

# Arabal 2011: The rise of the Middle East

The rise and rise of the Middle East as an aluminium-producing region was highlighted at the Arabal 2011 event held in Muscat, Oman. The region is forecast to be responsible for almost one-fifth of the world's aluminium by 2020 output on the back of a \$20bn spending programme on new smelters and expansions of existing capacities.

By Greg Morris, Editor, Aluminium International Today

Aluminium in the Gulf region, trends in the cost of production, China's role in the market and long-term opportunities were some of the subjects discussed at the 15th Arab International Aluminium (Arabal) Conference.

More than 400 delegates from 30

countries attended the four-day event in Muscat, Oman, which was being held on an annual basis for the first time rather than bi-annually due to aluminium production expansions in the region. The event was hosted by Oman-based Sohar Aluminium.

The programme featured a variety of session topics including price trends, expansions in the Middle East, power generation, downstream and recycling, and a keynote paper from Rio Tinto Alcan chief executive Jacynthe Côté.



## Industrial diversification

In her paper, Mrs Côté (above) said that industrial diversification and job creation are areas where the aluminium industry can help make a difference.

"The Middle East clearly possesses an enviable platform upon which to build a world-class aluminium industry. But going forward we must demonstrate that we also have the vision and the will to capitalise on these strengths by creating the conditions necessary to sustain growth.

"Judging by the success to date, of Sohar Aluminium and the other regional aluminium producers represented here and the determination of other stakeholders at the conference, I am confident that any challenges can be overcome and enormous long-term benefits can be realised," said Mrs Côté.

The Middle East has plenty of advantages thanks to its competitive gas price, ready capital and location close to

Asia, China and Europe. Its production has already risen to 4Mt/y from 1.5Mt/y in 2000 and this is set to increase to 5Mt/y by 2015 Ms Cote said (Fig 1).

Speaking just three days before the announcement of the closure of the Lynemouth, UK smelter, Mrs Côté said the company was concentrating on its tier 1 assets. The company is streamlining six of its Australian and New Zealand assets into a company called Pacific Aluminium.

These are the Gove bauxite mine and alumina refinery, the Boyne Island, Tiwai Point, Bell Bay and Tomago smelters and the Gladstone power station.

In Europe and North America, seven of its businesses are under threat. The decision to sell some of its assets are part of a plan for growth which would see the company focus on its core activities.

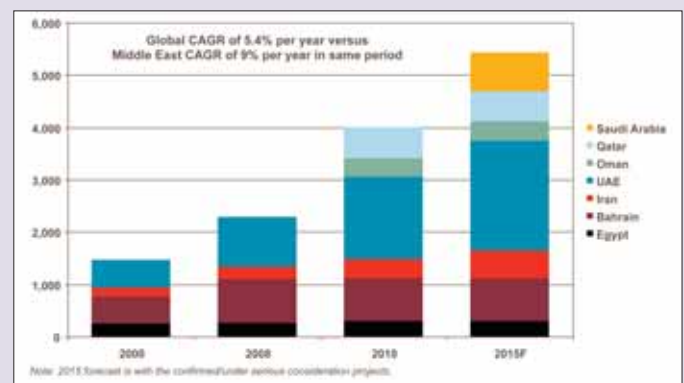
Ms Côté said these core activities included its bauxite assets and power position.

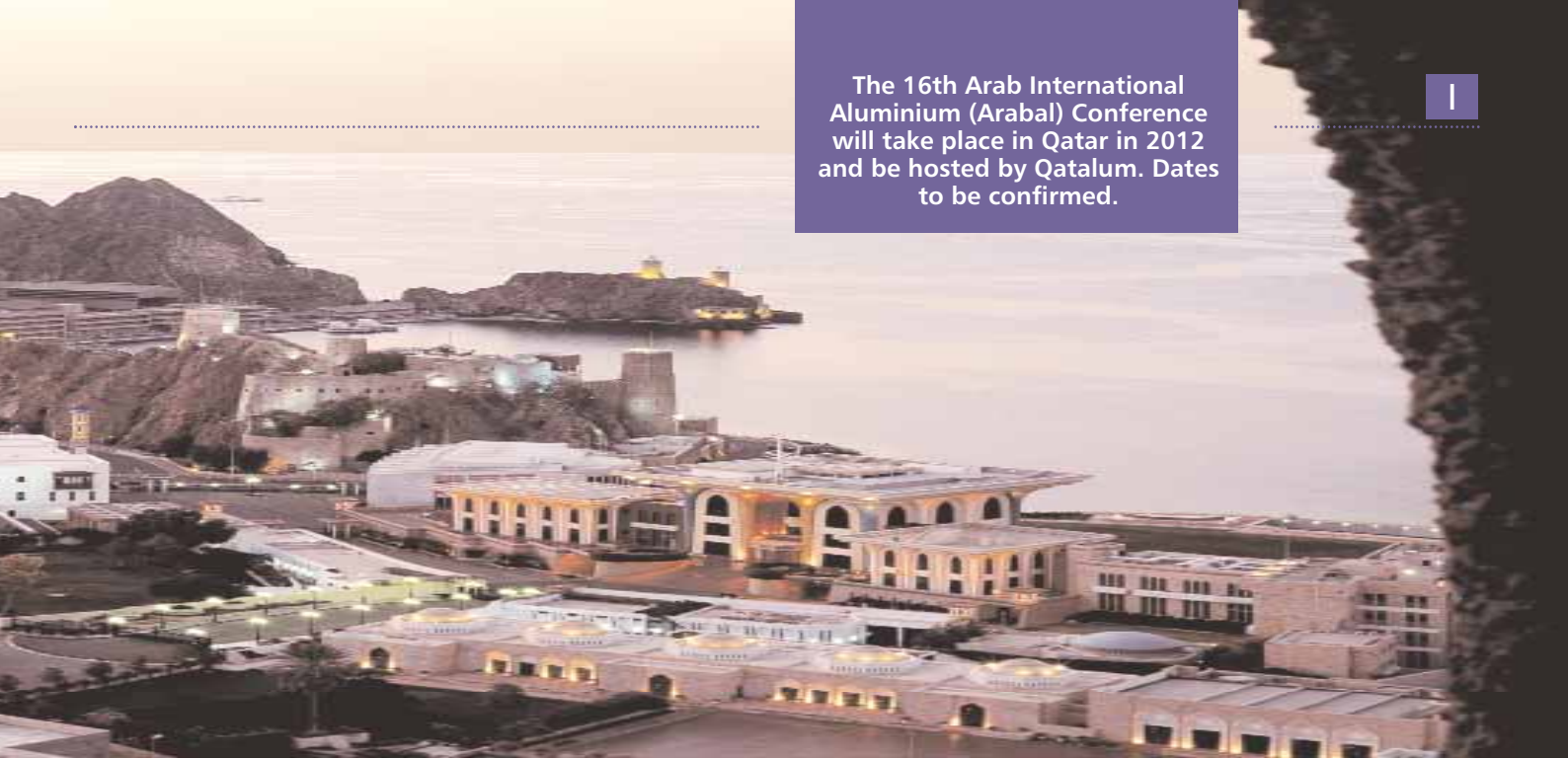
The company will expand some of these assets including doubling the tonnage capacity at its Yarwun alumina refinery, Queensland, Australia, expanding its Weipa bauxite mine, Queensland to 50Mt/y, which Ms Côté said would ensure better quality bauxite for China.

In addition there will be a \$500M expansion at its Isal, Iceland site where it would add a modern billet plant. Its Canadian sites would also benefit, with its Kitimat, British Columbia smelter reaching the last stage of expansion to 450kt, powered exclusively by hydropower while the Alouette smelter in Quebec will receive a 500MW power boost, increasing the smelter's capacity to 930kt.

She added RTA was looking to increase its production in Oman, Malaysia and Africa, with its Sohar smelter, Oman likely to expand after 2014.

Fig 1 Aluminium production in the Gulf is expected to rise to 5Mt/y  
Pic source Rio Tinto Alcan





## Chinese demand

China's insatiable demand for aluminium in the past 10 years has had a fundamental impact on the industry and on the Middle East region. Jim Lennon, aluminium analyst at Macquaire Securities looked at the role China will play in the next 10 years. It has accounted for about 14Mt of demand in the past decade driven by the growth of its economy. The main demand area has been construction, where 'mega' cities of huge populations have risen in the past 10 years (Fig 2).

The consumption of Al in China compared to other metals has been quicker due to its availability and low cost. It is the preferred building material and making inroads against other materials, such as copper, in the wire and tube markets. He predicted that China's shift from construction to consumer-based applications will fuel further strong growth.

One problem for the world market is that China has largely been self sufficient and is in fact becoming a net exporter,

dominated by the semi-fabricated market. It has also built a huge amount of extra capacity, about 45 greenfield smelters adding 12Mt/y of capacity since 2001 compared to nine greenfield smelters in the rest of the world which has added about 4Mt/y of capacity. Most of the Chinese smelters were built in Shandong and Henan provinces but there has been a migration to the north west of the country due to cheaper power prices and it is where coal reserves are located. The cost of building a smelter is also low at about \$1500/t compared to about \$4000/t in the ROW. Chinese smelters are built with a replicated design, a low labour cost and usually take between 12-18 months to build compared to four years in the ROW.

It means capital is not tied up and this model is likely to continue. Smelters are very cost sensitive so if the begin to lose money they will be idled.

By 2020 Mr Lennon forecast huge demand growth, possibly at 25Mt. This is a huge step up compared to previous decades and if this happens Mr Lennon asked where the extra capacity would come from. There is a large growth in

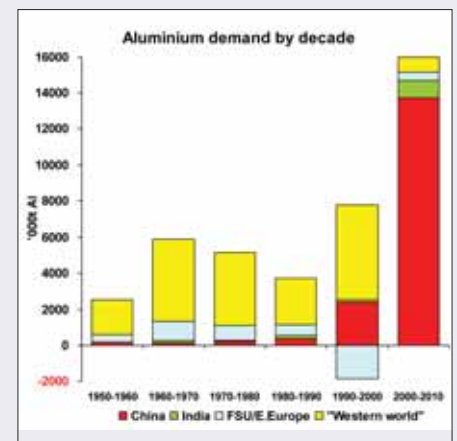


Fig 2 China's demand for aluminium in the past 10 years has been insatiable

Source: WBMS, Macquarie Research

Chinese supply, with some forecasts citing Xinjiang province alone producing as much as 10Mt/y based on its extensive coal reserves. However alumina would be transported from Henan and Shandong provinces, which could be an issue in winter.

## Aluminium in deficit?

Harbor Intelligence senior aluminium analyst Jorge Vazquez gave a slightly downbeat view of the industry, which was in contrast to most of the other consultants speaking at the event. His opening line was that the global primary aluminium market is already in deficit in both China and the ROW.

The game changers have been China (more metal imports), the US (no new smelters until 2016) and India (output less than expected). Global competition for aluminium will intensify in the next few years with the GCC the only region operating at overcapacity. The surplus in

East Europe, Africa and Oceania will remain unchanged.

As a result premiums will rise across the board with The Americas the worst hit because of its geographical position to attract metal.

Mr Vazquez believed the European debt crisis will continue and that economic stagnation in the region cannot be avoided, not just due to the current debt crisis. From 2007 there were less people of working age and this gets worse every year, especially in Spain and Italy. In contrast, there is an unprecedented amount of people working in Asia and the developing world. In North America the

working age population peaked in 2007, declined in during the next four years but is expected to grow from 2012.

The company's models suggest a growing tightness will become a structural shift rather than short term trend. There will be no smelter expansions in the USA until 2013, western European production will decline and Africa has no planned greenfield expansions.

However, the developing world has become more urbanised and requires more aluminium, so where will the metal come from? This is worrying, stated Mr Vazquez, who believes premiums will go up next year in the USA, Brazil and China.

## The rise of the East!

Ma'aden Vice President of SBU Aluminium, Addullah Busfar, gave an insightful account into progression of work at the \$10.8 joint venture between Ma'aden and Alcoa. The site at Ras Al-Khair in the north east of Saudi Arabia will be the largest vertically integrated aluminium complex in the world.

First commercial production is scheduled for 2013 and will include a 740kt/y smelter, a 380kt/y rolling mill as well as a 4Mt/y bauxite mine and 1.8Mt/y alumina refinery (Fig 3).

Mr Busfar said the decision to go ahead with the complex was made at the height of the global downturn in 2009, when many companies were downsizing. At a board meeting members decided the downturn was an opportunity to build the site taking advantage of lower construction costs as a result of the financial crisis.

Since then EPCM contracts have been signed, the first concrete for smelter and rolling mill has been poured, a rolling mill contract signed with Samsung Engineering and financing agreements all settled. More than 40 000 workers are involved in constructing the three projects. It is the only project in the Gulf with its own supply of alumina, is on a 20millionkm<sup>2</sup> site and can expand to three times to what it is today, potentially delivering 2.5Mt/y from the location. The site also includes a port and a 1500km railway line, which will deliver bauxite from a mine at Al-Baithah near the Jordan border in the north.

Products will include standard and T-Bar ingots from the smelter and slabs for rolling applications.

In addition Ma'aden has formed a JV to develop a production facility to manufacture caustic soda and EDC. The new company, called Samapco, is located at Jubail. It will produce 250kt/y of caustic soda and 300kt/y of ethylene dichloride. The caustic soda will be used at the Ras Al-Khair alumina refinery and start up is expected in Q4 2012.

### Power generation

Day two opened with a session on power generation. Mott MacDonald senior project manager Brian Purchas discussed the risks and benefits of a Gulf smelter connecting to the national grid.

Connection to the grid provides standby generation capacity and improves the reliability and security of smelter power supply. In addition it provides power during maintenance and forced outages of gas and steam turbines, and provides a spinning reserve generation that instantly allows power import in the event of a gas or steam turbine tripping.

The benefits to the grid include a large steady load during the year, stabilising grid voltage and frequency particularly during the low load Gulf winter, while also providing large revenue to the grid.

Risks to the smelter include any electrical faults on the grid may affect smelter voltage and power supply to the potline. The grid's responsibility is to maintain the security of its system, not the smelter, so may disconnect the smelter if it believes the smelter is having a negative impact on the grid.

For the grid, any potline trip at a smelter could cause a large power flow into the grid, causing a trip.

To protect the grid a smelter should ensure a potline trip causes a matching rapid reduction in smelter generation within less than 250milliseconds. Similarly, there should be automatic disconnection from the grid if a potline trip occurs and high frequency is detected at the grid connection point.

If a large smelter generating unit does trip, deload the potline using the high speed tap-changers of the rectifiers until grid frequency recovers. To protect a smelter a Grid Connection Agreement should include a clear communication protocol between grid dispatch and smelter power plant operations and a clear set of operating instructions that specify under what circumstances and with how much warning the grid can

disconnect the smelter.

In addition smelter staff should maintain good working relationship with the grid at all levels from working to management to government levels. There are huge costs associated with a power outage so being told quickly and clearly of a problem is important for a smelter.

### Oman rolling

The first two presentations of the downstream and recycling session were dedicated to Oman companies.

In the first Fata Hunter CEO Anthony Tropeano and Oman Aluminium Rolling Company (OARC) CEO Buddy Temple discussed the \$387M JV between the two companies. OARC, a 160kt/y rolling plant based in Sohar, will source its metal from the nearby Sohar Aluminium smelter.

First production will be in August 2013 and commercial operation will begin in 2014. Products from the plant will include aluminium food containers, automotive heat exchangers and air conditioners.

The two said the company's competitive advantage was due to its Hazelett Caster which will be more efficient and productive than twin roll casters.

Its sales plan will see a five year ramp up starting with 55kt/y in 2014 rising to 160kt/y by 2019. The two main markets for the business are air conditioning units, which in the Middle East is expected to grow from its current four million, and in the automotive market where the addition of more heat exchangers in vehicles is expected.

Construction of the OARC project is on schedule with steel set to go up during the week of the Arabal conference.

### Oman potential

Frederic Rouyer, CEO of Oman Aluminium Processing Industries said Oman has the potential to become a major aluminium recycling centre servicing the industry across the GCC.

He discussed the huge untapped potential for the creation of a viable

## Long-term trends

Marco Georgiou, Head of Aluminium at CRU Analysis discussed long-term trends.

In terms of demand Al has been the strongest performer out of the non-ferrous metals between 2000-2015, although this has not been matched on its price business (Fig 4).

Its end use is more diverse than steel and copper. Steel's main end use is in construction while copper's is in

electrical wire, aluminium has a balanced end use among construction, transport and the electrical industry.

Mr Georgiou is positive about Al's long-term outlook over the next 20 years. Once demand in emerging markets changes to consumer-led, aluminium will shine compared to steel and copper. In China by 2020, per capita semis consumption is forecast at 30kg/capita. Al in

transportation has increased its market share and is still developing there. By 2020 semis demand will be dominated by China and other emerging regions, construction will be the largest end use sector but will be pushed by transportation and packaging. In the developed world demand will be dominated by the transport sector. Extrusions demand will be strong due to construction-led demand





Fig 3 The pot room at the Ma'aden site, Saudi Arabia Pic Source Ma'aden

aluminium recycling industry in the Gulf.

He explained that the amount of aluminium scrap produced in the GCC during the downstream process was set to double to an estimated 270kt/y by 2020 as the Gulf becomes a centre of global importance for the industry.

Investing in recycling in Oman would help with direct and indirect job creation for Omani nationals, support long-term sustainability in the region, help with community and social development and provide fresh education and training opportunities, added Mr Rouyer.

OAPIL was established in 2007 and produces 50kt/y of aluminium products that include rods, alloy rods and overhead line conductors with plans to increase production in the future. Its objective when it set up in 2007 was to capitalise on the increased use of electricity due to a growing world population. Therefore its two main products are rod and cable convectors for energy transmission.

**Aerospace warning**

Constellium marketing vice president, Fabienne Le Tadic, warned of the threat of other materials such as steel and plastics in the aerospace market. Aluminium has to be careful if it is not to lose its market share to these other materials, she warned, saying they are all improving their image to gain market share. Composites especially have increased their market share, rising to about 53% in the aisle

structure of the new Boeing 787 and Airbus A350 XWB, up from 11% in the Boeing 777 in 1994. She identified the mid-2000s as a 'pain point' when aircraft became more composites-intensive. Composites meet the weight saving argument and are anti corrosive.

The aluminium industry did not notice this change at first due to being so comfortable as a result of good revenues. There was no emergency or a feeling to 'revolutionise'.

Eventually though it had to rush. In the past three years Constellium's approach has been to develop new partnerships and to completely revamp its innovation set-up. This included creating of a marketing team to boost aluminium's green image and weight saving and by highlighting aluminium's untapped potential.

Three years on and the company has learnt that there is no innovation without a certain amount of vision, willingness and risk. Often a near death experience, such as when composites took a chunk of market share, is a catalyst for change. But Miss Le Tadic warned a company should not wait to feel the pain, it should anticipate the market.

**Business intelligence**

The final session was dedicated to technology.

Paul Grill, President of Infosol Inc, discussed a case study involving his company and Sohar Aluminium in March

2011. His company had installed business intelligence which had improved data analysis at Sohar. The Oman company wanted to replace an inaccurate, labour-intensive process collecting key operational metrics. Data was collected by phone, entered into an Excel spreadsheet with reports produced and charts printed. These were put on walls so people could see what was happening. This was effective for a few weeks but people lost interest in the charts on the wall. Sohar wanted to get everybody engaged to achieve their goals.

So Infosol installed an online dashboard where people can see individual metrics for departments, look at health and safety, corporate, injuries and actions completed, costs and net carbon consumption.

Sohar wanted supervisors' information at the end of each shift. Supervisors entered their actuals against the target at the end of a shift.

If 15 mins after their shift ended and no information had been entered they received an automatic email telling them they had not entered the information. If 15 minutes after that they had still not entered the information, they received a second email, in red, which also went to the general manager. After this went live there had been no reds, Mr Grill said.

The system took four weeks to install and had helped encourage a culture change within Sohar where everyone is accountable.

in China and the emerging markets.

Mr Georgiou also addressed the problem of where will supply come from to meet expected demand. Utilisation rates at smelters will improve but extra supply will be needed. Where will it come from? The Middle East, China, Russia and Malaysia are the most likely areas for smelters, but their location is dependant on the price of power.

Fig 4 Aluminium has been the strongest performer out of the non-ferrous metals  
Source LME, CRU

