






**P1-2 / GREEN BUILDINGS**  
Learn more about BAC products that contributed to Green Building rankings.






**P3 / GREEN SUPPLIERS**  
Learn more on how Galva Power obtained a cradle-to-cradle certificate for zinc coatings.



**P3 / BAC SAFETY CULTURE**  
In all BAC plants we run a program to improve the safety of our employees. Read more about the Behavior Based Safety Program.



**P3-4 / INITIATIVES**  
Numerous local initiatives have been taken in our facilities around the globe.

JANUARY 2016



# BLUE by nature, GREEN at heart






## Green Buildings thanks to BAC

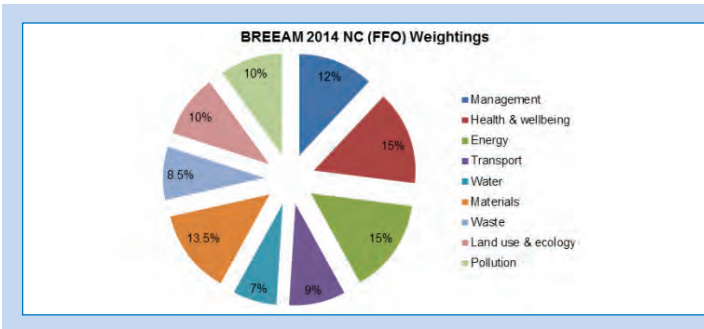
Green Buildings or sustainable buildings, are buildings that in their design and construction or renovation, provide opportunities to use resources more efficiently. These buildings are built to be more energy and water efficient, use fewer resources, to protect the health of occupants and reduce waste and pollution. Green building rating systems help to determine the level of a building’s environmental performance. Credits are awarded for optional building features that support green design. The number of credits generally determines the level of achievement. Utilizing BAC’s innovative evaporative cooling, ice thermal storage or water saving hybrid cooling equipment can help a building earn credits in different categories. Worldwide we recognize various credit programs, e.g. LEED, BREEAM, Green Star. Today BAC can present a long reference list of famous green buildings that use efficient BAC equipment for cooling across the world which makes BAC a leading provider of sustainable cooling solutions.

### THE WALKIE TALKIE, LONDON

The UK 2008 Climate Change Act forced designers, manufacturers and owners to demonstrate **improved energy efficiency**. Further the building owner would pay **less taxes** by executing independent energy audits. It makes sense therefore to incorporate energy efficiency and intelligent water savings from the outset into the design. By doing so valuable BREEAM points can be earned. The BAC Balticare London team have a key reputation in London’s building market. In 2013 they secured a big order for closed circuit cooling towers for the famously labeled Walkie Talkie building in London’s financial district.

This Walkie Talkie building is packed with green features including a roof garden with sloping arena views of

London, and a café, bar and restaurant. Behind this area the **4 BAC VXI-288 closed circuit cooling towers** are located providing 14.744 kW of heat rejection. The coolers are equipped with XB sound attenuation and plume abatement coils with three-way-valve. In winter months the units can run in dry mode and in the warmer summer months they revert to wet mode. This hybrid VXI concept saves the customer a considerable amount of water and money in his water treatment and chemical costs. BAC Balticare also supplied and installed the components for this water treatment system all contributing to the promotion of the environmental aspect of the design. Because of the high construction and city activity during the day, the cooling tower sections were often delivered and lifted at night. The Walkie Talkie has the **BREEAM “Excellent” rating** and hence it is one of the most sustainable buildings of its type in central London.



### What are BREEAM, LEED and Green Star?

Designers aiming for a more environmentally-friendly building design often turn to building rating systems and certification programs to help them assess the environmental impact of a building and components and this along the life cycle.

In such a certification program performance of a new construction building is quantified by a **number of criteria** stretching across a range of **sustainability categories**, which is ultimately expressed as a single certified rating, ie. the label. This is illustrated in scorecard university. While no product or material alone can earn points, **BAC products can help to earn points for several criteria**.

Different rating schemes exists and have their own emphasis. For example the weighting of each category may be different. The pie diagram at the bottom center of this page shows the weightings of the different categories under BREEAM.

**BREEAM** (Building Research Establishment Environmental Assessment Method) has it's origin in the UK and is widely spread amongst Europe.



The U.S. Green Building Council (USGBC) developed the **LEED** rating system. LEED stands for Leadership in Energy and Environmental Design. The LEED scorecard figure at the bottom shows the rating for the Law Centre in Baltimore (see next page).

Australia and South Africa have a **Green Star Program**.



We are a member of the US Green Building Council and the Green Building Council in South Africa which manage the LEED and Green Star programs.



LEED Scorecard		Platinum 54/69
SUSTAINABLE SITES	10 OF 14	100%
WATER EFFICIENCY	5 OF 8	62.5%
ENERGY & ATMOSPHERE	14 OF 17	82%
EA1 Optimize energy performance	10 / 10	100%
EA2 On-site renewable energy	0 / 3	0%
EA3 Enhanced commissioning	1 / 1	100%
EA4 Enhanced refrigerant management	1 / 1	100%
EA5 Measurement and verification	1 / 1	100%
EA6 Green power	1 / 1	100%
MATERIAL & RESOURCES	7 OF 13	53.8%
INDOOR ENVIRONMENTAL QUALITY	13 OF 15	86.7%
INNOVATION	5 OF 5	100%



MACQUARIE HOUSE, SYDNEY

This building is the new global headquarters of the Macquarie group, an Australian investment bank. The building has a strong and proud heritage. The building exterior features outstanding architectural character with a distinctive terracotta and pink granite Beaux-Arts facade. It is the largest heritage redevelopment to be awarded a **Six Green Star Rating** from the **Green Building Council of Australia** which is synonymous for “world leadership”. Remarkable sustainable features are: only 100% fresh air passes through the building; the roof collects rainwater to reuse in toilets; over 80% of construction waste is being recycled. Macquarie will also achieve a 40% energy reduction through an efficient lighting system; the ability to incorporate daylight into the premises and an **energy efficient cooling system. BAC supplied 3 VXTN240A open cooling towers.**



PING AN FINANCE CENTER, SHENZHEN

The Ping tower is the second tallest building in China. It is a prototypical Asian Skyscraper: very tall with its 600 m height and 115 floors but very dense, and hyper-connected. In 2016 this office building will be finally completed, having a **golden LEED certification**. Ping An Finance Center rises from a prominent location in the center of the city, connecting seamlessly to neighboring commercial and residential properties, as well as the Pearl River Delta’s high-speed rail corridor. The tower symbolizes a city which has witnessed unprecedented urban growth – from 300,000 people to approximately 10 million – in the 35 years since becoming China’s first Special Economic Zone. **BAC supplied 125 TSC H350MS ice coils** all contributing to the energy efficiency of the building.



Dear Colleagues,

Welcome to the winter issue of the global sustainability newsletter!

Last year we have officially launched our sustainability journey with **five long term commitments**. We have celebrated this on **World Environment Day** with events across regions in all our facilities. It was great to see all the enthusiasm that it generated. With two global sustainability newsletters a year, we want to keep you posted with bigger and smaller stories, and the progress that we are making towards each of our commitments.

Bearing the recent conference **COP21 on Climate Change in Paris** in mind, which resulted in a binding agreement to reduce greenhouse gas emissions worldwide, we have dedicated a large portion of this newsletter to **BAC units that are part of Green Buildings**. As more than 30 percent of global greenhouse gas emissions are buildings related, and emissions could double by 2050 if nothing is done, efficient cooling is part of the solution.

We also take a look at safety and feature some great initiatives taken at our facilities to reduce our environmental footprint.

Enjoy reading.

Marianne Fernagut  
Global Sustainability Manager



AL BAHR TOWERS, ABU DHABI

The headquarters for the Abu Dhabi Investment Council occupies a prominent site on the north shore of Abu Dhabi Island. The project comprises two 145 m tall towers, each having 25 floors and has a capacity of 1,100 employees. The towers are shielded on the south, west and east elevations by a **unique dynamic shading system** that opens and closes depending on the intensity of sunlight. The system is inspired by the ‘mashrabiya’. This is a geometrically-designed wooden lattice screen used to fill windows of traditional Arabic architecture since the 14th century. The adjustable shades help reduce interior heat caused by sunlight by around 50 percent. The building obtained a **silver LEED rating**. BAC contributed to this rating by installing 16 VTL open cooling towers with HD sound attenuation.



JOHN AND FRANCES ANGELOS LAW CENTER, BALTIMORE

The 12 floor law center-university includes 15 classrooms, 29 large and small group study spaces, an immense library and a 300-seat courtroom and event space. The building also houses all of the school’s clinical services and law-related centers. The building has a **Platinum rate**, which is the highest level of **LEED** certification. The **three cells PT2-0818A open cooling towers** were installed in parallel to maximize the space on the roof layout. This allows for a rainwater harvesting system to be included on the roof that captures and re-purposes runoff and reduces overall water use for the building. The cooling towers contributed to the building achieving a 10/10 under **optimizing energy performance** for LEED certification.



Sustainability commitments

Do you remember? Last year we set out **five long term sustainability commitments**. Every sustainable initiative or action that we take, can be categorized under one of the following goals:

- 1

Offer products with the lowest environmental impact along the life cycle, differentiating from others.
- 2

Have factories and offices that show the highest level of environmental consciousness.
- 3

Manage sustainability issues in our supply chain and meet evolving customer requirements.
- 4

Provide a great and safe place to work.
- 5

Be the leading provider of sustainable cooling solutions.

AND MANY OTHERS ...



Van Gogh museum, Netherlands, (2) VTL BREEAM-NL ‘Very good’



Abu Dhabi Islamic Bank, UAE (4) VXT LEED ‘Gold’



Royal Children's Hospital, Melbourne, (10) VXI 5 Green Stars rating



Soho Fuxing Lu, Shanghai (Office, shops), (56) TSC, (4) S3000, LEED ‘Gold’



McDonald's Corporate Headquarters, Illinois (1) HXV, LEED ‘Platinum’



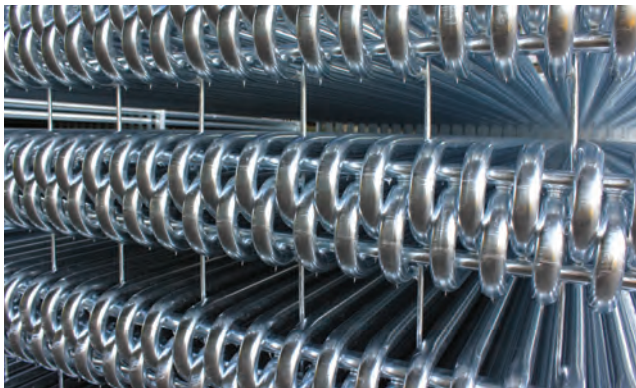
University of Technology, Sydney, (4) VXT 6 Green Stars rating





## Cradle to Cradle certificate for zinc coating

At BAC, we want to responsibly provide our products and solutions creating sustainable value for our customers. As such we like to work with suppliers that also conduct their business in a safe and sustainable way. Therefore we announce with pleasure that the supplier of zinc coatings for coils in Europe, Galva Power achieved the **Bronze Cradle to Cradle certificate** from the Cradle to Cradle Institute. Galvanization protects steel structures against corrosion, making them last longer, and at the end of the service life, the steel construction can be completely recycled. The Cradle to Cradle Certified™ Product Standard guides designers and manufacturers through a continuous product improvement process, checking five quality categories: material health, material re-utilization, renewable energy and carbon management, water stewardship, and social fairness. This is just about the sustainable business practices of one supplier. As part of our sustainability program, we will be investigating more of our supplier's sustainability efforts.



## Improving the BAC safety culture with Behavior Based Safety

**BAC's objective every day is to make sure that our employees return home safely to their families at the end of each workday. We asked Tom O'Hara, BAC's Global Manager Corporate EHS\* how we try to realize that at BAC.**

*"One of the tools we use to accomplish this objective at a number of our facilities is Behavior Based Safety (BBS)," says Tom. "We are using BBS to create an active, caring safety culture where our employees watch out for one another and communicate injury risks to one another when they observe them."* The BBS process consists of identifying the critical at-risk behaviors that are contributing to injuries; observing employees to determine why those behaviors occur; and finally having a discussion with the employee to change that at-risk behavior in order to prevent potential injuries. Tom adds *"We summarize the results of the observations in the form of BBS metrics that are used to measure improvement."*

BAC began its journey with BBS when the **BAC Heist**, Belgium plant implemented the first BBS program in 2009. Until that time BAC had focused its efforts on the technical aspects of working in the shop and in the field. *"We learned that minimizing the risk of processes and equipment can only take us so far. It's impossible to completely engineer all injury risks out of manufacturing equipment and processes. Zero risk is not achievable",* explains Tom. *"So to help us reduce employee exposure to on the job injury risks we are educating our employees on the residual risk, exercising good judgment and executing the proper behaviors to minimize their exposure to the risk of injury."* After a successful implementation at BAC Heist, the program spread to **BAC Chiuro** where another successful implementation was accomplished. Over the past few years BAC has learned that other AMSTED facilities also found success with BBS, so in 2015 BAC decided to launch BBS at **BAC Madera** and **BAC Milford**. Although the program is in its infancy in these two plants, BAC is already seeing positive effects. BAC launched BBS now on a global scale in FY2016. The **BAC Cape Town, Kunshan and Somersby plants** are completing the initial gap analysis and are working to launch their own BBS programs shortly. BAC is looking forward to creating an active, caring safety culture at all its facilities in order to reduce employee exposure to injury risk and ensure that **every employee returns home safe at the end of every workday!**



Tom O'Hara, BAC Global Manager Corporate EHS: "BAC is looking forward to creating an active, caring safety culture."

\*Environment, Health, Safety

## Management

With the retirement of Dave Liming, two new team members have been added to the **executive sustainability committee**, being Jennifer Swatling and Wouter Rosiers.



Members are:

- **Ronny Cannaerts**, Director Manufacturing Europe
- **Marianne Fernagut**, Global Sustainability Manager
- **Don Fetzer**, BAC President
- **Wouter Rosiers**, Director of HR EMEA
- **Stefaan Sonjeau**, Director of Marketing and Business Development EMEA
- **Jennifer Swatling**, VP Global HR
- **Michael Tenbrock**, Director of Global Technology and Innovation



Our team of local sustainability contact points remains the same:

- **Stefano Della Bosca**, Chiuro
- **Willem Fourie**, Cape Town
- **Mark Giltmier**, Madera
- **Tom O'Hara**, Jessup
- **Rick Schiller**, Somersby
- **Nick Talmo**, Milford
- **Rony Wouters**, Heist-op-den-Berg
- **Anne Zhang**, Kunshan



## Recent initiatives at our BAC plants

**We aim to have operations with factories and offices that show the highest level of environmental consciousness. In our previous newsletter we highlighted some of the local initiatives and today we are proud to tell you more stories of local sustainable actions.**

### KUNSHAN, CHINA

Already in the Heist, Chiuro and Somersby plants we implemented lighting condition improvement projects. In these plants the implementation of LED saved a lot of kWh per year. Also in Kunshan Tom Yang (Manufacturing & Engineering manager), Ren Bin (Senior Maintenance technician) and Bob He (EHS engineer) investigated how to reduce the electricity consumption in the factory by **changing the lighting**. Of course when changing the lights, you also strive to improve the **brightness** level. In a first phase they replaced the old energy saving lamps in the assembly area and they checked if the brightness of the LED lamps was sufficient enough. The result was very good, so they decided also to change the lamps in the sheet metal area and the welding booth. This all resulted in an electricity consumption saving of 27,352 kWh in 2015 and they expect to save about 64,011 kWh in 2016.



### HEIST-OP-DEN-BERG, BELGIUM

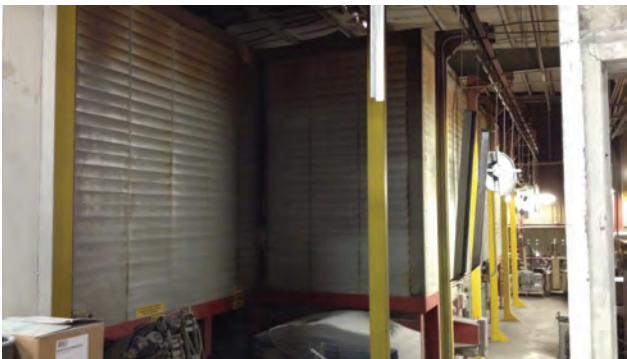
We like working with our colleagues in Italy, and have done so for quite a few decades now. Hence transportation between the Heist plant and the Chiuro entity is business as usual. But the Continuous Improvement Coordinator Frans Van den Brande, likes to put common habits to the test and that's why he brought the departments Technical Services, Engineering, Shipping and Thermoformer around the table to discuss the **reduction of transportation to Chiuro**. If we could realize that, it would not only save us money but also reduce our carbon footprint. Less transport means less air pollution and less fuel consumption, in short a greener way of working. And yes, they did realize it. The team managed to **reduce the yearly transport with 16 trucks**, comparable with 9940 miles or a CO<sub>2</sub> reduction of 13,500 kg CO<sub>2e</sub>. Was it easy to do? Well, it took some thinking but here is how they did it. They eliminated the old iron skids for intercompany fill transportation and replaced them with durable wooden skids. These skids are stackable during shipment by using corner pieces. A surplus advantage is that the skids can be reused and weigh less than steel skids. Returning the empty skids from Chiuro to Heist can be done with regular transport.





MILFORD, USA

During an energy assessment of the plant, Andy McNelia (Manufacturing Engineering Manager) and Nick Talmo (Plant Engineer) identified that by insulating the training room and the Baltibond oven **the usage of natural gas could decrease profoundly.** The **insulation** project should be finished by the time this newsletter is distributed. They will apply a R-23 open cell spray foam from the floor to the roofline in the training room. To the sides of the Baltibond oven they will apply a 2” thick (5 cm) mineral wool FSK Board. They expect a yearly reduction of 295 MWh in natural gas or a saving of 8,632 dollars.



CHIURO, ITALY

Back in 2013 Chiuro changed the old high power consumption bulbs in the factory to **LED lights.** Step by step they implement this LED lightening also to other plant areas. Ivano Contrio (Maintenance Technician) and Stefano Della Bosca (Process Optimizer) recently changed the old sodium vapor lamps at the yard with state-of-the-art LED lamps with **detection sensors.** By using sensors the lights only shine when needed. Today they can experience a better lighting of the yard and they have **reduced the energy consumption for lights again with 70%.**



More sustainability news

Check out the news items on BAC's sustainability website [www.BacSustainability.com](http://www.BacSustainability.com).

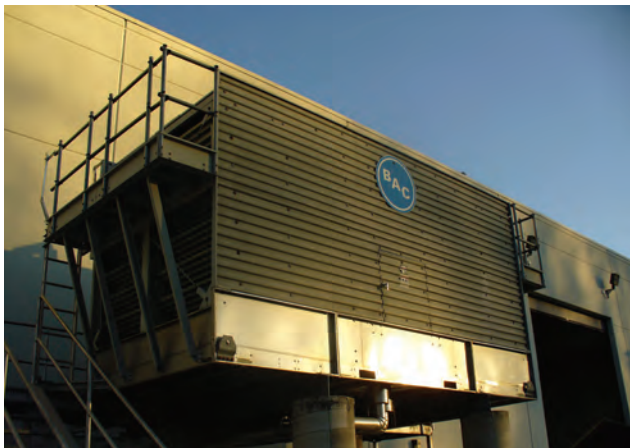
CAPE TOWN, SOUTH-AFRICA

Dumping **fiberglass dust** in the storm water channel is today no longer acceptable. That is what Karm Saliba and Willem Fourie agreed upon when they upgraded the FRP production area in our Cape Town plant. FRP trimming generates a lot of dust. The trimming booth used to be rinsed out with water and then guided into culverts around the building, finally ended up in the storm water channel. When upgrading the FRP area this included also the installation of an **extraction system** that sufficiently extracts emissions such as styrene and acetone. But also fiber dust and glass fibers needed to be extracted. Because of his experience José Fernandes, the Managing Director, assisted and guided in the design and the installation of this new extraction system. The new extracting system that Karm and Willem finally installed, includes a bag filtering system collecting dust. Inside the FRP trimming area extraction grills were placed (see picture). The dust is now guided through ducts and extraction fans (see picture) into **plastic bags.** This system prevents that the dusts goes into the atmosphere or storm water channel. The bag filters can be easily removed and are cleaned regularly. The evaporative cooler on the roof supplies cool air into the booth. Our South African colleagues now collect the fiber dust in plastic bags and dispose it in the correct manner. The end of polluting the storm water.



JESSUP, USA

Why not assess the **HVAC system efficiency** for our own offices? John Moffat (Accounts Payable supervisor) and Tom O'Hara (EHS manager) did this. They wanted to improve the HVAC energy efficiency of the corporate office building in Jessup. Part of that system is of course a highly efficient BAC cooling tower (see picture). An outside consulting company reviewed the complete system and identified several **potential savings opportunities.** The building facilities management company, Crockett Facilities Services, has been working on those recommendations, including scheduling modifications, repairs and new processes. In order to get to the next level of efficiency, they are working to improve the system monitoring capabilities. As a result, the building environment is maintained while having the system running less. In addition, repairs have increased the efficiency of the whole system. These changes resulted in a saving of almost 2 % of Jessup's total electricity usage. The savings can run up to 40,000 kWh annually, which equals a cost saving of 4,300 dollars. But by continuously monitoring the system and improving the controls over it, they may find additional areas for improved efficiency.



MADERA, USA

Changing the lights to LED style was also for the Madera plant a quick win. Justin Oakley (Plant Engineering Foreman), Mark Giltmier (Plant Engineering Manager) and Khanh Nguyen (Plant Manager) decided to change the fluorescent lighting to a **high efficiency LED style** in the office area. They installed all together 48 LED troffers, rectangular lighting fixtures. These new lamps will annually save up to 19,000 kWh which is a cost saving of up to 3,386 dollars. After two years the investment is paid back. You can see in the picture how bright it all looks now.



SOMERSBY, AUSTRALIA

Nothing is as easy as sticking two things together with glue. But glues can be harmful to the environment or to the health of people working with it. Therefore specific precautions are needed when working with toxic glues in terms of safety and waste disposal. The used glue “Plumma’s Type N Clear Solvent” is according to its MSDS (Material Data Safety Sheet) harmful to the environment by transfer through air and has to be handled correctly and disposed off according to the local Waste Regulations. “Why don’t we assemble our PVC sheet fill blocks differently?”, wondered Mark Lucas, Operations Engineer of the Somersby plant. He investigated how to **eliminate the usage of the glue** in the manufacturing process of the fill blocks. Mark managed to implement a purely **mechanical assembly process** for the blocks that does no longer involve any glue! The newly installed mechanical fill machine forms the assembly blocks by crimping together specially designed “tabs” that hold the sheets together. The quality remains but the total process has less impact on the environment and personnel health.



Questions?

- Website: [www.BacSustainability.com](http://www.BacSustainability.com)
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