

# ARABAL NEWS

## TOP EXECS FROM GCC SMELTERS TURN OUT FOR BUSY FINAL DAY OF ARABAL 2012



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## China, Global Cost Curve, Automobiles, and the Environment Dominate Discussion

The peculiar economics of China's aluminium industry, and its effect on the global cost curve were stand outs of the morning session of the final day of Arab International Aluminium Conference "ARABAL 2012", which the increased prevalence of aluminium in the auto industry, while sustainability and safety dominated the rest of the day. Senior executives from Qatium, Ma'aden, Sohar Aluminium, Dubal, Emal, Hydro, and other firms took part in panels, workshops and presentations – making the future of GCC aluminium the main focus of the conference, through its relationship with the rest of the global industry and the macro economy.

In the first session of the day, entitled 'What will the Aluminium Industry Policy in China be for 2012-2013?' Mr. Paul Adkins, Director of AZ China Limited and Mr. Eric Zhang, Analyst at SMM presented on the peculiarities of the Chinese industry, which persists with enormous production despite heavily subsidised losses – in certain provinces in particular. As Adkins noted, China sits in the top quartile of the global cost curve, and its industry consumes scarce energy resources, is forced to import raw materials, and jeopardizes environmental integrity, yet 10mt of new capacity are still to come online.

"Why on earth do the Chinese persist with making aluminium?" he asked rhetorically. "As Westerners and as analysts and corporates, we focus on the markets, the industry, equities, P&L, capital flows, ROI, etc. But by doing so, we can

miss the key point: for the Chinese Communist Party, aluminium is an important conduit for the development, urbanization and modernization of China", he said, reminding the audience that China's aluminium industry has been privatized – if such a term is accurate in such a Statist country – only one generation.

Eric Zhang forecast that domestic aluminium prices will face many uncertainties in 2013 and are subject to LME aluminium prices to a large extent. SMM expects domestic aluminium prices to fluctuate between RMB 15,000-17,500/mt in 2013.

The role of China was a theme carried into the next session; with a presentation by Jorge Vazquez, Managing Director of Harbor Aluminium Intelligence, who spoke to delegates on who is winning and losing in the global aluminium industry and supply chain today. "Who is getting the value?" he asked. "It is not the producer for sure". Today, consumers are getting great value ever, with a graph of real LME aluminium prices at a cycle bottom below \$2,000/mt, compared to historical average of \$2,650, and a high of about \$4,700.

He finished by forecasting two main sources of growth in next five years: Emerging Asia – including the Gulf – and the Americas. Over 16 million tons of new aluminium capacity should hit the market by 2015, two thirds of this in China for domestic consumption. The Middle East too is well placed. "We see the Middle East as the leading provider for growing world metal needs ahead and Americas/Europe/South East Asia as increasing import players". The next panel discussion was on Automobile Industry outlook in economic slowdown.

David Cutting, Director of J.D. Power Automotive Forecasting, spoke about the Global Light Vehicle Market – heavily dependent on aluminium –

saying it has come a Long Way. In, 2012, Global Light Vehicle Sales are holding in positive territory, while in 2013, Global Light Vehicle Growth is forecast to be steady with moderate risk. If there is one trend in the global automotive industry besides platform consolidation, however, it is uncertainty, Cutting argued.

The GLV Market is predicted to break through the 100 million barrier by mid-decade, almost doubling in size since the end of the 1990s. Emerging markets, led by China, India, Brazil and Russia, have driven much of the recent growth and are expected to remain key drivers to future growth. Light vehicle production growth in Asia is expected to significantly outpace the other regions (with share of output increasing from 48% in 2011 to 53% by 2016). "Scale brings fragmentation and a new definition of platform", he said, pointing to how platforms have changed beyond recognition in the last 20 years.

Shambhu Prasad, Senior Expert at Gulf Organization for Industrial Consulting, noted that Aluminium usage has increased to 140 kg/car in 2011 – predominantly in drivetrain, chassis and suspension and body. The automotive industry is the largest market for aluminium castings, and these account for more than 50% of aluminium used in cars. The afternoon session of the final day saw presentations on safety standards, design controls and "Aluminium Perfection, Sustainable Resource & Process", by Dr. Mufeed Odeh, Sustainability Manager at Qatium.

"Sustainable development is one that meets the needs of the present without compromising the needs of future generations", was the definition he gave, saying that it includes within it recognition that the needs of the less fortunate should be given priority. It also comprises the idea of limitations caused by current technology and social organisation on the environment's ability to meet present and future needs.

## SUSTAINABILITY OF ALUMINIUM CLOSING THEME FOR ARABAL 2012

On the last day of ARABAL 2012, Dr. Mufeed Odeh, Sustainability Manager with Qatalum, gave a presentation on how Aluminium is a sustainable metal, pointing out that "Sustainability, in simple words, is that we leave back something for our kids too." He further said that sustainability involves transition. "It's like moving from short term planning into long term planning. It's like working with the forces of nature rather than going against them. It is also moving beyond fossil fuels and thinking about and using alternative energy. Moreover, sustainability is also looking at the social, economic and environmental challenges as integrated, rather than separate and competing."

He also said that Qatalum is providing almost all the things that the Qatari state has envisioned in its Vision 2030. "Vision 2030 includes human development, social development, economic development and environmental development. At Qatalum, we provide most of these things envisioned by the government", said Odeh. He further added, "There are permanent jobs and Qatalum acts as a catalyst for institutions to develop competences as partners to the aluminium industry. We provide and contribute to Qatar's knowledge-based economy. Last but not least, Qatalum strives towards a sustainable aluminium business".

"Why is Aluminium a sustainable metal for sustainable future?" he asked. "This metal is light weight which has its own positives. It resists corrosion and is a great conductor of electricity. One of the most important features too is the ease with which it can be recycled."

Qatalum makes sure that all the principles of sustainability are followed properly. "Our company makes sure that all the principles are

imbedded into the company strategy and are followed on a daily basis", said Mr. Odeh. He claimed that whatever is emitted or reverted back to the environment is 'healthy'. "We make sure that we have a healthy recharge back into the environment, land as well as sea. Moreover, when we let it out into the sea we make sure that it's healthy for the fish", was his claim.

In order to make the element more and more sustainable, Mr. Odeh urged the industry to work in cooperation. "We need to work for that. We have to help each other. We have to produce aluminium which is conducive for the environment and society. So, all the smelters representatives should try and work on this policy".

He also explained that Qatalum believes in the strategy of 'reduce, reuse and recycle' and always keeps a check on its emissions. "Our fume

treatment plants help minimize the SO<sub>2</sub> and HF gases. And with our recycling policy we almost have no wastes" said Odeh, before saying he wasn't the mouthpiece of the organization.

Qatalum doesn't even allow its wastewater to go to waste. "We clean whatever water we use in our facility, and the treated process wastewater is used for irrigation".

Odeh also told the gathering that the next thing that Qatalum plans to do is to promote the use of aluminium in Qatar. "We will surely be a sustainable society. We will develop aluminium processes to be sustainable. We will always ask this question to ourselves: 'how would nature take it?' and we will aim for a zero waste output".







Thursday afternoon at ARABAL 2012 saw a panel discussion entitled “Automobile Industry Outlook in an Economic Slowdown”, moderated by Mr. Jorge Vazquez and with a panel comprising Mr. David Cutting, Director at J.D. Power Automotive Forecasting; Mr. Shambhu Prasad, Senior Export at Gulf Organization For Industrial Consulting; and Mr. Kevin Moore, President of All Raw Materials Consulting.

David Cutting in his kick-off presentation described how far the Global Light Vehicle Market has come. 2012 Global Light Vehicle Sales are holding in positive territory, while 2013 Global Light Vehicle Growth is forecast by J.D Power to be steady with moderate risk – a function of global macroeconomic instability and volatility, rather than general trends in aluminium use in automobiles; a trend which continues apace. The market for global light vehicle sales is forecast to break through the “100 million-barrier” by mid-decade, almost doubling in size since the end of the 1990s. Emerging markets, led by China, India, Brazil and Russia, have driven much of the recent growth and are expected to remain key drivers to future growth, he said.

For Mr. Cutting, the short-term outlook is mixed

by region but overall the global picture remains favourable. Some risks are high with the European crisis leading the way, yet the global environment is positive long-term – driven by Emerging Markets. The scenario in the Middle East was also discussed. Mr. Cutting pointed out that production in the region has increased, however there are factors which might lead to a decline in the production. “The production in the region in 2011 was 1.71 million units which are expected to cross around 3 million units in 2019. However sanctions on Iran has its own effects”, he said.

Mr. Shambhu Prasad gave a technical presentation, outlining the various components of modern automobiles that are increasingly being made of aluminium, and the challenges in the processes of manufacturing each. The automotive industry is the largest market for aluminium castings. Castings accounts for more than 50% of aluminium used in cars, and cast aluminium transmission housings and pistons have been commonly used in cars and trucks throughout the world for many years. Aluminium is increasingly prevalent in power train (pistons, engine blocks, cylinder head, fuel systems, heat shield, heat exchangers, miscellaneous engine components, transmission & drive shaft); chassis and suspension (side frames, suspension parts, wheels, steering system, brake system, car body & structures) and BIW (body in white) (doors, hoods, fenders, dash board, carrier, bumpers, seat frames, interior, exterior closure panel, instrument panel structure, windshield surround structures, electrical distribution systems).

Mr. Shambhu provided a plethora of statistics showing increased aluminium components in automobiles. Between 2002 and 2010, percentage of aluminium in engine blocks has increased from 30 to 65%. Bumper beams from 17 to 33% and crash boxes from 3 to 14%. Aluminium usage has increased to 140 kg/car by 2011, he said.

Kevin Moore, President of All Raw Materials Consulting, gave a presentation entitled “Is Automotive Aluminium Growth Finally Here?” in which he outlined “slow, uninterrupted growth over nearly forty years”, to 343lb per vehicle in 2012. Examples of aggressive use of aluminium include the latest Land Rover/Range Rovers, the aluminium bodies of which give 31.4MPG fuel consumption – in a large SUV – and over 900lb (430kg) in weight savings. A similar weight saving will be found in the

Much of this has come from the need to meet more onerous Corporate Average Fuel Economy (CAFE) standards. Powertrain enhancements and hybrid/electric development have been a key part, but the use of aluminium, AHSS (new steels), composites and plastics, and magnesium, have been crucial in reducing weight in the current generation of cars.

Mr. Moore listed key drivers for aluminium use as: customer acceptance/demand; absolute cost reductions; global regulations; US CAFE standards; incremental savings; competing materials; and technological advancements. He sees potential automotive aluminium growth coming from: hoods/doors/roofs/deck Lids/closures; bumpers; steering/chassis/suspension components; increased wheel penetration; increased powertrain applications; having the lowest cost primary production; the financial position and know-how to expand; and potential downstream value in alloys/billets/slab castings, and sheet stampings.

Moore said too that automobile companies know that the parts of the vehicle that need to show the greater weight reductions are the body closures, the chassis and suspensions. Today these parts are made of Mild, HSLA, and BH Steel. The average steel weight for these parts is around 1000 pounds. “If you want to save 10% of the current weight and save around 3 million tons of material, you have to put these components on a serious diet”, added Moore.



## PARADOXES OF CHINESE ALUMINIUM INDUSTRY LAID BARE AT ARABAL

### China to add 10mn tones of capacity despite high cost curve.

China's aluminum industry sits in top quartile of global cost curve, and is forced to import most of its raw materials for the industry, yet a staggering ten million tonnes of new capacity is still to come, remarks that were made at the first session of day two at the ARABAL 2012, by Mr. Paul Adkins, from AZ China Limited. He was speaking at a panel discussion on the subject, "What will the aluminum policy in China be for 2012-2013?", moderated by Ms. Claire Valdin and with Mr. Chenguang Zhang, Analyst at SMM, alongside Mr. Adkins.

"It's not safe to talk about averages when comparing 130 smelters with cost structures that vary by up to 33 percent. But as can be seen here, the median cash cost is around RMB15000 (\$2400). But it is also clear that the range of costs is very wide, with almost 50 percent variation between the lowest and highest-cost plants," Mr Adkins said. He said that government subsidies are taking as much as \$200 per tonne off the cost of production, and AZ China estimates that around 25-30 percent of China's production is presently receiving some form of government assistance.

"Governments subsidize a local industry in order to protect jobs, and to maintain a level of "social order". But these recent subsidies were virtually

wiped out by the market, which dropped RMB500 as soon as the news leaked out. It's only now, three months later, that we are starting to see the SHFE price rise to the level it was at before word got out about this assistance," he said.

"Why on earth do the Chinese persist with making aluminium?" he asked rhetorically. "As Westerners and as analysts and corporates, we focus on the markets, the industry, equities, P&L, capital flows, ROI, etc. But by doing so, we can miss the key point: for the Chinese Communist Party, aluminium is an important conduit for the development, urbanization and modernization of China," he said, reminding the audience that China's aluminium industry has been privatized – if such a term is accurate in such a Statist country – for only one generation.

Questioning the government's decision in not import aluminium, Mr. Adkins said the government wants to promote domestic value-add, so it imposes financial penalty to import, which is estimated at \$60 billion per year and growing, and last but not least, it assumes that jobs would be lost. According to Mr. Adkins, the Chinese should take the advice of the likes of Alcoa and others, and increase import. He added that the cost curve of the aluminium industry in China will result in consumption of scarce energy resources and also jeopardize environmental integrity.

Commenting on China's move to shift aluminium production to energy-rich western areas, Mr. Adkins said this wouldn't solve the industry's

problems with high costs and pollution. Describing China's aluminium output as "expensive and not particularly clean," Mr. Paul said most of the country's output is in the top half of the global cost curve and more than 90 percent of power supplying its refineries and smelters comes from coal.

Mr. Paul was of the opinion that the aluminum market in China will grow, because urbanization and a growing middle class drives demand from aerospace, automobiles, home appliances, transportation and other aluminum-dependent industries. Mr. Eric Zhang, Analyst at Sangha Metals Market (SMM), taking part in the panel discussion said in order to reduce losses at aluminium producers, local governments in China have granted electricity price subsidy to producers in Guangxi, Sichuan, Guizhou and Hunan provinces.

"According to SMM statistics, 3.9 million t/yr of new capacities will put into operation in 2012. The total aluminium capacity is 27.1 million t/yr and the output will arrive come to around 21.89 million tonnes," Mr Zhang said. He said that North West China has become the largest aluminum production region in China, which is mainly due to its lower energy cost. He said there are more than 10 million t/yr of new aluminium capacities that will be built in Xinjiang. The SMM analyst said the government has introduced policies to stimulate aluminium consumption because domestic aluminium prices will face many uncertainties in 2013 and are subject to LME aluminum prices to a large extent. SMM expects domestic aluminum prices to fluctuate between RMB 15,000-17,500/mt in 2013.





## SPENT POTLINING (SPL): THE INDUSTRIAL ECOLOGICAL PERSPECTIVE

The afternoon session of the final day at ARABAL 2012 included a presentation of a case study by Mr. Bernie Cooper, Managing Director at Regain Ltd., entitled “A Solution for Aluminium Smelter Spent Potlining Based on the Principles of Industrial Ecology: A Case Study”.

Changing environmental regulatory conditions, according to Mr. Cooper, mean an alternative to landfilling of SPL is required. There is potential value in using SPL for industries such as cement and clay brick manufacture, but realisation of the potential value in SPL has proved difficult due to hazards in SPL, the variable properties of SPL, and regulatory and community perceptions regarding SPL.

However, Industrial Ecology, said Mr. Cooper, provides a framework for objective and rational stakeholder engagement, and a comprehensive solution for SPL.

So what is Industrial Ecology? Industrial Ecology

uses the natural environment as a model for industrial environmental problems. In natural ecosystems, waste of one species is food for other species. The concepts of industrial ecology set the tone for constructive engagement of disparate stakeholder groups. The key is to reconceptualise waste as products.

Industrial ecology enables synthesis of environmental imperatives, technological innovation, and business economics. There is a general trend away from disposal and towards recovery in industry, using byproducts for new purposes. 2008 EU requirements, for example, define what it is for a substance to be regarded as byproduct rather than waste. The substance must have certain further use; be able to be used directly without further processing; is it produced as an integral part of the production process; and its further use is lawful.

Australian regulatory input for this case study is also helpful, a result of mandating the avoidance of residual material; sensitivity to community reaction; and reluctance to approve export under Basel Convention. SPL has its challenges. “In the aluminium industry the spent potlining (SPL) is hazardous because of health and environmental hazards due to the presence of cyanide formed as a result of the reaction of nitrogen from air with the carbon lining. Reactive components that combine with water to give of ammonia, methane and hydrogen which presents a potential explosion hazard, and disposal of SPL has been a problem for many years.”

Yet SPL can have real value for other industries too, such as cement and clay brick industries, which have environmental pressure to reduce CO<sub>2</sub> emissions, and economic pressure to reduce energy costs. As fluxes and mineralisers, SPL can lower process temperatures as the former (sodium), and accelerate reaction rates as the latter (fluorine). Alumina and silica have values too as raw materials, Mr. Cooper said. The objectives should be a 100% beneficial re-use of SPL with no residual material, lower the cost of SPL processing, lower energy use & CO<sub>2</sub> emission for cement & clay brick, and a positive impact on the environment.

What is the strategy to promote SPL re-use? According to Mr. Cooper, it is crucial to gain the support of regulatory agencies; develop chemical processes to eliminate explosive gas & cyanide hazards; develop markets for mineral products; and establish the integrity of the overall system.

In summary, Mr. Cooper argued, changing environmental regulatory conditions mean an alternative to landfilling SPL is required. There is potential economic and environmental value in SPL materials and applying the principles of industrial ecology provides the basis for constructive engagement. By removing the hazards in SPL, products derived from SPL are not classified as hazardous waste. There is a comprehensive and low risk solution for SPL, which has been proven over ten years with 90,000 tonnes of SPL.



## BENEFITS OF PROPRIETARY ELECTRO MAGNETIC STIRRING (EMS) TECHNOLOGY HIGHLIGHTED BY ALTEK MANAGING DIRECTOR

With electric power representing about 20 to 40 percent of the cost of producing aluminium, depending on the location of the smelter, cost-effective magneto-hydrodynamic (MHD) induction stirring system (sometimes known as Electromagnetic Stirring (EMS)) is now available to the aluminium industry, which can be retrofitted to aluminium furnaces. They are a simple and cost-effective means of increasing productivity while reducing both fuel consumption and dross generation. .

speaking on the issue of “A friendly environment, leading the way to efficient, low-carbon-energy”, and advocating the widespread take-up of Altek’s EMS technology.

According to Mr Peel, the EM stirrer systems ensure rapid temperature and chemical homogeneity throughout the melt - maximizing quality and aluminium yield. “Return on investment can be less than one year, depending on the application,” he said. Giving a comprehensive details about the new system, Mr Alan said unlike other electromagnetic stirring systems, then Altek EMS system is 100 per cent air-cooled and does not require an expensive water circulating and cooling system.

“The system is fitted on the exterior of the furnace, is non-contact and therefore makes its stirring effect on the metal through a stainless steel plate and full refractory thickness of the furnace hearth or wall. This makes the unit very reliable and can be switched on or off at any time in the cycle with no detrimental effect to the inductor,” he said.

Mr. Peel claimed that new system increases furnace productivity up to 25 per cent, reduces gas consumption up to 15 per cent, and reduces melt loss up to 30 per cent. He said the system helps in rapid chemical and temperature homogeneity, that there are no moving parts in it

and most importantly, it is cost effective and has a long life span.

As a case example of the Altek EMS system, Mr Peel gave the example of Hydro Ardal where it was observed that the energy consumption was reduced by 3-4 per cent based on the new operating system of EMS.

“The EM stirrer system decreased the time for boom in the furnace at high temperature (more than 720 degrees Celsius) due to the change in cycle operation with the stirrer, and as a consequence this led to less fork lift,” Mr Peel said.

The Altek Managing Director went on to add that the EM stirrer system at Hydro Ardal has also benefitted the company with a much cleaner furnace wall as bath stirring results in less buildup on the furnace wall.

Finally, Mr Peel concluded his presentation by saying that the EMS system is an established and proven technology, and can significantly lower energy consumption than conventional water types cooled devices. He said the payback on this investment is less than a year.

China’s aluminum industry sits in top quartile of This was the message put across by Alan Peel, Managing Director at Altek Europe Limited, while











