ARMSTRONG

PLANET PROPOSITION

Sustainability Report 2015/16

In early 2013, Armstrong Fluid Technology embarked on a sustainability journey which began with the formulation of a charter titled the ‘Planet Proposition’.

Armstrong’s Leadership Board signed up to the charter and champions have been empowered at each of our global locations (Canada, USA, China, India, UK). The focus has been for the selected champions to communicate the aims and benefits of the ‘Planet Proposition’ program, and seek active involvement and commitment at all levels of the organisation.

Armstrong defines a sustainable business as an enterprise that measures its success based not only on economic gain but also on their achievements in preserving the environment and bettering humanity, particularly among our employees and the communities they call home. This approach integrates the three pillars of sustainability — the economical, environmental and social dimensions — and inspires the three key tenets of our Planet Proposition.

ARMSTRONGFLUIDTECHNOLOGY.COM

Contents

INTRODUCTION

Armstrong Fluid Technology is a global organisation providing low and zero carbon solutions to the heating and comfort cooling sectors of the construction industry.

Since our founding in 1934 by Samuel Allan Armstrong, our company has pioneered an uncompromising range of products and solutions and has developed eight manufacturing facilities on three continents that serve customers in over 50 countries.

As a leading designer, manufacturer, installer and servicer of low carbon heating, cooling and pumping solutions, we provide a comprehensive service from innovative component HVAC products to fully packaged integrated plant rooms and energy centres. Our facilities feature advanced manufacturing processes and quality control, utilising sophisticated computer testing throughout the entire production cycle.

Thanks to Armstrong's worldwide capabilities and wealth of resources, we are able to deliver integrated energy solutions which provide return on investment, reduced capital expense and minimal energy costs for all non-domestic buildings, including schools and universities, hospitals, shopping centres, commercial and industrial properties.

Steve Cooper
Director of Sustainable Design:

Since it was first adopted in 2013, our Planet Proposition has developed significantly and has become increasingly embedded in our everyday business practices. Employees in all of our plants around the world have embraced this initiative and have been actively involved in projects which are reducing the environmental impact of operations in our own and our customers' plants. We will continue to develop our capabilities in this area and strive to make these practices a key part of our business culture.

Sustainability in Armstrong

We are committed to making Sustainability the foundation of our business.

At the beginning of 2013, Armstrong has embarked on a sustainability journey which started with the formulation of a charter called the Planet Proposition. The Leadership Board has signed up to this charter and Champions have been empowered at each of our sites in Canada, USA, China, India and the UK to communicate the aims and benefits of the programme and seek active involvement and commitment at all levels of the organisation.

At Armstrong, we believe that the ideals of commercial success and responsible environmental stewardship are not diametrically opposed - on the contrary, they are inextricably linked.

This approach integrates the three pillars of sustainability - the economic, environmental and social dimensions - and inspires the three key tenets of our Planet Proposition:

Our Solutions

By designing & supplying industry leading energy-efficient and eco-friendly fluid flow solutions, we help our customers reduce their energy consumption, save money and lower their carbon emissions.

Our Environment

By applying stringent environmental standards to our operations, measuring our performance & continually raising the bar we're reducing our own consumption of valuable resources and making our plants a better and more comfortable place to work in.

Our Community

And by educating and supporting the Armstrong community (our stakeholders and neighbours) to make environmentally responsible choices at work and at home we're helping the community at large become more sustainable.

OUR SOLUTIONS

First and foremost, by delivering value to our customers, we aim to create a sustainable business which will continue to produce innovative energy saving solutions for the building services industry.

Utilising high performance equipment we ensure the system design, installation and maintenance deliver maximum efficiency to lower a building's carbon footprint and reduce first and whole life costs.

Integration is the Key to our Success

Armstrong is a leading provider of low carbon heating, cooling and pumping solutions. Our fully integrated approach consists of incorporating multiple systems in order to deliver high performance equipment to our clients while reducing first and whole life costs, lowering our carbon footprint and making the most of renewable technologies.

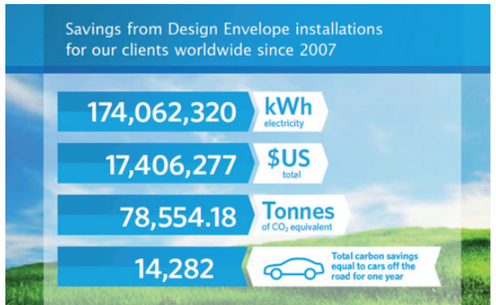
Armstrong systems are not formed through a collection of products brought together. Our expertise lies in manufacturing multiple systems such as gas-fired condenser boilers, heat pumps, biomass boilers and solar thermals. It isn't enough to simply choose high performing products, or to add low or zero carbon technologies to an existing system and expect to minimise energy costs. In integrating these systems we consider a wide range of factors including the different optimum temperatures, part load operation efficiencies, variable versus fixed speeds and demand based control.

Design Envelope — Intelligent Variable Speed Pumps

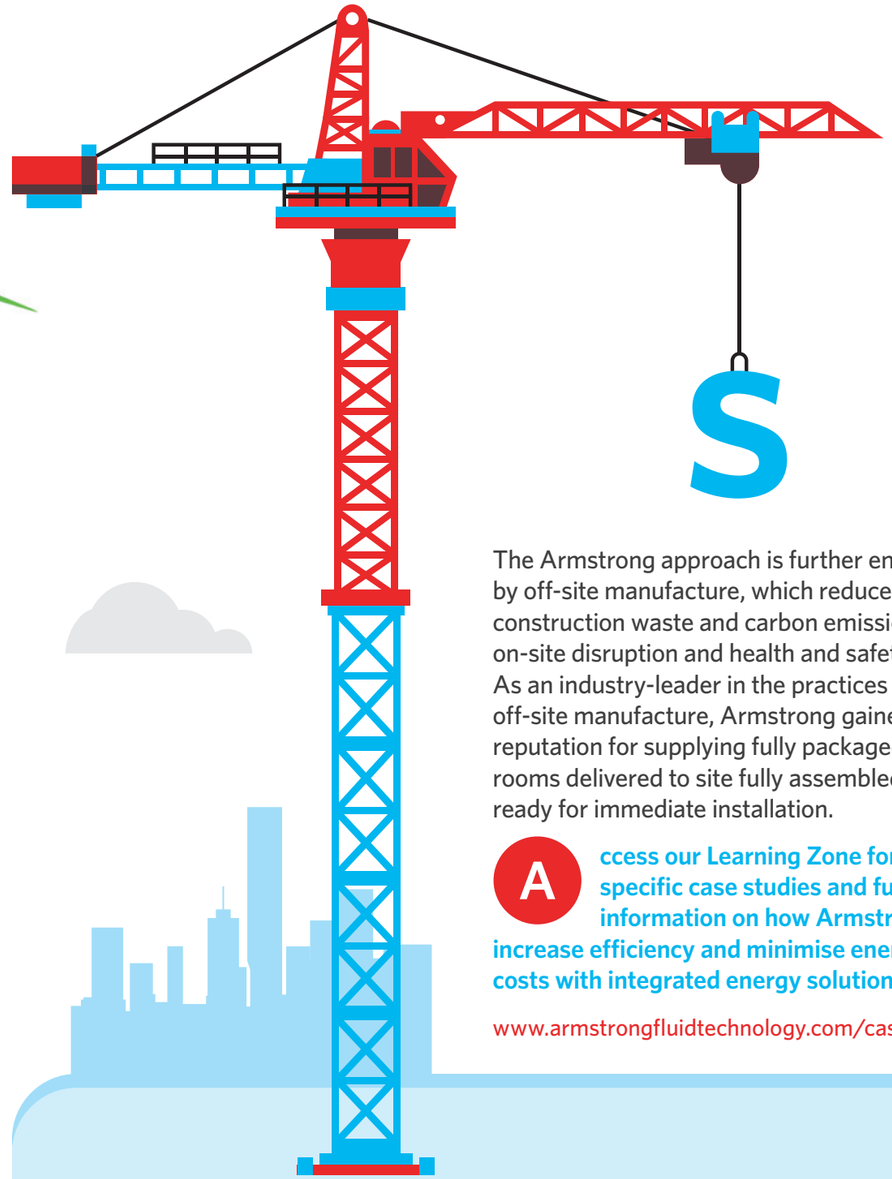
In 2009, Armstrong's Design Envelope Pumps were introduced as a complete solution for heating and cooling systems. At its core, the Armstrong Design Envelope is a new way of approaching equipment selections for HVAC systems which provides both greater efficiency and increased operational flexibility.

IVS pumps reduce pumping costs through advanced integration of demand-based control with variable speed capability, consuming only the energy required, based on current system demand. As a result, clients enjoy substantial energy and cost savings and benefit from reduced carbon emissions.

In 2013, we also launched our Sustainability Dashboard which displays the amount of energy, cost and CO_2 we are saving our customers worldwide through our Design Envelope solutions.



Off-Site Manufacturing



The Armstrong approach is further enhanced by off-site manufacture, which reduces construction waste and carbon emissions, on-site disruption and health and safety risks. As an industry-leader in the practices of off-site manufacture, Armstrong gained a firm reputation for supplying fully packaged plant rooms delivered to site fully assembled and ready for immediate installation.

Access our Learning Zone for specific case studies and further information on how Armstrong can increase efficiency and minimise energy costs with integrated energy solutions.

www.armstrongfluidtechnology.com/casestudies

OUR ENVIRONMENT

As part of the Planet Proposition, we are committed to reducing the environmental impact of our operations globally, not only through sound environmental management but also through company-wide initiatives aiming to embrace sustainability at large.

By the end of 2013, every Armstrong production facility around the world had achieved ISO14001 Environmental Management accreditation. Our Planet Proposition involves efforts to build upon and exceed the requirements of this certification by setting global targets for energy, water and waste reduction which helps to lower the carbon and ecological footprint of our operations.

Environmental goals & progress in 2015

Last year we have adopted three key global environmental goals: 10% reduction in our energy and water consumption, as well as in the total amount of waste produced (all relative to the previous year – 2014). This target applies to all Armstrong production facilities, in Toronto, Buffalo, Birmingham, Manchester, Bangalore and Shanghai.

In order to achieve these goals, Planet Proposition champion teams in all locations focus on two different types of measures: lag measures - monthly cumulative indicators of progress against the target for the year, and lead measures – specific actions that help to achieve the target, such as installing energy efficient lighting to reduce electricity consumption. The progress of these objectives is then assessed and reported on a monthly basis by the local teams through their A3 plan, which acts as a compelling scorecard for capturing progress, actions and responsibilities.

Local champions are encouraged to interact with the teams in the other Armstrong regions in order to share sustainability good practice and drive continuous improvement across Armstrong globally. To facilitate this, we have created a central Planet Proposition Share Point where all relevant internal documents are uploaded and which can be accessed by all Armstrong sustainability champions and interested employees.

In addition, in December 2015 we have organised our first global Planet Proposition meeting where all champions had the chance to share their plans and achievements directly as part of a common online conference.

This initiative was well received by everyone and it will become a regular event in 2016.

Examples of successful actions and projects

In 2015, the Planet Proposition teams have made great progress in all the environmental areas.

Actions to increase recycling and reduce total waste produced:

Working with our suppliers in Shanghai and Bangalore to implement returnable packaging schemes using metal crates instead of wood pallets for example; in Shanghai, this led to a 20% decrease in the amount of waste produced

Improving waste segregation processes at our Manchester and Toronto facilities in order to increase the extent of recycling

Developing a single stream recycling programme in Buffalo to facilitate recycling for staff (see Case Study 3)

Replacing regular cleaning products with eco-friendly, aerosol free ones to reduce water and air pollution

Actions to reduce water consumption:

Implementing washroom upgrades at our facilities in the UK (including push taps and bacterial filters)

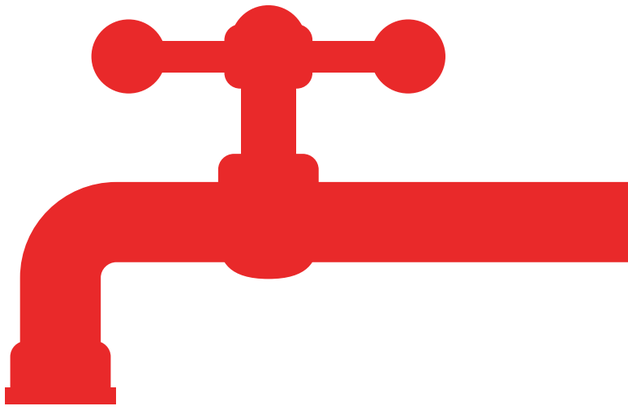
Examples of energy reduction initiatives:

Adopting renewable energy through the installation of solar photovoltaic panels at our Manchester facility (see Case Study 1)

Upgrading lighting to LED in our Shanghai plant (see Case Study 2)

Reducing heating demand by installing rapid action doors in our UK plants

Preventing excess use of electricity at our facilities in Toronto by controlling lighting through motion sensors



Recycling the water that we use to test our equipment wherever possible

OUR ENVIRONMENT

Case Study 1

Solar Photovoltaic Panels at Armstrong in Manchester

By the end of December 2015, Armstrong has completed a major renewable energy project at our Manchester site. A 250 kilowatt peak (kWp) solar PV system was successfully installed over a roof area of 1,550 m2.

The investment is estimated to provide an electricity output of approximately 200,000 kWh/ Year, which will account for a significant extent of our energy demand.

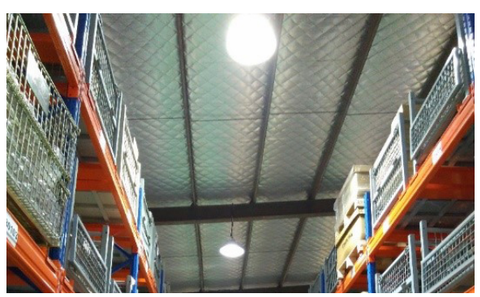
The system is up and running since January 2016 and has already started to reduce the carbon emissions and the costs associated with our electricity consumption.

Case Study 2

LED Lighting Installation at Armstrong in Shanghai

The Planet Proposition team in Shanghai have completed in 2015 a three-phase project to replace existing lighting equipment with new, energy efficient LED bulbs. A total of 53 new lights were installed in the factory's production line, warehouse and shipping storage location.

In the long-term, the investment will result in reduced carbon emissions, better lighting and improved working conditions, as well as reduced energy bills.



Case Study 3

Single Stream Recycling at Armstrong in Buffalo

In Buffalo, an alternative technological solution was adopted to facilitate recycling through the acquisition of single stream recycling equipment.

With this new equipment, the sorting of waste happens inside the recycle hauler, making the process easy and accessible to everyone. Since the implementation of this initiative, the amount of recycled waste has doubled compared to previous amounts.

Carbon footprint data collection

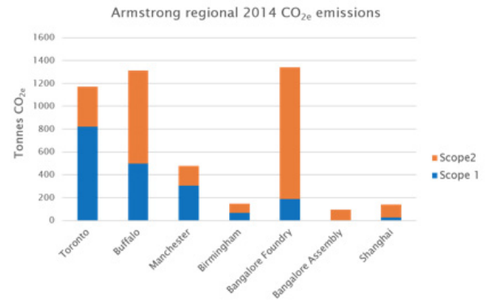
In addition to the monthly energy monitoring that we perform for all Armstrong plants, in 2015 we have gathered for the first time data related to our global Greenhouse Gas (GHG) emissions. This is presented in the figures below as CO2 equivalent (CO2e) values for 2014 in each Armstrong region (Figure 1) as well as for the period 2011-2014 for Armstrong globally (Figure 2).

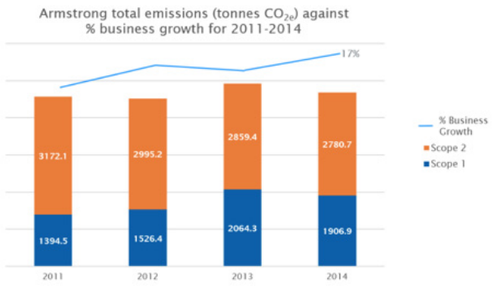
The graphs capture both our Scope 1 direct emissions (including fuel combustion in our plants, owned transport, process and fugitive emissions) as well as Scope 2 indirect emissions (originating from our consumption of purchased electricity).

The business growth trend line captured in Figure 2 shows that our Planet Proposition efforts have allowed us to hold our carbon footprint at 2011 levels while our business grew at over 17% during that period.

The collection and analysis of this data will form the basis of our future targets and initiatives for carbon emission reduction at a global corporate level, extending the focus of our existing energy reduction targets.

A more detailed overview of these plans is provided below.





Our environmental targets for 2016

After analysing current performance and requirements, we have decided to extend the 10% reduction target on our energy, water and waste figures compared to 2014 as the base year. As progress against this target varied between the different regions in 2015, the extension will provide opportunity for alignment at global level before the target is revised. As energy consumption accounts for most of our GHG emissions, the achievement of this target alone will translate into approximately an 8% emission reduction.

Performance indicators will be adjusted for total employee numbers, showing energy consumption, waste production and carbon emissions per employee. This will allow for meaningful comparisons to be made across the different Armstrong plants as well as across the industry.

It will also help to take into account long-term changes to our business that will be reflected in the nature of our energy consumption and carbon emissions.

The only exception is represented by indicators related to gas consumption, which are adjusted for degree days instead – a measure which captures fluctuations in temperatures throughout the year. As we use gas primarily for heating, this helps to eliminate changes in consumption that are associated with weather factors.

OUR COMMUNITY

Although reducing carbon emissions, eliminating waste and saving water are all cornerstones of sustainability, enterprises should also treat people well, recognizing the basic human dignity in everyone regardless of race, class or gender.

Thus, Armstrong aims to create a working environment that values, inspires and empowers our staff. Also, we understand that environmentally responsible behaviour is a key aspect of meeting sustainability goals so we are committed to promote sustainability both internally and externally to all our stakeholders - customers, employees, suppliers and community.

Bangalore

Books, uniforms and shoes for school children

At Armstrong facilities in Banaglore, the one side printed orders used to be previously shredded after the retention period expired. The team here accumulated 100,000 A4 sheets that were converted into 600 books and distributed to employees' children and disadvantaged school children located in the nearby community.

This initiative was well received and the team plans to sustain it in the following years.

Funds were also raised to donate uniforms, shoes and socks to school children, who were able to wear these during the celebrations on 15th of August – India's Independence Day. Armstrong employees were also invited to witness and take part in the celebrations.

Training mechanical engineering students on foundry processes & Armstrong sustainability

A group of 3rd year engineering students from Sri Vidya Institute were given training on Foundry Processes and Armstrong Sustainability Initiatives on the 2nd of April 2015.

Through this initiative, Armstrong is supporting the Indian Institute of Foundrymen in Bangalore which aims to increase awareness among engineering students and encourage them to work in the Indian Foundry industry as it is encountering difficulties in attracting young talent.

The presentation and plant tour ended with a Q&A session and the programme was very well received by students. The organizers from the Indian Institute of Foundrymen were also very happy with the programme and they received positive feedback from students who visited.

The sustainability champions in Bangalore are looking to undertake similar programmes with other colleges in the future.

Organic vegetables grown at the Foundry site

By taking good care of the Foundry Green Belt, employees have managed to grow leafy vegetables (such as tomatoes, carrots and radish) at the AAIMPL premises in Bangalore.

They sell part of the vegetables to their lunch supplier which use them to prepare the food!

The rest of the vegetables are available for employees to collect at no fixed cost, being asked to make free donations to the charity box every time they collect. Normally the donations are much higher than expected.

The money generated is then spent to fulfill social responsibility projects such as donating books and sport kits to local schools.

A group of 55 engineering students visited the Foundry on the 12th of Mar 2016

The students are focusing on metal casting technology and the purpose of the visit was to give them an insight into Foundry processes and to encourage their future involvement in the industry. During the visit, students were also introduced to Armstrong and our Planet Proposition.

The 30th of Mar 2016 – No vehicle day at AAIMPL

The first 'No Vehicle Day' initiative in Bangalore was highly successful with most employees responding positively and using public transport for commuting. The initiative prevented about 60 vehicles from going on the road that day!

Shanghai

Energy conservation training project for local school children

The Planet Proposition team in Shanghai have worked with a local school in 2015 to organise a training project for children on the subject of energy conservation as well as other related sustainability aspects.

Over the course of a few days, children were given presentations on the subject, visited the Armstrong facility and participated in a craft works competition followed by prize giving.

The initiative was highly successful and may lead to a longer term collaboration with the local school.

Energy saving open-house learning session for local college

Armstrong principles, solutions and related products were presented to a group of nine students from a local college, some of whom were HVAC master and doctoral students.

Operation and testing of products were demonstrated to the students who found the experience very positive and beneficial to their understanding.

OUR COMMUNITY

Halesowen and Manchester

Health promotion

In 2015, we held successful wellbeing events at both the Manchester and Halesowen sites, where our staff had the chance to learn about their current health and how to improve it.

Health checks were organised on site and local gyms were invited to talk to employees about making healthier life choices within their day to day routines.

Schools competition

For the past 3 years we have held a local school competition event for pupils from Manchester and Halesowen areas. This year children were asked to create a Story to a Sustainable Future.

Those shortlisted enjoyed a trip down to The Crystal in London, where our chosen winner was announced.

Congratulations to the lucky winner from Bourneville Junior School!

Winners at The Crystal in London

Buffalo

Health & Wellbeing

The planned May Wellness event at Armstrong Buffalo was developed to get the team walking and elevating their heart and activity levels.

As part of this programme, participants tracked their aerobic activity such as walking, running, elliptical machine, swimming or anything that got their heart rates going.

Participants then turned in their weekly trackers for a raffle prize draw to earn 10 wellness points for programme completion. The initiative took place for 6 weeks during the period of May 4th to June 14th.

Toronto

2nd Annual Curling Funspiel

In April 2015, the Armstrong team in Toronto held their 2nd annual Curling Funspiel.

The event was attended by 25 employees and significant others. Everyone had a great time slipping and sliding on the ice, while also exercising and improving their health.

MANCHESTER

WOLVERTON STREET
MANCHESTER
UNITED KINGDOM
M11 2ET
+44 (0) 8444 145 145

BIRMINGHAM

HEYWOOD WHARF, MUCKLOW HILL
HALESOWEN, WEST MIDLANDS
UNITED KINGDOM
B62 8DJ
+44 (0) 8444 145 145

LYON

93, RUE DE LA VILLETTE
69003 LYON
FRANCE
+33 (0) 420 102 625

TORONTO

23 BERTRAND AVENUE
TORONTO, ONTARIO
CANADA
M1L 2P3
+1 416 755 2291

BUFFALO

93 EAST AVENUE
NORTH TONAWANDA, NEW YORK
U.S.A.
14120-6594
+1 716 693 8813

BANGALORE

#59, FIRST FLOOR, 3RD MAIN
MARGOSA ROAD, MALLESWARAM
BANGALORE, INDIA
560 003
+91 (0) 80 4906 3555

SHANGHAI

NO. 1619 HU HANG ROAD, XI DU TOWNSHIP
FENG XIAN DISTRICT, SHANGHAI
P.R.C.
201401
+86 21 3756 6696

MAKING ENERGY MAKE SENSE™

ARMSTRONG FLUID TECHNOLOGY
ESTABLISHED 1934

ARMSTRONGFLUIDTECHNOLOGY.COM