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Market Outlook of **Taiwan's Aluminium Industries** AFLM 2012, Japan 09/11/2012

S.H. Shih Ningbo Huayang Aluminium-Tech Co., Ltd C.S. Aluminium Corporation

Ningbo Huayang Aluminium-Tech (NHAC)- the subsidiary of CSAC Specialized in the aluminium rolled produccts of sheet/coil with design annual capacity **35,000 metric tons**



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C.S. Aluminium Corporation (CSAC) The Largest Producer of Aluminium Rolled Products in Taiwan with design annual capacity **122,00 metric tons**







- Profile of Taiwan Aluminium Industries
- Supply / Demand of Aluminium Market in Taiwan 2011
- Import/Export of Taiwan Aluminium Market
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- Extrusion / Forging Industries
- Rolling Industry

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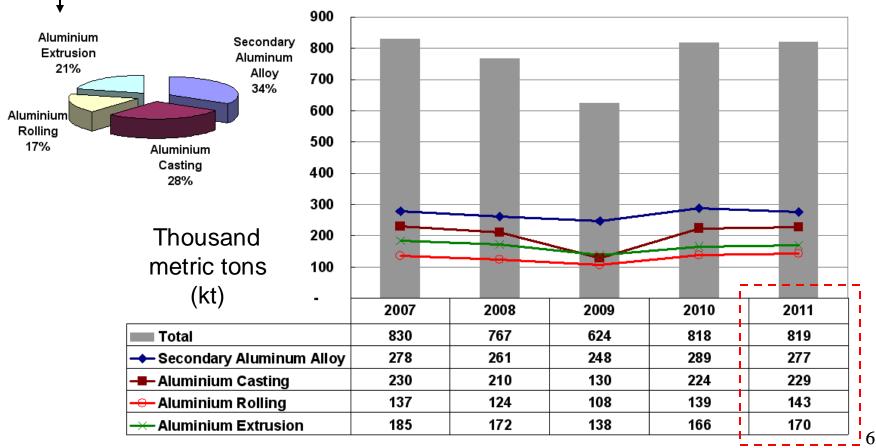
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Profile of Taiwan Aluminium Industries

Production - by volume :

819 thousand metric tons in 2011 for four main categories:

Secondary Aluminium Alloy, Casting, Rolling and Extrusion Industries



Source: Industrial Production Statistics of Taiwan

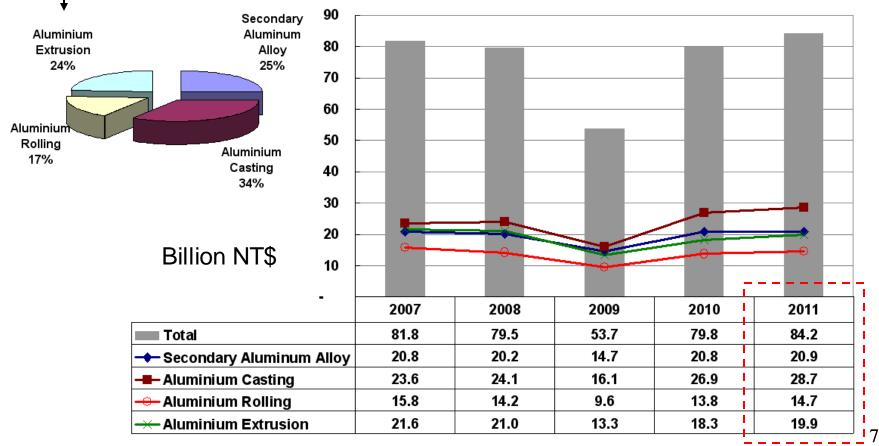
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Profile of Taiwan Aluminium Industries

Production - by value :

84.2 billion NT\$ (New Taiwan dollar) in 2011 for four main categories:

Secondary Aluminium Alloy, Casting, Rolling and Extrusion Industries



Source: Industrial Production Statistics of Taiwan

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Secondary Aluminium Alloy Ingot, Rolled Products and Extruded Products

By Volume

Unit : thousand metric tons

Market	Production	Import	Export	Domestic Apparent Demand
Secondary Aluminium Alloy Ingot	277	83	114	246
Rolled Products	143	88	73	158
Extruded Products	170	7	25	152

By Value

Unit : Billion NT\$

Market	Production	Import	Export	Domestic Apparent Demand
Secondary Aluminium Alloy Ingot	20.9	6.6	8.3	19.3
Rolled Products	14.7	12.9	10.8	16.8
Extruded Products	19.9	1.2	3.4	17.7

Source: Industrial Production Statistics/Customs import and export statistics of Taiwan

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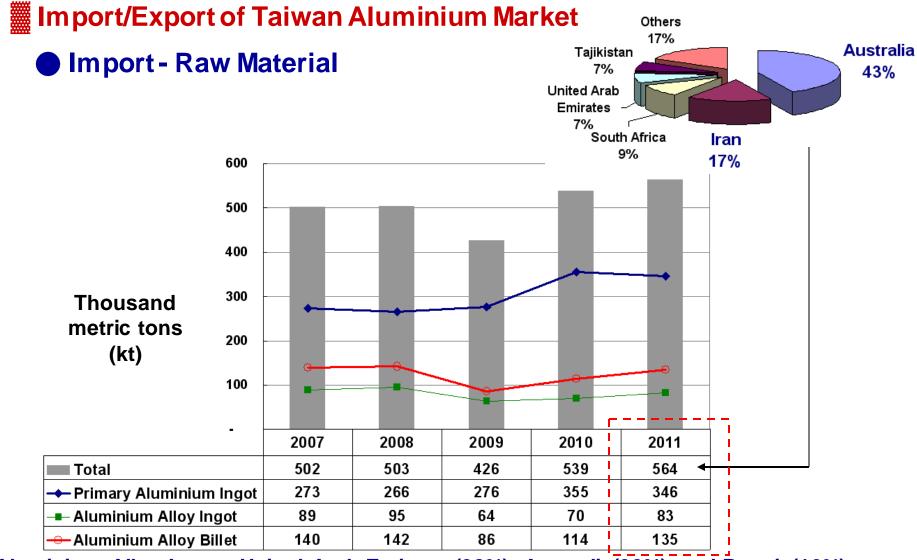
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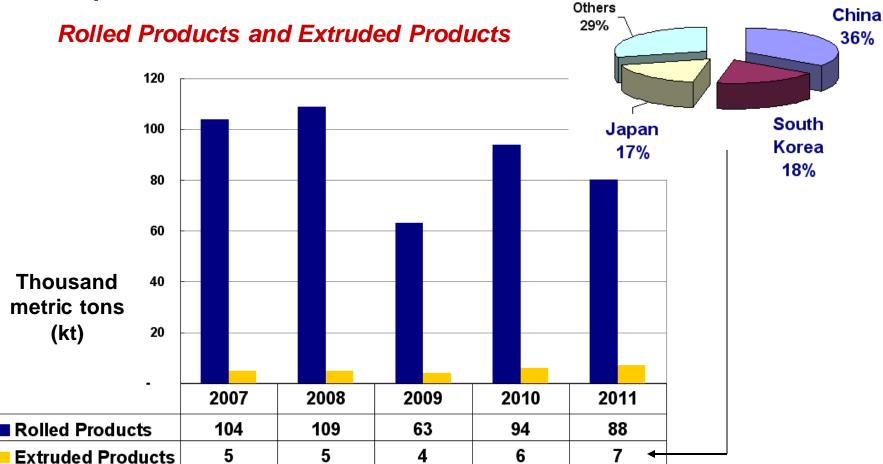


Aluminium Alloy Ingot : United Arab Emirates(38%), Australia(30%) and Russia(16%) Aluminium Alloy Billet : United Arab Emirates(43%), Australia(23%) and Bahrain(19%) Source: Customs import and export statistics of Taiwan

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Import/Export of Taiwan Aluminium Market





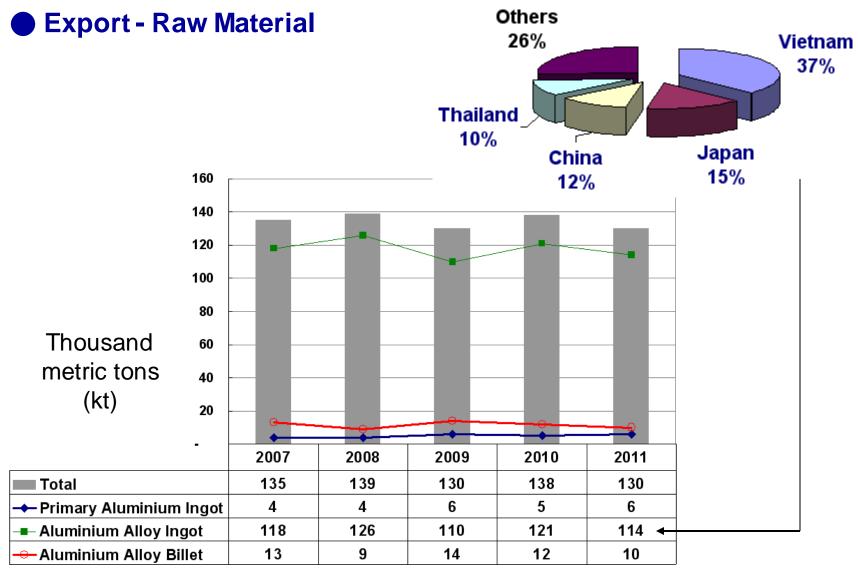
Source: Customs import and export statistics of Taiwan

There is still some room for Taiwan aluminium rolling industry to develop its own domestic market. 12

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Import/Export of Taiwan Aluminium Market



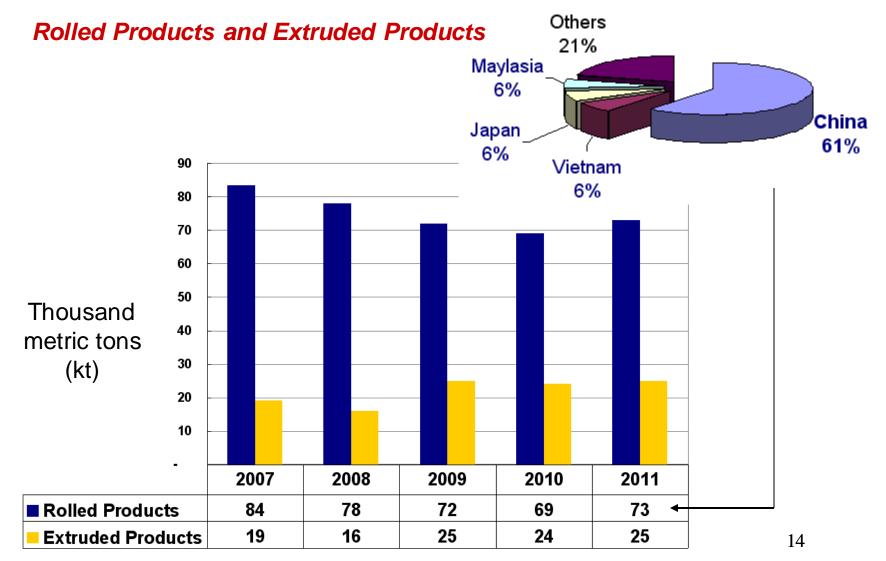
Source: Customs import and export statistics of Taiwan

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Import/Export of Taiwan Aluminium Market

Export - Main Semi-Fabricated Products



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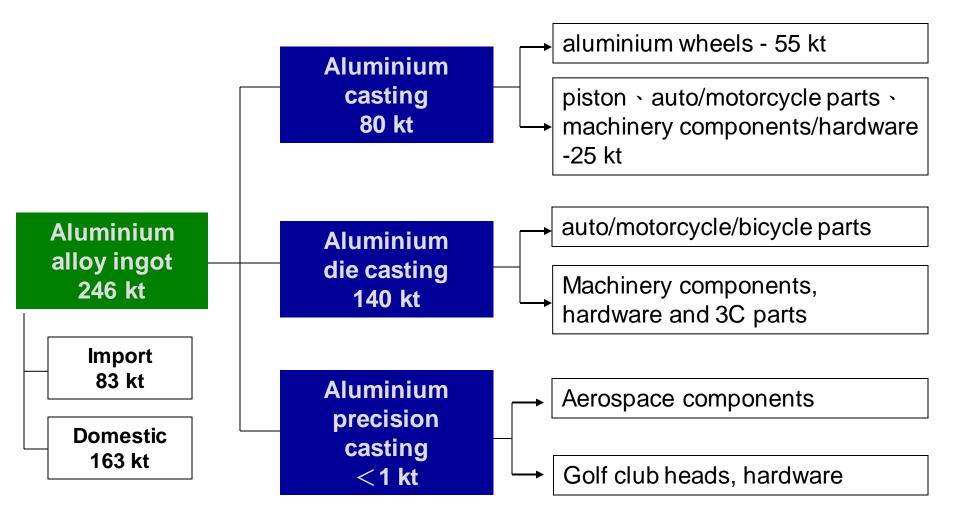
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Material Flow and Market



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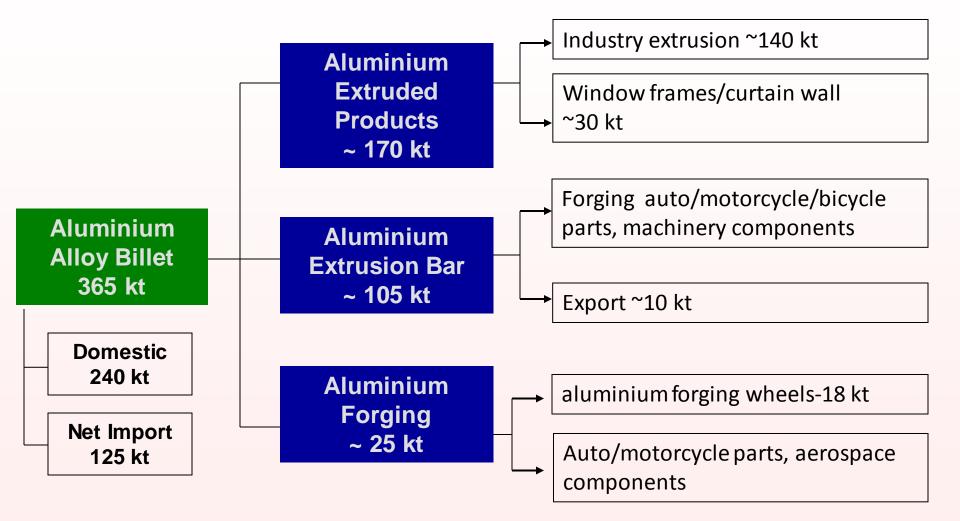
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Extrusion / Forging Industries

Material Flow and Market in 2011



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Extrusion / Forging Industries

Market of Extruded Products

O Current Status

Total annual production of extruded products was 170 thousand metric tons with about 15% for export in 2011.

Two major supplying sources of raw material :

(a). Billet (mainly 6063 alloy) imported from Bahrain, Australia, United Arab Emirates, South Africa and USA.

(b). There are about 16 billet producers in Taiwan who import primary aluminium ingot and manufacture billets locally.

There are approximately 100 Aluminium extruders in Taiwan. Most of them produce 6XXX alloys for industry extrusion. Some of them produce higher strength alloy like 2XXX, and 7XXX for sports goods, bicycle parts, machinery, aerospace components, etc.

The production of window frames and curtain walls now only accounts for 17%.

Extrusion / Forging Industries

Market - High strength aluminium extrusion

O Current Status

In recent years, the output of high strength aluminium alloy (2000 and 7000 series) has accounted $18 \sim 20\%$, and enjoys steady growth.

Taiwanese businesses rank at top in the world in terms of the supply for high strength extrusion products :

 \star Taiwan ranks No. 1 for AI-Sc alloy bicycle frames in the world.

★ Taiwan's high strength aluminium alloy baseball bats rank No.1 in the world in terms of market share (60-70% approximately).

★ Bicycle frames (AI-Sc alloy), shock absorber tubes (7075-T6), chainwheels (7075-T651) and cranks (7050-T6) are the major products for bicycles.

Extrusion / Forging Industries

Market - High strength aluminium extrusion

O Competitive Advantage and Prospect

With the advantage of reaching the same levels of technology and quality as the advanced suppliers from Europe, the U.S.A. and Japan, Taiwan is more competitive and expected to play a very important role in the supply for the high-strength aluminum extrusion market in the world.

Taiwan's high-end bicycle supply chain has been well constructed, with advantages in brand and distribution channels.

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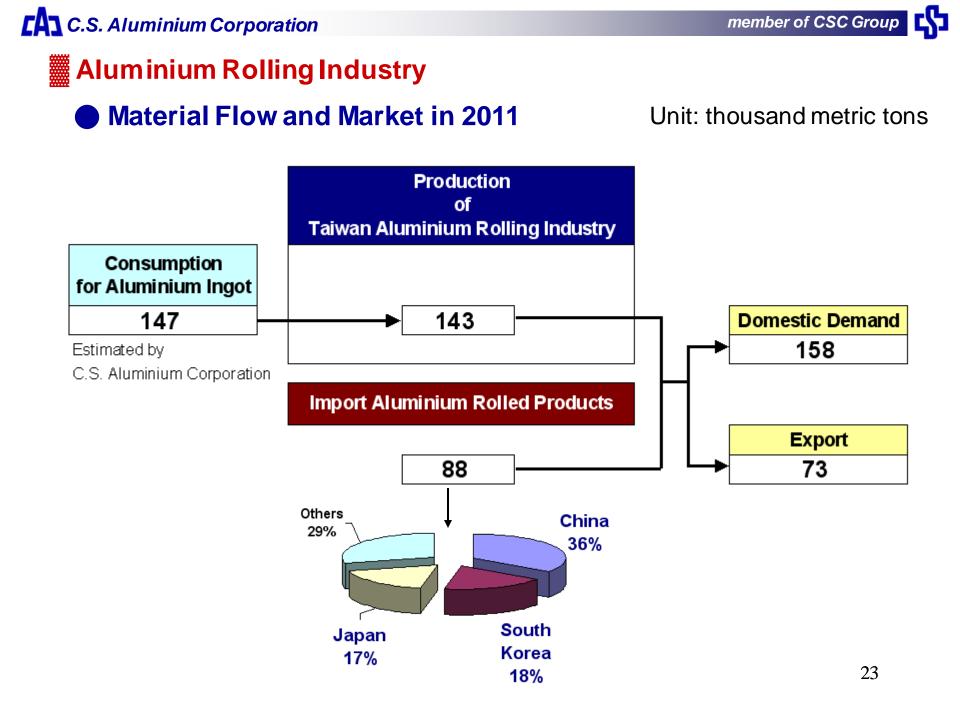
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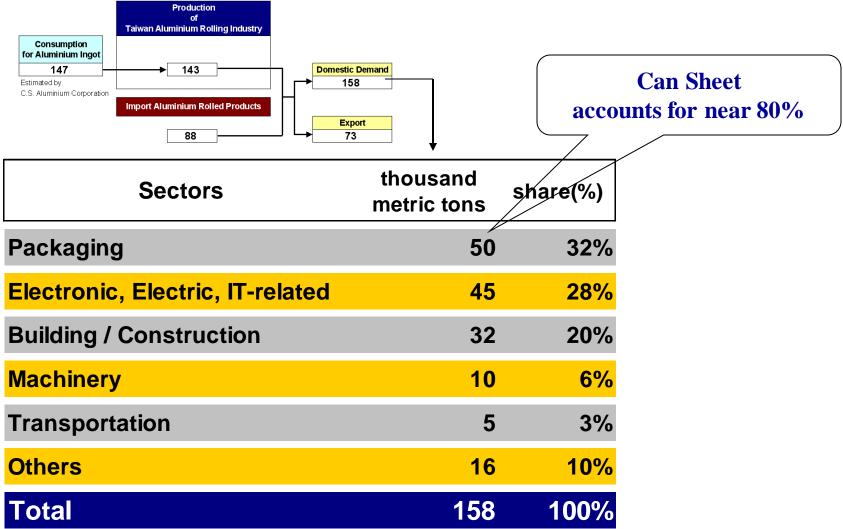
Extrusion / Forging Industries

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Domestic Demand for Rolled Products (by Sector) 2011



Estimated by C.S. Aluminium Corporation

Main Market - Cans

O Demand for Aluminium Sheet for Cans in Taiwan

As for the main market for Taiwan Rolling Industry, The beverage can is the most important one.

The main market for the Taiwan aluminium rolling industry remains the beverage can, despite strong competition from substitution materials.

Aluminium sheet used for beverage cans still occupies a large share of Taiwan's rolled product market.

However, with the strong competition from PET and other substitution materials, the demand for aluminium sheet for beverage cans is expected to remain at the current levels of around 40 thousand metric tons without further growth, and Taiwan's can-makers will transfer their focus to the market in China.

Main Market - Cans

O Booming Demand for Aluminium Sheet for Cans in China



Forecast - 2011~2018 Aluminium Can Sheet Demand

Estimated by C.S. Aluminium Corporation

Main Market - consuming electronic / IT related products

New consuming electronic and IT related Products Spur Demand for Aluminium sheet

Today, the uses of aluminium in IT products shows strong growth thanks to its superior characteristics.

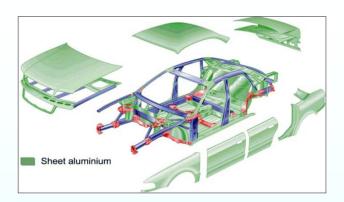
Taiwan's manufacturers of consumer electronics and IT-related products (including those from their production bases in China) play a very important role in global supply.

Following the development of lifestyle trends, aluminium sheet now is and will remain the important choice of material used for those kind of products in the future.

The booming demand for aluminium sheet for IT products will push the major Asian rolling mills to focus on this market of the future. **CA** C.S. Aluminium Corporation

Aluminium Rolling Industry

- Developing Market
 - Automotive body sheet



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Trend of reduction of CO₂ emissions is driving the increased adoption of Aluminium globally.

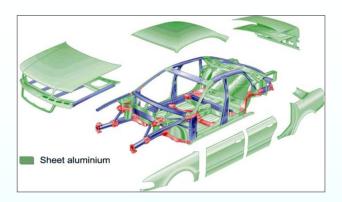
Novelis, Inc. forecast:

Steel FRP (Flat Rolled Products) demand will significantly increase despite material substitution.

Although AL-BiW (Body in White) will have a strong CAGR 2011-2025 of 15-20%, it will remain a small player in comparison to steel.

Speeding Ahead – Automotive Lightweighting Erwin Mayr Chief Strategy and Commercial Officer Novelis, Inc. June 12, 2012 Chicago **CA** C.S. Aluminium Corporation

- Aluminium Rolling Industry
 - Developing Market
 - Automotive body sheet



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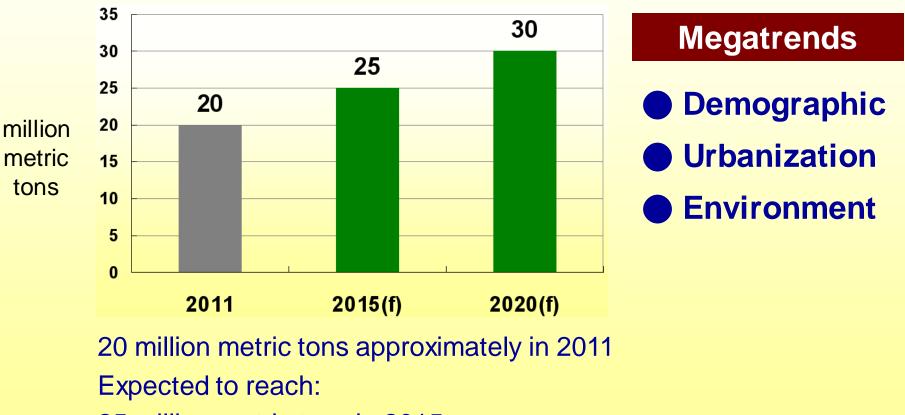
Large long-term growth potential for aluminium

In 2011 the global consumption for aluminium body sheet used for automotives was just around 300 thousand metric tons in terms of weight.

It is estimated to grow up to over one million metric tons in 2020 if using a 15% CAGR.

Global Long-Term Trends in Aluminium Rolled Products

Global Demand for Aluminium Rolled Products (Plate, Sheet/Coil, Foil)



25 million metric tons in 2015

30 million metric tons in 2020

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Aluminium Rolling Industry Taiwan's New Investment

As mentioned earlier there is still some room for the Taiwan aluminium rolling industry to develop in the domestic market.

Also mainly with the prospect of high growth in demand for aluminium rolled products in the emerging market of China and Southeast Asia, in 2011 C.S. Aluminium Corporation, the largest aluminium rolling manufacturer in Taiwan, decided to carry out a major expansion investment with advanced technologies and facilities to increase the existing design capacity of 120 thousand metric tons by 146 thousand metric tons to 266 thousand metric tons.

Construction work for the expansion is projected to be completed by the end of 2013.

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The competitive advantages of Taiwan's aluminum industry are:

1) excellent aluminium processing technology and high product grade;

2) advanced production and marketing information system and management system;

3) full supporting system with the peripheral industries, and

4) high production flexibility, strong marketing ability and fast reaction.

However, facing the competitive environment of open markets, it will become much harder for enterprise operation. The future market strategy should strive towards the expansion of international marketing. There have been huge growths in aluminum consumption in China, India and other emerging markets in Southeast Asia. Such vast potential markets are worthy of being explored aggressively by the Taiwan aluminium industries.

Conclusion

The low-end aluminium producers will no longer be competitive. The future market opportunities for Taiwan's aluminium industry exist in the development of high-grade/high value-added niche products.

These high-grade/high value-added niche products will include:

 automotive body sheet, anodizing aluminum sheet for consumer electronics/IT-related products, high-strength aluminium plate and aluminium beverage can stocks for the aluminium rolling industry;

high-strength/high-precision industrial extrusions for the aluminium extrusion industry; and

 and aluminium forged security components for vehicles, and forged/cast aerospace components for the aluminium forging Industry.