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Case Study:

Manufacturing company reduces energy waste and accelerates towards their sustainability goals with the support of Zero Carbon Ready Worcestershire

ARMSTRONG

> We've always been very keen on sustainability within the company. In fact, we won the Queen's award for sustainable development in 2021.

Armstrong Fluid Technology is a company that designs, engineers, and manufactures intelligent fluid-flow equipment and operates eight manufacturing facilities internationally. Armstrong Fluid Technology combines high-quality hardware, controls intelligence and related services into fully integrated building energy solutions. The core competencies of the company are in demand-based control, digitalisation, fluid flow and heat transfer.

The company's Sustainable Design Director, Steve Cooper, was motivated to join the Zero Carbon Worcestershire Programme because of its commitment to making Armstrong's buildings net zero by 2030.

"We really needed help in formulating a roadmap to becoming net zero. That's why we wanted the help of a consultant to look into that for us and advise us. And that's what the Programme did."

Steve found out about the Programme via a Local Council email and was then introduced to the County's Business Development Team who spoke to him about sustainability. Steve praised the application process:

"The application process was very quick which amazed me because over the years I have participated in a few programmes like this, and they tend to take months. But this was a simple form to fill in."

Armstrong Fluid Technology received bespoke advice and a face-to-face review from a specialist consultant at the company's Droitwich facility. The consultant met with Steve on several occasions to discuss existing initiatives and further possible initiatives that could be considered. The consultant suggested some changes, for example, solar PV for the roof of the building and improvements to the ventilation system which was wasting a lot of energy by sucking out air from the welding areas.

"An immediate thing they did for us was look at half hourly data for electricity consumption. They found that during the night and the weekend when the building was unoccupied, our consumption was considerably high."

With the support of the consultant, Steve discovered many of the light sensors in the building were incorrectly set up, so they were coming on during the night. Some of the heating and air conditioning units were also coming on at night when the building was unoccupied. Immediate plans were enacted to reset the systems so that they were not running unnecessarily.

"Taking this immediate action in one facility saved us £15,000 a year. It was a considerable saving as a result of a very simple change. There was no capital investment that had to be made. We wouldn't have done that without the consultant's help."

Steve passed this advice to the company's other facilities across the world which resulted in savings on a wider company level. He was pleased with the quality and appropriateness of the assistance.

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Armstrong Fluid Technology also applied for a grant from the Zero Carbon Ready Worcestershire Programme which the company anticipates would help them make the changes suggested by the consultant to reduce their energy consumption and waste.

The Programme has helped Armstrong Fluid to formulate a net zero roadmap. The company is planning to reduce their energy use by 25% by 2025 and 50% by 2030. Steve believed that without the Programme's support, they would be at least 6 months behind where they are now.

"We certainly wouldn't have spotted the flaw of using energy outside of working hours. So, the Programme have been a big advantage to us."

Steve stated he would 'definitely' recommend the Programme to others. The company is now looking to install solar PV on the roof and improve the ventilation of their Droitwich facility to increase energy efficiency.

"This has already been done at our Manchester branch and it gives us around 40% of our total electricity usage."

They are also considering the installation of a rainwater harvesting system to use the water for their hydraulic testing.

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Case Study:

Kidderminster Harriers Get Smart About Their Energy Use with Help from Zero Carbon Ready Worcestershire

With the 'Harriers' name paying homage to the club's early years in athletics and rugby, football as we know it began in 1886 with the birth of the club that does the town proud to this day. Always looking to be innovative, 1951-52 saw the revolutionary use of floodlights by the club, giving Harriers the distinction of staging the first floodlit games in the history of the FA Cup at the club's home ground, Aggborough Stadium. Kidderminster Harriers boldly entered a new era in 2019 with a new ethos and structure both on and off the pitch, and the club continues that ethos in the way it manages its facilities.

Taking up the story, Harriers' Finance Director, Neil Stanley, commented that all football clubs have a massive energy requirement. Harriers themselves, in addition to the floodlights, concourse lighting and irrigation system for the pitch, have a pub that's open six days a week, a function room, offices and external food kiosks. All these facilities require power and the Club wanted to be able to review their power usage and identify which of the facilities were the heaviest and/or the most inefficient users.

> As a result of the Zero Carbon Ready grant, we now have visibility over 80% of the business, which will rise to 100% when the final couple of meters arrive from the US.

"The system has been repeatedly added to over the years and we just wanted to quantify our usage and understand what levels of electricity were being used around the ground."

Neil made the decision to apply for the Zero Carbon Ready Smart Meter assistance, and the Harriers received a grant of circa £8,448, which represented 87% of the cost of installing 16 smart meters around the club. Neil praised the clarity and professionalism of the team and the application process, with a turnaround time of circa two weeks between Neil completing the application and installation being undertaken by a local electrician.

"Our electricity bill ranges from £4.5k to £6.5 per month, depending on how many matches are played at the stadium. As a result of the Zero Carbon Ready grant, we now have visibility over 80% of the business, which will rise to 100% when the final couple of meters that we have procured independently of the Programme arrive from the US. It will be interesting to track usage through the app and see how this compares with the monthly bill."

Neil confirmed that this is a pre-emptive strike to understand the energy usage at the ground, and that the data provided by the meters will allow the Club to make informed decisions on what kind of impact various actions will have, both financially and environmentally. Neil commented that the meters will hopefully bolster a recent grant from the Football Foundation, which allowed the Club to replace its halogen floodlights with an energy efficient LED 'switch on/switch off' system, saving circa £5k per annum.

"The smart meters now installed will provide us with a holistic picture of where we can be more efficient and, hopefully, make similar savings. We just want to make running the facilities as sustainable as possible and the smart meters will facilitate that process."

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Kidderminster Hotel Sees the Light with Help from Zero Carbon Ready Worcestershire

THE LION HOTEL

A constant and integral part of the local community, The Lion Hotel, Kidderminster, has proudly provided temporary accommodation for over 30 years, helping hundreds of people take the first step out of homelessness by offering comfortable, friendly accommodation, irrespective of circumstance. Working closely with local services and charities, The Lion Hotel provides a unique and vital service in the local community.

> The initial site review was professional and comprehensive, but the combination of the review and the grant funding, which allowed us to procure new lighting systems quickly, was very attractive for us as a business.

Regional support can be critical to the sustainability of such initiatives and Harry Murdoch, Manager at The Lion Hotel, commented that he first became aware of the support on offer from Zero Carbon Ready Worcestershire when he was investigating ways in which the comfort and safety of those using the accommodation could be improved. After an Internet search highlighted the support available from Worcestershire County Council, Harry made initial contact with the Programme and a decarbonisation review was arranged. A member of programme delivery partner Pro Enviro visited The Lion Hotel in September 2022 to undertake a site assessment, with an output of the review being a comprehensive 20-page report outlining the ways in which the Hotel could reduce its carbon emissions.

Harry commented that the review in itself was a worthwhile exercise, providing a roadmap for the Hotel to become more energy efficient as funds allowed. However, the review in combination with the

grant, allowing certain recommendations within the assessment report to be actioned, is where the Programme provides significant added value. Harry believed that this combination of support was a real strength of the Zero Carbon Ready Worcestershire support:

"The initial site review was professional and comprehensive, but the combination of the review and the grant funding, which allowed us to procure new lighting systems quickly, was very attractive for us as a business."

The Lion Hotel received a lighting grant from Zero Carbon Ready Worcestershire of circa £5,000, facilitating engagement of a local lighting installation company who had worked in premises such as care homes previously, and were therefore up-to-date in terms of the regulations on installing such systems in premises where people sleep.

"We have areas where we need lighting at all times. The grant facilitated installation of lighting with PIR (passive infra-red) sensors in communal areas and emergency lighting. Such a project would normally represent a significant initial investment for us, but one that would give us huge gains over the long-term. The fact that the lighting grant covered 100% of the costs meant that we could push ahead with procuring the new lighting systems immediately."

Harry confirmed that installation of the new lighting system was completed by 1 November 2022, evidencing the responsiveness of support, from initial contact to delivery, with the Hotel predicting savings of £1,000 per annum on a circa £12,000 electricity bill (prior to recent price inflation) – monies which can now be allocated to improving the amenities for residents, ensuring their future comfort and safety. In addition to financial savings, Harry predicts the new lighting will provide a reduction in greenhouse gas emissions of 500 kilograms (CO2) per annum. Harry concluded by stating that:

"Communications with the programme were open and professional, both with the management team and the consultant who delivered the site assessment. The potential impacts of the support, both for us and for other regional initiatives and enterprises, from programmes such as Zero Carbon Ready Worcestershire, are clear to see."

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Case Study:

Kidderminster Manufacturer Reduces its Energy Use with the Support of Zero Carbon Ready Worcestershire

Kidderminster-based Storm Environmental Ltd believes in excellence and a commitment to quality. With a team that has over 100 years of experience in the waste management industry and supply of wheeled containers, Storm has become the leading manufacturer and supplier of mobile waste and recycling containers to the UK market. Via its cutting-edge design studio with 3D and computer generated modelling capabilities, the company manufacturers BSI-certified products to Quality Management Systems ISO 9001-2015 and Environmental Management Systems ISO 14001-2015, incorporating coating, lifting, RFID tagging and custom logo and graphics options for its clients. The company currently has two manufacturing sites in Stourport, Wyre Forest, including its current 55,000ft2 site and a new 80,000ft2 facility which the company is in the process of bringing online, aiming for the end of 2023.

> Obviously we now have these smart meters to facilitate informed decision making about our energy usage as and when needed as we move over to the new facility.

Taking up the narrative, Richard Ganley, Financial Director at Storm, explained that the company was already being supported by Worcestershire County Council through its Business Energy Efficiency Programme when WCC delivery partner Pro Enviro identified that Storm could also benefit from Zero Carbon Ready Worcestershire support. Upon successful application, the company received a grant of circa £6,000 to cover support provided by Pro Enviro, the first aspect of which was to conduct assessments of the company's two

> We had not undertaken anything like this before. We hadn't undertaken any data gathering or really identified where and how we were consuming energy. The company's aim is to cut its carbon emissions and the support received from Zero Carbon Ready Worcestershire has put Storm Environmental on a sound footing to achieve such aims.

manufacturing sites in April of 2022 to determine the best way to monitor electricity usage and to identify the optimum machinery/facilities on which to focus attention. Richard went on to explain:

"Following initial assessment of our manufacturing facilities, Pro Enviro utilised temporary micro-metering of our current manufacturing lines to identify what hours specific machines were being used, when they were being switched on, and how much energy they were consuming."

The exercise identified that certain powder-coating machines were being turned on several hours before shifts would commence. Such machines use significant amounts of gas and the company was able to ensure that machines were switched on much closer to shift start, saving circa two hours of energy consumption prior to every shift. The micro-metering also identified, via measuring control unit use for the rotary moulding machinery, that the respective oven for this manufacturing line was a significant consumer of gas and was running twenty four hours a day. The exercise identified that keeping the oven running was the most efficient way to operate the equipment, as opposed to letting the oven cool and having to start it up again each shift. Using the information at hand, company management decided to adapt shift patterns to run a four-day week, maintaining productivity levels and worker hours, but improving the efficiency of the machinery, with ovens only shut down and restarted once a week.

Richard went on to identify that Storm had also utilised Zero Carbon Ready Worcestershire Smart Meter funding of circa £1,000 to purchase four battery-powered, blue tooth smart meters to ascertain how energy was being consumed in the new 80,000ft2 facility. At the time, the facility only contained welding machines and general building facilities, lighting etc., which were being powered via a rented diesel generator. The smart meters identified that although mains electricity was between £0.70 and £0.80 per kWh at the time, it would save money to switch to mains as the diesel generator was costing around £1 per kWh.

"Obviously we now have these smart meters to facilitate informed decision making about our energy usage as and when needed as we move over to the new facility."

Pro Enviro also provided the company with generic advice relating to areas of operation including the procurement of variable air compressors that, although requiring initial capital outlay, would pay for themselves relatively quickly through savings on electricity, through to the use of sensor functionality on lighting and the removal of halogen bulbs. Richard confirmed that all such advice would advise and impact upon future equipment procurement and operation for the new facility.

Although the company is at the start of its emission-reduction journey, Richard commented that Zero Carbon Ready Worcestershire support had identified additional options/schemes (the use of solar power, for example) that can be examined when cash flow allows and that such advice will prove invaluable for the company going forward.