

"In the unlikely event..."



On 15 January 2009 Kevin Anton, now Alcoa's chief sustainability officer, was one of 150 passengers on board US Airways flight 1549. A seasoned flyer, he likes to nod off, but on this occasion – as one of Alcoa's financial staff – he was getting to grips with some tricky figures when a flock of geese jammed the engines, forcing the Airbus A320 to land on water.

By Matthew Moggridge*

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In what became known as the 'Miracle on the Hudson', the plane glided to a halt on the water and everybody survived. Such an experience changes people.

"I've always had a desire to do something with a broader impact," Anton said, explaining how taking on the role of chief sustainability officer at Alcoa was strongly motivated by what happened on the Hudson.

Taking on the role of chief sustainability officer for a business that relies upon bauxite mining and an energy-intensive primary production process is no walk in the park.

"Yes it's a tall order. We want to reduce our footprint. We know that CO₂ and global warming are issues and it's too big a risk not to talk about it. We know that we can be part of the solution," he said, adding that the company's track record gives it credibility in front of the policy makers, legislators and regulators.

Outstanding results

Alcoa has achieved some outstanding results. Between 2005 and 2012 it reduced carbon dioxide equivalents by 24% and in 2012 emissions were down from 57.6Mt to 46.5Mt. Last year, the company initiated over 500 energy-related sustainability programmes delivering an estimated \$75 million of savings with a further \$50 million on the procurement side of energy, said Anton.

In fact, since Alcoa retooled its Energy Efficiency Program in 2009, it has posted similar energy efficiency savings each year, and those savings continue. "Once you change a process and make it more efficient, that sticks with you. Those are savings that pay dividends year on, year in," he said.

It's rare for somebody with a financial background to take on a sustainability role. Anton says that environmentalists often think the CFO is evil when it comes to sustainability projects. "The CFO wants to see the business case and that's why I try and make the sustainability community understand that sustainability needs to be embedded in business and not seen as a separate programme," he said.

Anton believes that Alcoa's sustainability work helps the environment, society and the company's shareholders because it's embedded into the infrastructure and management system. "If you have a project that's only going to pull one of those levers, it's probably not going to be so great," he added.

Hydro power

With the global aluminium industry facing all kinds of significant issues – rising input costs, currency headwinds, pressure to reduce GHG emissions and depressed prices – Anton believes that Alcoa's sustainability initiatives have eased the

situation for the company, thanks in part to its reliance upon hydro electricity.

"We've always believed that hydro electricity is the best way to make aluminium. The reason Alcoa is here in East Tennessee is because, about 20 miles from here there's the Little Tennessee River and a hydro system that we built 100 years ago. We built four hydro dams and generated the electricity to support the smelter here," said Anton.

Hydro electricity powers two thirds of Alcoa's smelting capacity and, says Anton, it is the best source of green, clean power and substantially drives down the company's carbon footprint.

"Then you start looking inside the process where there's two things to consider. One is how much energy is used to produce a ton of aluminium and two is how many PFCs are produced from the process?"



In the 1990s, Alcoa realised that as a greenhouse gas, PFCs [perfluorocarbons] were an issue and set about reducing these emissions. Several solutions were developed that had the potential to not only reduce PFC emissions, but improve operating stability, reduce electricity consumption and increase output. Then chairman Paul O'Neill engaged the entire workforce – smelter operators, union and non-union officials – to deploy improvements across the entire operation. That launched an initiative that not only has reduced Alcoa's emissions by several million tons of CO₂ equivalents but encouraged the entire industry to make reducing PFCs a priority.

"And then we put technology into it. One of the things we had to understand was the chemistry going on inside the reduction cell. So we would take a sample, send it off to the lab, the lab would come back and say 'this is what your chemistry looks like'. Then our technical guys developed a probe, hooked it to WiFi, the

probe goes in the cell, takes measurements, feeds them into the process control computer and we make adjustments on the fly," Anton explained.

Real time data and an engaged workforce, says Anton, produced around \$25 million a year in energy savings so Alcoa decided to energise its management team by offering them incentive compensations tied to sustainability goals. The scheme started at the top and filtered all the way down. "People understand that energy and GHG reductions are vital to our company," said Anton.

Role model

Having an historical association with sustainability dating back to when Charles Martin Hall created the aluminium production process and formed Alcoa in the late nineteenth century puts Alcoa ahead of the game today, says Anton, and

acts as a kind of role model for the modern day industry. "We want to make sure that everyone is striving to have the same track record that we have because if they don't, the reputation of the metal is damaged," he said, adding that in China, the company is highlighting its aversion to coal-fired power plants running aluminium smelters.

"Obviously, there will be some in the world, but we think aluminium should be produced using hydro power. We want to be a supplier of green aluminium with a low carbon footprint," he said.

Aluminium smelters will follow the path of the lowest cost electricity, said Anton. "It tends to be hydro, so you think about it: it started in the Alps and it started in Niagara Falls and when those places were no longer offering low-cost electricity, it moved to the US south and Norway and Iceland and then Brazil, Australia and the Gulf. The outlier to this theory is China where national interest – more than straight economics – is driving things," he said.

And while many industry analysts argue that primary aluminium production is moving away from 'the West' – where punitive energy prices and carbon taxes make smelting uneconomical – Anton is keen to stress that nobody should write off the USA. "This whole shale gas boom is making the US much more competitive from an energy standpoint," he said, stating that long-term power contracts mean that Alcoa has secured itself in many regions of the world for the next decade or longer.

One way to get long-term secure power at a known price, says Anton, is to own the asset. Another is to contract with a power generator. "In Iceland, we're comfortable contracting with the power generator as it's effectively a state-owned enterprise and there's not a lot of competition in the region. If you're in a place where you've got a deregulated energy market, we might be more inclined to want to own the asset," he said.

Keeping one step ahead

Alcoa has adopted a precautionary approach to the environmental challenges facing the aluminium industry by designing its production facilities to meet the environmental regulations of tomorrow, today. "One of our competitors might have to retro-fit a plant to meet some new requirements, but we try to be

ahead of that as it gets us a lower compliance cost and a competitive advantage," Anton said.

Alcoa brought together its policy and environmental staff and invited them to come up with the most innovative and aggressive ideas possible.

"We told our operating guys to figure out the most practical things we could do and then put the two groups in a room together to work out a compromise.

Marrying the practical and the visionary, forcing them into a room together and creating some 'tension in the room' worked like a charm and now Alcoa has brought forward its 2030 GHG goals to 2020.

"We are going to reset our water goal because we achieved that too. By setting goals you challenge people, drive innovation and get results," he said.

Going 'beyond compliance' and establishing a firm reputation for setting and achieving tough targets has paid dividends globally as people want to work with a company that has a great sustainability record and great transparency, Anton argues. "If you're Iceland and you've decided you want another aluminium smelter, who do you call? If you're Brazil and you've got bauxite resources in the Amazon that you want to extract and gain value for, who are you going to call?"

Recognition

For Anton, a sustainability track record leads to growth opportunities. It has also led to media accolades. Recently, the company was heralded as *Fortune* magazine's best metals company, for the second consecutive year, while in Brazil, *XM* magazine named Alcoa as the most sustainable company in the country based on its work at the Juruti bauxite mine. "It tells you you're doing things right," Anton said, adding that there's an awful lot of 'sustainability scorecard kind of things' out there.

Last year Alcoa was top performer in the basic materials category and number two in the overall ranking of 360 US companies on the Maplecroft Climate Innovation Index (CII), which is compiled by risk analysis company Maplecroft.

"A handful of these folks have good rigour and they're meaningful so *Fortune*, obviously, is one of them and we're very appreciative of their recognition. We've been on the Dow Jones Sustainability Index for 11 years," he said.

Alcoa hopes to reduce its energy intensity by 10% in 2020 and by 15% in 2030. Currently, the company has reached 2% and Anton is confident of success looking ahead at long-term plans, such as its Ma'aden smelter project in Saudi Arabia, which he



claims will be the most energy-efficient smelter in the world. "So that helps bring down the average and then we've got a couple of Soderberg plants in North America – Massena, NY and Baie-Comeau, Quebec – which will be rebuilt with pre-bake technology and will have a very significant effect on our energy efficiency," he said. "I expect we'll get there."

On target

Anton is confident that Alcoa will achieve most of the sustainability targets it has set for itself. In Brazil, the use of bio diesel in baking furnaces means lower emissions and not having to pay a premium for fuel. The company has upped its game on fresh water use-intensity and Anton claims it will achieve a 25% improvement by 2020 and 30% by 2030. "Water is an incredibly regional issue. In Western Australia it is absolutely precious," he said. "But we've got other areas in which we operate that are not as water stressed." While the company seeks to conserve water at all operations, it focuses its efforts on areas that are water stressed.

In Pinjara, Western Australia, Alcoa has developed a water catchment system to service its bauxite mining process. The system supplies the local community and makes the mine a more sustainable operation. Alcoa works hard with the local community, adding that recently the water catchment system provided water to help extinguish a bush fire.

In Iceland and Saudi Arabia, Alcoa is developing 'engineered natural systems' instead of traditional water treatment plants. "What we do is take a couple acres of land and we build a natural system there – rocks, gravel,



sand, residue from our refining process – and that becomes the filter media. It polishes and scrubs the water, deals with bacteria, captures minerals – it's really cool," said Anton.

The water can be re-used or sent back to the aquifer. "And you're not using chlorine to purify your water, you're letting nature do it. It becomes like a wetland," he said, adding that similar systems exist at Alcoa's plants in Massena, NY; Lafayette, Indiana and in the company's technical centre at Pittsburgh and in Alcoa, Tennessee.

"One of the problems we're dealing with is muskrats coming in and eating all the reeds. We've got to find a nice way to tell them to go live somewhere else. There's too many of them and no natural predators – but that's a good problem to have," he said.

Recycling

When it comes to recycling, Alcoa doesn't have a comparable goal to USA-based Novelis' intention to have 80% of its production from recycled metal by 2020. "If you're dealing with plastic bottles, recycling content matters because you take that plastic bottle and what are you going to do with it? It's very hard to recycle. Aluminium, on the other hand, is infinitely recyclable, there's no degradation of quality and you don't need to create artificial markets for it. We would rather say: let the market decide who's going to recycle and have recycled content. The key is making sure you do everything you can to prevent aluminium from going to a landfill," he said.

Alcoa is now in complete control of the Evermore used beverage can (UBC) recycling project that was once a joint venture with Novelis. "We're using it to convey our message about recycling and we're loving it," said Anton.

The mission is simple. "We're about increasing the supply of aluminium cans and making sure they don't go to landfill

and we want to buy efficiently and retrieve high quality cans," said Anton.

Dealing with scrap

Most Alcoa facilities have their own remelt systems. The company handles its own scrap internally, but also buys from others, Anton said.

He is particularly proud of Alcoa's Barberton, Ohio, facility. In nearby Cleveland the company makes forged truck wheels, a process that creates a lot of aluminium chips. "We used to take those chips and ship them to Massena, NY to be melted and turned back into raw material feedstock, which is then shipped back to Cleveland," he said.

However, having developed a more energy-efficient process for converting chips into feedstock, using third-party technology, Alcoa developed a melting and machining facility in Barberton, close to Cleveland, and no longer needs to ship chips to Massena.

Communicating its sustainability message to the general public is centred around recycling programmes on college campuses using the Alcoa Foundation. "It's a great way to tell the next generation about aluminium and it's also a great recruiting tool. We select universities where we want to have a big presence and then we go out there and target the best and the brightest," said Anton, adding that he spends time on college campuses conducting sustainability courses.

Now that Anton has crossed the street from finance to sustainability, the myth that CFOs are Darth Vader characters in all sustainability projects has been well and truly busted. With a smile on his face, Anton recounts how it is not unusual for William Oplinger, Alcoa's current CFO, to lecture on sustainability. "He goes once or twice a year and teaches a sustainability course to the Carnegie Mellon MBA students," Anton says, proving that times truly are a-changing. ■