-added products; mainly meet the demand from automotive, rail trains and high speed rail transportation for large, porous, shaped, and hollow magnesium alloy profiles, high-quality magnesium
alloy sheet, variable cross-section rolling plate, large-scale magnesium alloy die casting, and more than 1500mm-wide magnesium alloy sheet; mainly meet the demand from aerospace and defense industry for magnesium alloy plate with high strength, high toughness, high temperature, corrosion resistance, and fatigue resistance, as well as for large-scale forgings, profiles, and large and complex welding parts; mainly develop magnesium alloy function material of special function and property.

Raw Material Department of MIIT plans, during 13th five-year plan period, to further focus on magnesium deep-processing industry and facilitate the application of magnesium

In October 16th, Chen Xuesen, director of Nonferrous Metal Section, Raw Material Industry Department, Ministry of Industry and Information Technology (MIIT), addressed CMA national magnesium industry conference and said MIIT will continue to support magnesium industry upgrading as main measures.

Mr. Chen said MIIT has always attached great importance to the development of magnesium industry, strengthen the development of magnesium industry guidance and support from the planning, policy, standard, and fund etc. MIIT released "Nonferrous Metals Industry Development Planning during 13th Five-Year Plan Period" and "New Material Industry Development Planning during 13th Five-Year Plan Period" which all put forth the effort to develop high performance magnesium alloy and revitalize technological transformation and industrial strong base and allocate other special funds to support high performance magnesium alloy projects. MIIT issues magnesium industry access conditions, and carries out the access management. MIIT, at present, already releases 35 up-to-standard enterprises whose capacity account for 50% of national total.

Mr. Chen thought China's magnesium industry is facing the following problems:

Firstly, industrial structure needs to be adjusted. At present, capacity utilization rate for magnesium smelting industry is only about 50%, the problem of over large capacity is prominent, deep processing capacity of downstream products is of deficiency, and export is mainly primary products with low-added value.

Secondly, key technology of magnesium alloy needs to make breakthrough. Has been no fundamental breakthrough the large-scale application bottleneck as indicated in magnesium smelting and continuous production technology, high strength and heat resistant magnesium alloy technology, corrosion resistance and surface anti-corrosion technology, and magnesium material processing technology.

Thirdly, product development and market application need to be strengthened. New product development lags behind, the propaganda for popularization and application of magnesium products is poor; social understanding is of lack for comprehensive performance, application fields, advantages and characteristics for magnesium products; development and application of the whole magnesium downstream products is still at the starting stage.

In the background of currently national macroeconomic situation and downward pressure of domestic economy, it is a common task of all employees of the magnesium industry to early speed up
magnesium industry technology progress, innovation and upgrading, actively expand the magnesium material consumption, and realize industry scale.

MIIT, then, will mainly carry out the following work:

Firstly, MIIT will actively strengthen planning guidance. In the Nonferrous Metal Industry Development Planning during 13th Five-Year Plan Period, we will continue to mainly support magnesium deep processing industry and expand the application of magnesium.

Secondly, MIIT will continue to strengthen the industry access and standard management. We will support the development of up-to-standard enterprises and improve industrial concentration.

Thirdly, MIIT will strengthen the support for technical progress. We will continue to increase the special fund support for technical innovation of magnesium smelting industry, and constantly improve the level of clean production of magnesium smelting and deep processing capacity. At the same time, we will encourage domestic enterprises to strengthen international cooperation, and to increase the introduction of international advanced technology.

Fourthly, MIIT will further expand the market application. We will, with China Nonferrous Metals Industry Association, study and establish magnesium products application mechanism, strengthen communication and coordination of upstream and downstream industries, promote the application of magnesium alloy materials in automobile and other related fields, and facilitate lightweight transportation. At the same time, we will rely on CMA to organize magnesium product promotion, and strengthen propaganda.

Finally, Director Chen Xuesen said we should adapt to the situation, seize opportunities, strengthen innovation, and strive to realize the transition of China’s magnesium industry from big country to powerful country.

Prof. Pan Fusheng talked about magnesium alloy development planning (2016-2020)

In the recently national magnesium industry conference, Prof. Pan Fusheng, director of National Engineering Research Center for Magnesium Alloys made a special report, analyzed the current situation of magnesium and magnesium alloy industry in the technical aspects of the problem, and introduced the national magnesium alloy development planning during 2016-2020.

1. Main alloy materials developed in 13th five-year plan period:
   - High performance casting magnesium alloy.
     To develop high performance & heat resistant magnesium alloy and high performance casting magnesium alloy with low cost and their main absolute performance at existing commercial aluminum alloy level. Among them, tensile strength of high-property cast magnesium alloy targets to exceed 400MPa.*
   - The ultra - high strength wrought magnesium alloys.
To start with rare earth magnesium alloy as the main system, and develop ultra-high strength wrought magnesium alloy with strength at more than 550-600MPa, and elongation rate at larger than 5-10%.

- Low-cost and high strength magnesium alloy.
  To start with rare earth-free magnesium alloys as the main system, emphasize the use of low cost elements, and develop high strength magnesium alloy with strength at 400-500MPa, and elongation rate at 8-20%.

- High formability and high plasticity magnesium alloy.
  High formability magnesium alloy is 30-40m/min for extrusion speed, and room temperature Erichsen value for sheets is greater than or equal to 8-10.0mm; high plasticity magnesium alloy is over 50% for room temperature elongation rate.

- Super light magnesium alloy.
  To start with magnesium-lithium alloy as the focal point, develop super light magnesium alloy with density at less than 1.60g/cm³, tensile strength at greater than 280-300MPa, and elongation rate at more than 20%

- High strength and high damping magnesium alloy.
  To solve the problem that high strength and high damping performance cannot be coordinated, and develop high damping magnesium alloy with damping coefficient (SDC) at more than 40% with tensile strength at 350MPa.

- Biomedical magnesium alloy.
  To study the technology of new medical magnesium alloy, and develop new medical magnesium alloy for different uses and relevant surface treatment.

- Mg-based energy alloy.
  To develop new Mg-base hydrogen storage material with high hydrogen storage density, low operating temperature, controllable hydrogen discharge, and long cycle life.

- Electromagnetic shielding magnesium alloy.
  To study the relation among alloy element, process and electromagnetic shielding property, and develop moderate-intensity electromagnetic shielding alloy with electromagnetic shielding effectiveness at 85-100dB (frequency range <1.5GHz, and 2mm of sample thickness) when strength is 320-360MPa

2. Main engineering technology for magnesium and magnesium alloy:
- low cost and high quality magnesium smelting technology;
- Metallurgical quality control technology and equipment for high-quality melt magnesium;
- Production technology for large and complex magnesium alloy casting; advanced casting technology and traditional casting-upgrading technology;
- Large ingot casting process, heat treatment process and machining process for wide plate/sheet;
- Large billet casting process, profile heat treatment process and machining process;
- Coating material and magnesium alloy system with strong adhesion, good corrosion resistance and high hardness;
- Connection technology and equipment represented by friction stir welding.
3. Standard and R & D platform for magnesium alloy products
   - To establish complete and international standards that can meet the industrial production of magnesium alloy.
   - To establish, with international level, the world's largest data platform which can meet the development and application of magnesium alloy.
   - To establish modern R & D platform which can integrate R & D, material and product processing, product development and application, shorten the development cycle for magnesium alloy product and give full play to the potential performance of magnesium alloy.

Experts from Volkswagen group hope for potential application of magnesium alloy in Volkswagen automobile
On Oct.13, experts from Research Center of Volkswagen Group joined the Symposium of Volkswagen Automobile-Oriented Magnesium and China’ Magnesium Industry, sponsored by Dalian Deying Science and Technology Development and Sunlight Metal. Attended the symposium and made wonderful lectures Soenke Schumann, former director of Research Center of Volkswagen Group, Dr. David Klaumunzer, manager of Magnesium alloy Section, Research Center of Volkswagen Group, and Dr. Katrin Wendt, senior research engineer, Volkswagen Research Lab China.

The visiting experts described in detail the history and present situation of magnesium application in Volkswagen Group. They emphasized the factors considered in the Volkswagen group for the use of new metal materials: material performance, lightweight cost and carbon dioxide emission index. They, also, introduced Volkswagen Group’s attention to China’s market and magnesium material in the future development. They believe that, due to the more and more stringent emission reduction requirements from domestic and international communities for automobile, lightweight process must be accelerated, and the choice of materials include aluminum, magnesium, and reinforced fiber materials. However, at present in Europe and North America, magnesium-aluminum price ratios were 1.6 and 2.6 respectively, and in the China only 1.2 (actually only 1.05 according the survey from Sunlight Metal). Price advantage in China is very obvious. This year, China has exceeded Europe and become the Volkswagen Group’s largest market. The above several factors make Volkswagen Group realize that Volkswagen Group should put special attention to magnesium alloy for its application in Volkswagen automobile made in China. In order to improve the amount of magnesium alloy, still remains lots of improvement and efforts, including parts in casting and machining deformation. They have an understanding that a new era of Volkswagen for magnesium alloy may be opened in China. They invite participants from China’s magnesium alloy and processing enterprises to join Volkswagen for the application of magnesium in Volkswagen automobile.

Nearly 40 delegates from 20 magnesium industry sector attended the symposium. Attendees introduced the basic situation and development progress of their respective enterprises to Volkswagen experts at the symposium, and had frank communication. Especially, they introduced to the experts China’s magnesium industry in the energy-saving emission reduction progress and the recent stability of magnesium market price, and expected the experts to evaluate, from more comprehensive and objective points, China’s magnesium production, supply capacity and sustainable development, and to further enhance the experts’ confidence for magnesium material.
Attendees and Volkswagen experts expressed great affirmation of the results of the symposium, thanked Dalian Deying Science and Technology Development and Sunlight Metal for their efforts to organize this commonweal technology exchange activity, and looked forward to such opportunities to build multi-level and multi-issue communication platform for the development of China's magnesium industry.

*(Contributed by Dongchunming)*

**Yunhai Special Metals intends to invest 0.299 bln. yuan on high-strength magnesium alloy project**

On Oct. 26, Yunhai Special Metals announced its intention to construct, by its own capital, high-strength magnesium alloy and deformation processing product projects in its factories in the Lishui Economic Development Zone of Nanjing City, and in its subsidiary Chaohu Yunhai Magnesium Industry, with total investment at 0.299 billion Yuan.

Data show that the project includes 30kt/a of high-strength magnesium alloy line; 4kt/a of semi continuous-casting line for high-strength magnesium alloy; 300t/a of high-strength magnesium alloy forging line; 2kt/a of high-strength magnesium alloy extrusion line; high strength magnesium alloy laboratory; high strength magnesium alloy parts machining line and related facilities.

Upon its full commission, the project, with investment recovery period at 4.58 years (including construction period), will realize annual sales income at about 1.252 billion Yuan and net profit at 0.116 billion Yuan.

Source from the company said this project for high-strength magnesium alloy and deformation processing product conforms to the industrial policy issued by MIIT, and belongs to the field of high-end equipment. The project, through the key technology breakthrough in high-strength magnesium alloy, aims to form engineering and industrialization ability, meet the demand for high-performance magnesium alloy from China's aerospace, rail transportation, and electronics. In addition, the project will help Yunhai Special Metals to extend to the high-end quality products, and further lay its leading position in magnesium industry.

**Yunhai Special Metals received 23.7 million Yuan of central financial subsidy fund for its high-strength magnesium alloy project**

On Oct. 20, Yunhai Special Metals announced it received 23.7 million yuan of central financial subsidy fund from MIIT.

The announcement said that Nanjing economy and Informatization Committee, with Nanjing Municipal Finance Bureau, jointly issued "The Circular on Central Financial Subsidy Funds for Industrial Transformation and Upgrading of Encouragement-Class Industry", and required relevant finance bureau in development zones to allocate related funds to targeted projects as soon as possible. The circular also required to strengthen the capital management and special use.

The project, carried out by Yunhai Special Metals, is named high-strength magnesium alloy and deformation processing product, which belongs to the field of high-end equipment. It aims, through
updating high strength magnesium alloy material, to improve Yunhai Specail Metal’s capacity for such material.

The project will target at the breakthrough of key technologies for high-strength magnesium alloy, develop the ability for engineering and industrialization, and meet the demand for high -performance magnesium alloys from aerospace, rail transportation, and electronics in China.

**Chinese government will punish passenger vehicle manufactures failing to meet the standard on automobile average fuel consumption**

On Oct. 14, Ministry of Industry and the Information Technology, along with many ministries and commissions including Development and Reform Commission, jointly issued a circular aiming to strengthen the average fuel consumption for passenger vehicle manufacturers, and substandard manufacturers will take relevant penalties.

In 2013, central government issued the "Accounting Approach for average fuel consumption of passenger vehicle manufacturers ", and set up the target that, by year 2015, passenger cars made in China must realize average fuel consumption at 6.9 L/100 km.

According to the latest circular, MIIT will expose passenger vehicle manufacturers who fail to meet average fuel consumption and manufacturers with more than 6.9L/100kt of fuel consumption upon MIIT’s statistics for their passenger vehicles.

MIIT will temporarily suspend the application for new product project from related manufacturers who fail to meet fuel consumption standard in last year.

According to the circular, passenger vehicle manufacturers, including new ones and brown ones who plan to expand their product capacity, must adjust their plan if average fuel consumption plan they submitted are of substandard. MIIT will temporarily suspend any projects applied by related manufacturers whose products failed to meet the standard on average fuel consumption in last year.

The circular also say that any passenger vehicle manufacturers, who fail to meet the standard on average fuel consumption and fail to perform the compliance commitment, will be supervised in the terms of customs clearance, import inspection, and production consistency check.

The circular requires vehicle manufacturers must, on time, submit to MIIT the last year’s average fuel consumption report. Any manufacturers, who fail to meet the standard on average fuel consumption, must, at the same time, submit compliance commitments in which the manufacturers must put forward annually specific improvement goals and measures.
Output of primary magnesium in Sept. by geography

Data from China Customs said output of primary magnesium from Jan. to Sept. closed at 643.7kt, up 7.48% y-on-y. Among them, Shaanxi ended at 288.9kt, up 10%, Shanxi at 187.6kt, down 0.49%, and Ningxia at 71.1kt, up 13.18% as shown hereafter.

Output of primary magnesium in September

<table>
<thead>
<tr>
<th>Region</th>
<th>Aug.</th>
<th>Sept.</th>
<th>subtotal(Jan.-Sept.)</th>
<th>Change of subtotal (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shaanxi</td>
<td>36.9</td>
<td>38.3</td>
<td>289.6</td>
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<td>187.6</td>
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<td>6.8</td>
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<td>3.9</td>
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<td>2.3</td>
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<td>Total</td>
<td>75.8</td>
<td>77.9</td>
<td>643.7</td>
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Source: China Magnesium Association

Export of magnesium products closed in Sept. in China

<table>
<thead>
<tr>
<th>Item</th>
<th>Magnesium unwrought (min 99.8%)</th>
<th>Other magnesium and alloy unwrought</th>
<th>Waste and scrap</th>
<th>Magnesium rasps/turnings/granules according to size &amp; powders</th>
<th>Magnesium wrought</th>
<th>Magnesium articles</th>
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<td>Ningxia</td>
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Sunlight Metal collects and publishes daily ingot quotation and FOB price from key magnesium production regions objectively, independently and systematically. Being taken into account the viewpoints from both supplier and consumers, Sunlight Metal price, rationally reflecting the change in market, is the most authoritative in domestic magnesium sector for 5 years running. For more detail and inquiry, pls. contact us at info@chinamagnesium.net.