



# Climate-positive

**Svein Richard Brandtzaeg, CEO of Norsk Hydro, talks exclusively to *Aluminium International Today* about reducing emissions, his short-term concerns for the industry and his long-term optimism. By Matthew Moggridge\***

Aluminium has the potential to be 'climate positive', said Svein Richard Brandtzaeg, CEO of Norsk Hydro at a conference in Trondheim, Norway, in 2012. He believes, quite rightly, that to make any sense of the metal's impact on the climate, a life-cycle perspective is imperative.

Accepting that CO<sub>2</sub> is an inherent by-product of the electrolysis process and that aluminium requires a lot of energy, Brandtzaeg – possibly having listened to John Lennon's chart-topping single Imagine – said, "You may say that I love aluminium, but I'm not the only one."

Brandtzaeg sees the bigger picture and is ready with facts that set out to prove aluminium's worth in global society – facts that those in the industry already know: around 75% of all the aluminium ever

produced is still in use; secondary production through the remelting of scrap uses only 5% of the energy required to produce primary aluminium; and that UBCs (used beverage cans) can be back on the supermarket shelves 60 days after being scrapped and recycled.

There is a lot of good news out there that shows aluminium in a good light and Brandtzaeg's Norsk Hydro is reinforcing the positives with ambitious emission targets.

In 2011, the global aluminium giant produced 1.61 tonnes of CO<sub>2</sub> per metric ton of aluminium, down from 1.63 tonnes in 2010. It hopes to bring that figure down to 1.52 tonnes for 2013.

"You have to be good in operation," said Brandtzaeg. "The operation has to be stable and it requires a lot of competence

to stabilise the operation on a high level," he said.

Norsk Hydro's cost reduction programme, introduced in 2011, was centred upon operational excellence and that, for Norsk Hydro, was all about reducing energy consumption and costs.

Everything has been taken into consideration, including anode consumption, which has been reduced significantly. "All the important driving factors for efficient aluminium production have been in focus and to achieve that we have also changed the way we are operating our smelters," he told *Aluminium International Today*.

Norsk Hydro is Norway's second largest producer of hydroelectric power, producing almost 9.5TWh per year and using around

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Alunorte alumina refinery  
by night



Svein Richard Brandtzaeg,  
CEO of Norsk Hydro

12.5tWh for its own aluminium production purposes. The company has negotiated external contracts to cover the rest of its needs.

"We are following carefully the Nordic energy market because we are also selling energy ourselves," Brandtzaeg explained, adding that the Nordic market will move into a situation where there is excess energy.

"I think there is a consensus among all energy producers in the Nordic market that price levels are coming down and this is due to four main factors," he said, citing the introduction of 'Green Certificates' (that support the development of renewable energy in Norway and Sweden); climate change (leading to higher precipitation); the development of energy-efficient buildings; and ongoing energy-efficiency programmes.

"For a significant part of metal production in Norway, therefore, we are in a much better position than it was perceived just a few years ago," Brandtzaeg said.

### Recycling

How does Brandtzaeg view recycling and the fact that Atlanta-based Novelis aspires to 80% of its production coming from recycled metal by 2020?

Norway is number three in Europe for UBC recycling with an impressive 93% recycling rate. Norsk Hydro hopes to recycle 1 million metric tonnes (Mt) of contaminated and post consumer scrap. But is there enough metal out there?

"The fact that aluminium demand is growing faster than any other metal means that the recycled rate on average will not grow as fast as it would if the

consumption rate was lower. So there is a dilemma that the industry would like to recycle as much as possible, but the available pile of aluminium in the world is limited," he said.

According to Brandtzaeg, the world will need more aluminium in the future and will experience growth in consumption way beyond that of any other metal. For this reason alone, there has to be some limitation on how much recycled metal can contribute to that growth, bearing in mind that 75% of all the aluminium ever produced is still in use.

Brandtzaeg believes that Hydro should be involved in recycling because it adds value to the company and it's an interesting business opportunity. "It's part of our responsibility as a leader in this industry to bring back what we produce into the value chain; and with the advantages of aluminium we can produce top quality products out of post-consumer scrap. It's good for the environment, for our customers and for business," he said.

### Expert logistics

Norsk Hydro has several recycling facilities in Europe and believes that recycling process scrap is a natural element of its business. Furthermore, bringing process scrap back into the value chain fits in well with its European and US operations. "If you want to be an expert on post-consumer scrap, you have to be an expert on logistics," said Brandtzaeg, adding that Norsk Hydro's philosophy is to increase post-consumer scrap recycling.

"There is a lack of understanding of how important it is to have systems and structure in place to collect valuable metals from the market post consumption," said Brandtzaeg, highlighting Hydro's 'urban mining' initiative, which involves digging into scrapyards and landfills and taking aluminium back to the value chain. "To sort those metals and bring them back to the value chain is very important if we are to create a more viable society," he said.

### Solid energy

Brandtzaeg described aluminium as 'solidified energy'. "We try in Norway to argue that aluminium is the best way to transport energy. When we use renewable energy to produce aluminium, we convert the energy to aluminium, which is very much renewable energy in a solid state that we can sell to our customers," he explained.

When the product's lifecycle is finished, Hydro retrieves it, recycles it and then re-uses it as there is no quality loss and only five per cent of the energy required to produce primary aluminium is used to recycle it.

Hydro is currently recycling about 300kt of post-consumer scrap annually and has a remelting capacity more than 1Mt. The

company's total global primary aluminium production is close to 2Mt.

Aluminium is 'climate-positive' and should, perhaps, be viewed as a 'green' metal. It has so much to offer and yet the global industry is depressed. Why?

### Over-supply issues

For Brandtzaeg, the current state of the global aluminium industry is nothing new. "I've been in aluminium for 27 years and during that time there has only been a few years when the industry made really good money. The appetite for investment has been high and new capacity has come on board faster than demand and so there has been an over-supply situation," he said.

"There has been over-capacity until the last quarter of this year [2012] and now we see that finally there is a much better balance between supply and demand. It still remains to be seen if this is influencing the prices of aluminium short-term," he added.



Alunorte alumina refinery by night



Qatalum

Brandtzaeg cites the automotive industry as a prime example of how aluminium can reduce energy consumption and CO<sub>2</sub> emissions. "The main target for the OEMs is to produce cars that are consuming less energy and they are talking about multi-lateral light-weighting. The driving force is to use aluminium in order to achieve their targets on emissions and fuel consumption and we see big opportunities in that respect and are contributing with our technology. I think the technological leadership we have in aluminium is supporting our status in that sense," he said.

Norsk Hydro is sitting together with automotive producers to develop the next generation of cars that will contain 'a much, much, much higher amount of aluminium', said Brandtzaeg. He believes that Hydro needs to be very proactive in research and development. "We have to be innovative and come up with good ideas together with our customers," he said.

Brandtzaeg believes there are many good examples of the benefits of aluminium that the industry should be



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marketing to the wider world. "There is a common interest to grow consumption and participate in product development. We are competing in several areas with other metals. With heat exchangers we compete with copper where the benefits of aluminium are used in a very competitive way; and if you use primary aluminium in the car, it will contribute positively to the environment after three years. With recycling, aluminium contributes to reducing climate gas emissions from day one," he said.

### Cars or buildings?

In fact, if you look at global society and ask where can aluminium best contribute to reducing energy consumption, it would be easy to assume that the automotive sector would be top of the list. The right answer, however, would be buildings. An estimated 40% of energy consumption is accounted for by buildings (for cars it is 20-25%) and with new buildings accounting for just 1% of the total annually (excluding China) refurbishment is very important.



Qatalum

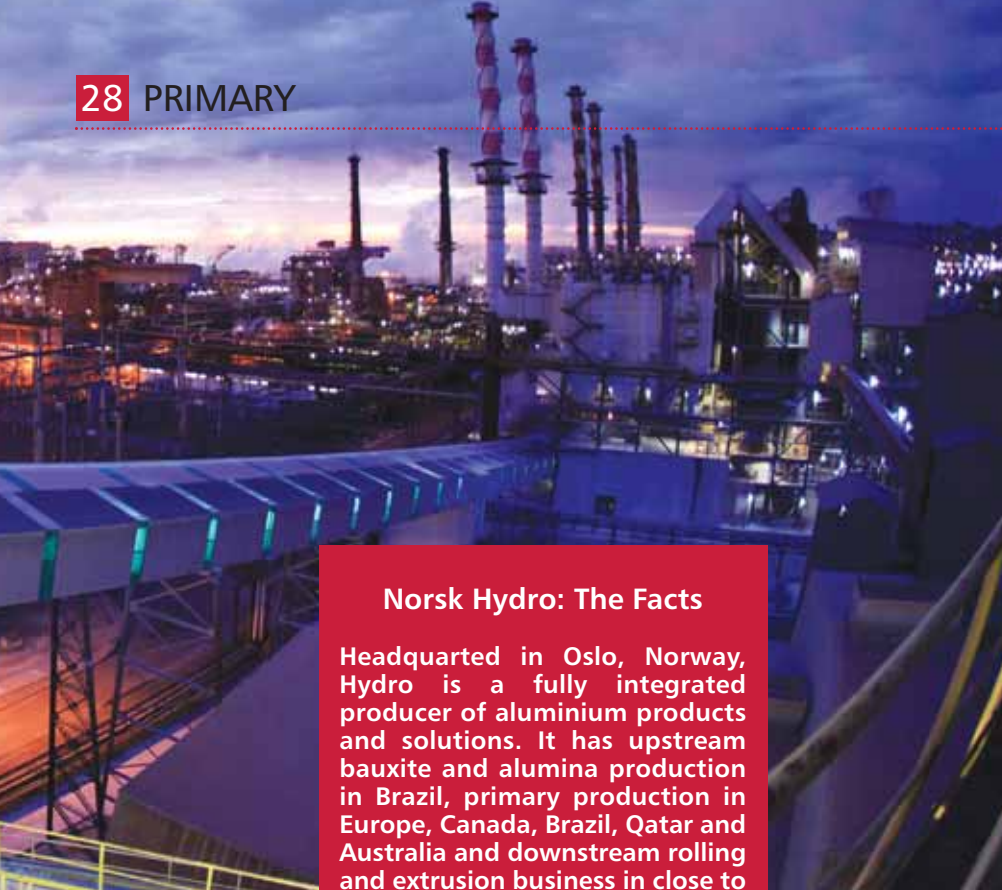
"If you take down the energy consumption of buildings by half, you are compensating for the whole transportation segment, so there is big potential," he said.

Hydro is claiming an average of 13.79kWh/kg Al from its fully-owned smelters in 2011. "Qatalum [which is 50% owned by Hydro] is on that level and it uses the same technology employed at our Sunndaal smelter in Norway, but at a higher current density. We are now producing more metal in Qatar than its nameplate capacity," Brandtzaeg claimed.

Developing new production technologies to reduce energy consumption doesn't mean building new production lines because a lot of the elements involved – computer control systems, anode and cathode design – can be added to existing facilities.

"I can confirm that our electrolyte lines today are run at a much better performance on energy consumption than when they were new, so we have developed this constantly over time," Brandtzaeg said.





### Norsk Hydro: The Facts

Headquartered in Oslo, Norway, Hydro is a fully integrated producer of aluminium products and solutions. It has upstream bauxite and alumina production in Brazil, primary production in Europe, Canada, Brazil, Qatar and Australia and downstream rolling and extrusion business in close to 40 countries around the world.



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The last of the company's old Soderberg cells were closed in 2009.

Brandtzaeg supports the idea of a level playing field globally on CO<sub>2</sub> emissions because it would be beneficial for the aluminium industry as a whole through increased incentives to use more aluminium.

"I believe the polluter should pay for the pollution, but as the market is today, we have carbon/CO<sub>2</sub> costs in Europe and that means that European smelters are losing competitiveness compared with the rest of the world. Personally, I think it will take many years before we have a global solution, as there are so many different interests. Hopefully, there will be a global consensus," he said.

#### Level playing fields

Whether a level playing field would prevent smelter closures in the West is debatable as there are energy cost differences around the world. "And when the energy cost is between 30% and 50% of the cost of production, it is very clear that you don't locate a smelter where



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energy costs are highest. You have to search for a place where the cost is low," Brandtzaeg explained.

He believes the Middle East is a very important contributor to capacity in the West. "We have the option to expand at Qatalum, but at the same time, due to the situation we have now with surplus capacity and the fact that production has been above consumption, the appetite for investment is far less than it was some years ago," he said.

#### Bauxite and alumina

2012 was a challenging time for bauxite and alumina. Hydro is ranked number four in the world in terms of the production and supply of both commodities. On a positive note for Hydro, index-pricing delinked from the LME is gaining ground. The Platts index is being used more frequently and Brandtzaeg asserts that there 'is no logical link between the costs of alumina and aluminium production.

While LME prices have dipped 12% since 2010, the price of caustic soda has risen by 120% alongside rises in coal and

fuel prices. Unsurprisingly, Hydro has postponed the development of its CAP alumina refinery in Brazil where the company already has extensive bauxite mining and refining infrastructure.

"The CAP project is probably one of the most attractive alumina projects in the world. It offers a very good location and the cost of investment and operations is the most attractive you'll find on earth today," said Brandtzaeg.

"The reason for the postponement is not because it's not a good project, but the world has enough alumina capacity right now and we will decide on the right timing at a later stage," he added.

#### Increased volumes

When that day comes, the multi-phase CAP project will take 18 months as the ground is already prepared and a lot of the work has already been done.

Hydro leads the field in bauxite and alumina in Brazil. Mineracao Paragominas has increased volumes by 42% since Hydro



Paragominas

has been involved.

Alunorte in Brazil is the biggest alumina refinery in the world.

#### Medium-to-long-term optimism

Brandtzaeg oozes optimism for the medium-to-long-term prospects for global aluminium but is cautious for the short-term. He sees vast potential in the automotive industry – "even high volume cars are now using body-in-white aluminium" – but cites low prices and high input costs as major stumbling blocks reflected on the industry's bottom line.

Hydro has improved its competitive edge through energy efficiencies and this is reflected in its market capitalisation.

"Hydro is the most valuable aluminium company among its peers. We're not the biggest, but my ambition is that we should be the best in the world. We're on the right track, but our competitors are working hard too so this is a tough competition – but I like competition and we will continue to work in that landscape," he said. ■