



AVR IN THE UK
**GREEN PAPER
SUMMER 2023**

Expect... **AVR**



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AVK UK GREEN PAPER AN INTRODUCTION

At a time when the global economy is struggling, there is war in Ukraine, and the domestic cost of living is making it difficult to make ends meet for so many families, it is perhaps understandable that sustainability might slip down the political and commercial radar.

However, sustainability is critical to every single person living on the planet and we must remain vigilant in our focus on this issue for the sake of current and future generations.

AVK Group is a socially responsible manufacturer. We also recognise that we operate in highly competitive markets where factors such as price, quality and availability weigh heavily alongside sustainability in procurement decisions.

I would like to take the opportunity provided by this Green Paper to underline the importance AVK places on sustainability, the commitments we have made, and the steps we are taking. It's a challenging journey that will be made easier if we all understand the part we have to play.

AVK Group is committed to achieving carbon neutrality by 2030 and striving for Carbon Zero (the difference between these terms is explained within this Green Paper). Other Group commitments, relating to green energy, product design, and investment payback, are shown in Table A.

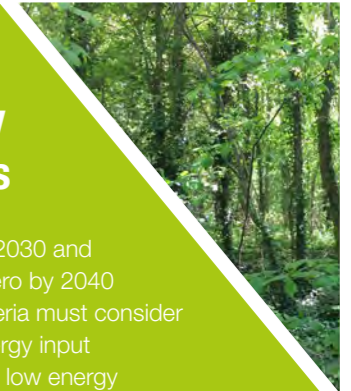
What does this mean for those of us working in the UK? At a headline level, it means supporting the Group vision. In terms of actions, it translates into:

- Appointing a dedicated Environment Champion across all four UK businesses (AVK UK, Glenfield Invicta, Fusion Group, Atplas)
- Being Carbon Neutral by 2030
- Measuring our Green House Gas emissions and pursuing policies to achieve a 4.2% reduction in emissions which is necessary to prevent global temperatures from rising more than 1.5 deg C

Table A

AVK Group Sustainability Commitments

- Carbon Neutral by 2030 and strive for Carbon Zero by 2040
- Product design criteria must consider lowest possible energy input
- Investments need a low energy consumption preferential criteria
- 10% of our investments should be targeted potential direct energy saving
- Consideration of longer paybacks for investments with an Environmental benefit
- Pursue initiatives to increase the use of Green energy
- Pursue third party accreditation for Life Cycle Assessment (LCA) for the AVK Group
- General agreement that we should be measuring product footprint analysis



- The Group annually produces a Sustainability Report that showcases other commitments and achievements from across the Group
- All UK sites to achieve 'Zero Waste to Landfill' by 2025
- Measuring the carbon footprint of products made by our factories in the UK
- Pursue a proactive engagement strategy with suppliers to ensure they are engaged in our journey
- Ensure sustainability is on the agenda in executive and management meetings



- Having a proactive approach to community involvement and supporting designated charities
- Communicate our sustainability to employees and seek their cooperation and involvement. Regular Green Papers are part of this process

Sustainability is associated in most people's minds with the environment. From a corporate perspective,

Table B

Sustainability Principles of ISO 26000: 2010

An organisation should:

- Be **ACCOUNTABLE** for its impact on society, the economy and the environment
- Be **TRANSPARENT** in its decisions that impact on society and the environment
- Behave **ETHICALLY** based on the values honesty, equity and integrity
- Respect and uphold the **RULE OF LAW** and international norms of behaviour
- Respect **HUMAN RIGHTS**



it is much broader than that. AVK has committed to following the sustainability principles as outlined in ISO 26000:2010 (see Table B).

In addition to environmental policies, ISO 26000:2010 recommends that a sustainable company has policies covering topics as diverse as human rights, labour practices, and community involvement and development. We are working to bring together the many policies in place across companies in the UK to ensure we have common and consistent policies in these areas.

Amongst all of this talk of standards, policies and procedures, you may well be saying to yourself that this is all very well but what can I, as an individual, contribute? In short, a huge amount.



[Click here to Read more](#)

MARTIN GREENHALGH

Managing Director
AVK UK

We are embedding lean across all aspects of our operations from manufacturing, through logistics, to administration. At its heart, lean is about waste reduction. If we all embrace lean and implement it effectively we will be behaving sustainably.

Those working in product design are looking to value engineer products to maintain and improve performance whilst reducing metals and plastics, and other raw materials required. This is sustainability in action. Throughout the year, there will be opportunities to support events organised by AVK UK, Fusion Group, Atlantic Plastics and Glenfield Invicta to raise money for the national and local charities we support (see our Corporate Social Responsibility (CSR) page on the AVK UK website). Get involved. Make a difference.

In this edition of our Green Paper; we meet Chris Leese, Group QHSE & Compliance Manager for AVK UK, Chris explains and expands on some of the terminology associated with the environment and sustainability, there is often a lot of green speak but do we truly understand it? (page 7), he also explains the difference between net zero and carbon neutral (page 8), find out more about the actions we have been taking locally to progress towards our targets on sustainability (pages 9 & 10), and finally, Chris provides tips on how we can all be greener in our everyday lives (page 11).

As I said at the start, sustainability is critical to every single person on the planet. We all have our part to play.

IN BRIEF

My name is Chris Leese, and I am Group QHSE & Compliance Manager at AVK UK

The three terms – sustainability, corporate social responsibility (CSR) and environmental, social and corporate governance (ESG) - all relate to the obligations that a business has to society and the wider world.

For businesses seeking to define their carbon footprint, Greenhouse Gas emissions have been divided into three Scopes, each defined by the source of the relevant emissions:

Carbon Neutral status requires a company to remove (or offset) its Scope 1 and 2 emissions. A Net Zero strategy is much more demanding, requiring Science-Based Targets' (SBT) that are aligned to limiting the rise in global temperatures to 1.5°C by 2050.



- AVK has installed four electric vehicle chargers at each of its manufacturing sites



- AVK has a 'zero to landfill' policy, and this is why we separate waste so that as much as possible is recycled. We are discussing the introduction of two further waste streams to reduce our general waste to a minimum

What are AVK in the UK doing?

- AVK are pursuing opportunities to preferentially use Green energy wherever possible across our UK sites. We have the intention to invest in solar energy where this is practicable for our businesses. This will be key to achieving carbon neutrality and substantially reducing our energy consumption by 2030

How can I be greener?

You can be greener AND save money. Try hypermiling. Hypermiling is when the driver of a vehicle employs techniques to minimise the use of fuel; hypermiling can reduce fuel consumption by 10-20%. You can find out top hypermiling tips later in this Green Paper.

Chris Leese
Group QHSE & Compliance
Manager Quality -
AVK UK



"AVK is committed to acting responsibly and we have been focusing our efforts on becoming more sustainable in our business operations, and reducing our impact on climate change.

I am excited to be sharing some of the great work that has already taken place across our journey to 'net zero' and I look forward to updating you through our green papers on further progress made."

NET ZERO AND CARBON NEUTRAL WHAT'S THE DIFFERENCE?

These two terms - Net Zero and Carbon Neutral - are widely misunderstood and often used incorrectly. In some ways, this is understandable as the 'headline' definitions are very similar and have the same ultimate objective; the balancing of 'unavoidable' GHG production and the permanent removal of GHG from the atmosphere.

Carbon Neutral, as defined by the PAS 2060 Standard developed by the British Standards Institution, requires a company to remove (or offset) its Scope 1 and 2 emissions. Reduction of Scope 3 emissions is encouraged but not mandatory.

Offsetting is a way for a business to mitigate its emissions by buying certificates from organisations that are engaged in environmentally positive activity.



A **Net Zero** strategy is much more demanding, requiring Science-Based Targets' (SBT) that are aligned to limiting the rise in global temperatures to 1.5°C by 2050. This can only be achieved by complete removal of emissions from the entire supply chain; Offsetting is not permitted. Some energy-intensive sectors will rely on technology such as carbon capture and storage (CCS) that is not yet fully-developed.

ATPLAS AN INTRODUCTION



Atplas joined the AVK Group in June 2022. Based in Bridgend, South Wales, Atplas manufactures a variety of valves and water fittings for house connections. One of its high-profile products is the Matrix boundary box which is injection moulded from recycled plastics.



Simon Spridgeon, pictured left, is Atplas' Marketing and Product Director:

'Long before it achieved the profile it has today, sustainability was at the heart of Atplas' decision-making.



Many of the manufacturing processes we use, such as injection moulding, are energy-intensive. We focus on value engineering product designs to minimise both materials usage and energy consumption. All the energy we use comes from renewable sources; quite a turn around for a business situated near the famous South Wales coalfield.

Atplas is certificated under the Achilles carbon reduction scheme and meets the zero waste to landfill criteria. Current sustainability initiatives include looking at how best to capture and track sustainability data that can inform our decision-making.



AVK ACTION STATIONS

Renewable Energy – Photovoltaic Solar

People sometimes think of solar power as the thermal solar units used to directly heat water. These have been popular in Southern Europe, where the hot weather lends itself well to this very basic technology.

Photovoltaic (PV) solar power, on the other hand, uses silicon panels to convert the Sun's energy into electricity. As PV panels work by converting light energy, they give good, predictable yields even here in the less-sunny north of Europe (continued on page 6).

AVK is considering the installation of solar panels at some of its manufacturing sites, which have a high surface area.

The proposed installation of PV solar panels will reduce grid electricity requirements by at least 20%. With energy prices set to triple in the autumn, this represents a significant saving that will enable a system to pay for itself in about three years.

This will be key to achieving carbon neutrality and reducing our energy consumption by 50% by 2030. In the medium term, battery storage will become more affordable. Batteries will allow 'unused' solar energy (when the sun is up but the factory isn't working – weekends, early morning etc) to be stored. Initially, this will feed in to the grid in exchange for a very low feed-in tariff called a SEG (Smart Export Guarantee). With batteries installed, solar panels could reduce electricity consumption by over 40%.

In the past there was concern that PV systems would lose significant performance over time, with scepticism about manufacturers' claims that panels will still operate

at 80% output after 25 years. However, we can now see evidence from older systems that they have remained effective.

For example, I installed PV solar panels at my home in 2013. Although these panels are not as effective as the latest technology, after 10 years they have not yet lost any efficiency, generating between 3,000 & 3,400 kWh every year from an array of 18 panels.

Longer term, AVK will consider supplementing solar renewables with wind power. Wind power doesn't currently offer the same return on investment as PV, and it is not as predictable. However, it is likely to be more viable in the next few years, particularly in conjunction with battery storage. Smaller, roof-mounted units can be an option where there isn't the space to erect larger turbines.

Other future energy options include the replacement of conventional gas boilers with heat-pumps. These will work particularly well where we have the benefit of free renewable electricity.

AVK ACTION STATIONS

Electric vehicles

AVK's amended car policy is beginning to take effect with more hybrids and electric vehicles (EV) in the fleet.

The lack of a reliable charging network has been an obstacle to switching to EVs. AVK has begun to address this with the installation of chargers at each of its manufacturing sites.



Waste streams

There are three very good reasons why we separate different types of waste into 'streams':

- It allows a large proportion of waste to be recycled
- It saves the company money
- For some types of waste, it's a legal requirement to stream it.

For businesses like AVK, there is a lot of legislation (and associated documentation) governing the disposal of waste. With household collections, the Local Authority bears a lot of the burden of legal responsibility.



Waste generally falls into two main categories: hazardous and non-hazardous. Hazardous waste is directly damaging to the environment and/or harmful to health and can't be disposed of as general waste. There are some obvious examples such as oils and paint, but even things like broken electrical appliances are classed as hazardous and have to be removed by specialist contractors.



Non-hazardous waste, such as paper, wood and most plastics, can be disposed of at landfill or by incineration, but again, licenced waste carriers must be used to remove this. AVK has a 'zero to landfill' policy, and this is why we separate waste so that as much as possible is recycled.



Most waste is recyclable to some extent. Currently, we recycle paper and cardboard, wood, metals and PE pipe. Most other plastics are collected as general waste, but we are discussing the introduction of two further waste streams to reduce our general waste to a minimum.

AVK SMART WATER AND SUSTAINABILITY

Imagine you are in an exam, and you are faced with the following question. What would your answer be?

A water engineer has a series of wireless sensors located across their network. These sensors regularly measure and communicate key variables such as flow, pressure, temperature, level and valve open/closed back to a central core centre in almost real-time.

What sustainability benefits could the water engineer derive from the analysis of the data generated by the sensors?

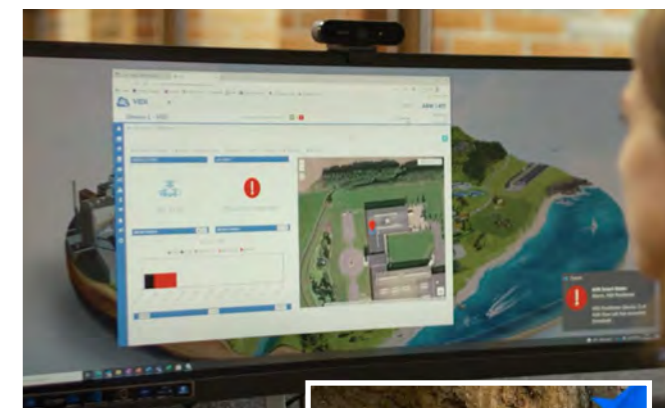
This is exactly the type of question the AVK Smart Water team, led by Dave Hurley, is answering for water companies on a daily basis.

AVK Smart Water supplies and installs a range of sensors under the VIDI brand. The VIDI sensors have been developed to work with core AVK products such as gate valves, hydrants and fittings. The sensors can be supplied pre-installed on new AVK valves and hydrants, or retrofitted to products that are already active in the water distribution network.

Dave, pictured right, an engineer working on water distribution networks for Severn Trent, Wessex Water, and Thames Water before joining AVK in 2014, and his team have been monitoring multiple AVK Smart Water installations to gain an insight into the sustainability benefits of the sensors.

Here, Dave shares a couple of anonymised case studies: 'One water company has installed VIDI positioners on valves and hydrants in remote network locations; the VIDI positioners indicate whether a valve or hydrant is open, closed or in an intermediate position.'

It is a common approach for water companies to have engineers visiting valve and hydrant locations on a regular and planned basis simply to check whether a valve is open or closed. The VIDI positioner eliminates the need for these routine visits. The intelligence provided greatly reduces the number of miles driven and the fuel consumed, it also



enables engineers to focus on more important and, frankly, more interesting and fulfilling work. If there is an emergency in an area, the ability to access real-time data on valve positions enables rapid and intelligent decisions to be made, with effective resource allocation.



Even though they are typically buried at least 750mm below the surface, water pipes are still affected by significant changes in ground temperature, both hot and cold. These changes can lead to pipe bursts and subsequent loss of water. To address this problem, one water company has installed VIDI temperature sensors in strategic locations. Monitoring and analysing ground temperature changes enables the company to target its maintenance manpower effectively to 'danger zones' and react far more quickly to leaks. The analysis of VIDI temperature data also takes into account the pipe material as different materials respond differently to temperature fluctuations.

Leakage is a huge environmental and economic issue for water companies and AVK Smart Water can make a huge contribution reducing it in years to come.'

You can find out more about AVK Smart Water on the AVK UK website: [Smart Water](#)

AVK DIGITISING THE WATER NETWORK TO MEET SUSTAINABILITY GOALS

In Ofwat's PR24 methodology, a broader range of environmental commitments is introduced, including eliminating serious pollution incidents and delivering reductions in greenhouse gas emissions, among others.

Water companies will be incentivised to meet these commitments, with a focus on innovative solutions to provide long-term improvements.

Ofwat is not the only organisation holding water companies to account on their sustainability obligations, of course. The UN's Sustainable Development Goals 6, 9, and 11 focus on clean water and sanitation, building resilient infrastructure in part through the fostering of innovation, and ensuring cities are resilient and sustainable.

This focus on "innovation" is often mentioned in relation to further digitisation of the water network under PR24 and AMP8.

Through the deployment of Smart Water technology, such as AVK UK's intelligent VIDI sensors, water companies can get real-time data from their network, including levels, flow rates, pressure, temperature, and valve status. Another option for wastewater is our smart air valves which provide data on the status of air valve performance. Once deployed, these sensors will alert engineers when potential issues arise, when the network exceeds the pre-set parameters on pressure, for example.

What that means in terms of sustainability improvements:

- Less pollution incidents due to burst pipes / broken assets.
- Targeted maintenance minimises unnecessary work, reducing carbon footprint.
- Better knowledge of asset performance, ensuring optimal working conditions, therefore reducing energy consumption.



AVK ARIsense smart water air valve alerts Yorkshire Water operations team to avert potential sewage leak. See full case study: www.avkuk.co.uk

Pictured below an example of an AVK UK VIDI sensor on a hydrant



Rob Edwards, AVK UK's Smart Water Specialist, said: "Air valves as an example are, typically, the most neglected asset on water company networks. When air valves aren't functioning correctly, air may be drawn into the network or unable to escape, leading to vacuums and air locks, which means pumps must work harder to move clean water or sewage in rising mains; working harder leads to wear and tear and increased energy consumption.

AVK smart air valves provide a wealth of network and asset data. Communicating this data via an online platform with an open API ensures it can be exported into water companies' network management programmes. The smart network is no longer a pipe dream."



AVK IN THE UK COMMITTS TO USING GREEN ELECTRICITY

AVK in the UK commits to using green electricity AVK in the UK includes leading utility network brands such as AVK UK, Fusion Group, Atlantic Plastics and Glenfield Invicta.

AVK UK signed up with British Gas back in October 2022. British Gas has confirmed that all of the electricity used by AVK UK has been generated from renewable energy sources such as wind and solar, and is underpinned by Renewable Energy Certificates. The same applies to Glenfield Invicta's electricity consumption.

Renewable Energy Certificates (REC) are often referred to by other names such as Green Energy Certificates, Green Tags or Renewable Electricity Certificates. In simple terms, a REC is produced every time a renewable energy source generates 1 MWh of electricity and feeds it into the national grid.

Both Atlantic Plastics and Fusion Group operate multiple injection moulding machines many of which have recently

been upgraded to new, more energy-efficient designs. This significant capital investment programme highlights AVK UK Group's commitment to operating more sustainably. Both Atlantic Plastics' and Fusion Group's energy suppliers have certified that all electricity supplied is generated from zero carbon sources.

Chris Leese is AVK UK's QHSE and Compliance Manager: 'Like many manufacturing companies, electricity constitutes a significant proportion of the energy we consume each year. As an organisation we are taking a number of steps to minimise the amount of electricity we take from the grid.

These steps include installing solar panels on the roofs of our manufacturing facilities, stepping down incoming voltage to 220V, and implementing lean manufacturing best practice to eliminate waste.

Being able to prove we are using electricity from renewable sources is another important step in our sustainability journey.'



Earlier this year AVK's Aqua Gas manufacturing business supported the Corby Kingswood Under 13's team, pictured above, with a generous donation to help fund the purchase of new training kits

AVK IN THE UK GIVING BACK TO OUR COMMUNITIES

There has never been a more important time to support our local communities, at AVK UK Corporate Social Responsibilities is a priority and we strongly believe in supporting the communities in which we work.

In January AVK's Aqua Gas manufacturing business supported the Corby Kingswood Under 13's team with a generous donation to help fund the purchase of new training kits for the 18 youngsters who play for the team in division four of the Weetabix Youth Football League.

Also, in March we were delighted to announce our sponsorship of Staveley Miners Welfare Junior Football Club, who are a competitive Junior Football Club based in Staveley, Derbyshire. Our donation will help to provide

essential team kit for match days, and we hope the new Junior branded kit gives the side a well-deserved boost as they enter the pitch to face the competition.

Julia Nixon Head of Marketing for AVK UK explains "Grassroots football brings huge benefits to children in many ways and we are proud to be able to lend some financial support to ensure teams have the kit they need, we also recognise the impact sport can have on wellbeing, so for us, the sponsorship felt right

Contributing to the local community and supporting local clubs is something we are proud to do. As our business continues to grow and expand we feel it is important to share our success and give something back"



In March this year, AVK UK were delighted to announce our sponsorship of Staveley Miners Welfare Junior Football Club, pictured above and right. who are a competitive Junior Football Club based in Staveley, Derbyshire. Our donation will help to provide essential team kit for match days





Pictured above, AVK UK – Aquabox Walk for Water

Pictured above, Atplas – Pretty Mudders charity event
Pictured left, a food bank collection at Fusion

AVK UK GROUP SUPPORTING CHARITIES



The employees of AVK UK Group companies have continued to be exceptionally active in the last few months supporting their local communities and a range of charitable organisations. Activities have ranged from sponsored walks for Aquabox, AVK UK's official charity partner, to litter picks and Halloween cake sales for charities nominated by employees.

Substantial amounts of funds were raised for Macmillan Cancer Support through events organised to support the 'World's Biggest Coffee Morning'. As well as home-baked and not-so-home-baked cakes and biscuits donated by employees, fundraising benefited from tombolas and other activities.

Other health-related charities benefiting from fundraising activities included the Motor Neurone Disease Association, Dementia UK, Rethink Mental Illness, Lymphoma Action, and Cancer Research UK.

Two activities organised in aid of charity, by Fusion Group and Atplas showed that, whilst money is vitally important to charities, there are many other ways of supporting worthy causes. Fusion Group organised a food and clothing collection for the local Chesterfield Foodbank. In total, almost 130kg of food was collected by the Fusion Group team to help local families struggling to feed their families.

In South Wales, Atplas took part in the Surfers Against Sewage 'Million Mile Clean'. The vision of Surfers Against Sewage is to rally 100,000 volunteers to each clean 10 miles of blue, green or city space each year. The Atplas team visited Newton Beach, Porthcawl just a few miles southwest of the Atplas factory in Bridgend. Five large sacks of rubbish were collected with the goal of improving and protecting the local environment and wildlife. A great example of environmental sustainability in action.

Aquabox responds to natural disasters such as earthquakes and flooding by providing water purification filter kits, as well as other humanitarian aid. Whilst in the UK we may occasionally be inconvenienced by droughts, it is easy to take for granted the seemingly unlimited availability of clean drinking water. In disaster areas, however, survivors are often in desperate need to access safe drinking water to keep their families alive.

To learn more about Aquabox visit www.aquabox.org or <https://www.avkuk.co.uk/en-gb/solutions-and-information/about/sustainability/community-and-charity/aquabox>.

AVK UK is a Corporate sponsor of, and actively participates with, Aquabox to deliver positive outcomes and lasting change to communities worldwide.

HOW CAN I BE GREENER?

Hypermiling

What is hypermiling?! Hypermiling is when the driver of a vehicle employs techniques to minimise the use of fuel, the cost of which has become a serious problem for many people.

Hypermiling can reduce fuel consumption by 10-20%. Another benefit of hypermiling techniques is that they usually make you a safer driver. As well as slowing you down, it requires you to maintain a high level of awareness of traffic conditions.

The basic principle behind hypermiling is that you move the vehicle with as little use as possible of the accelerator and brake pedals.



If you want to give hypermiling a go, here are some top tips:

- Relax and slow down. In urban driving, rushing and racing saves little or no time. Even on the open road, a reduction from 70 to 60mph costs no more than five minutes on a one-hour commute.
- The optimum speed for fuel economy is around 55 – 60 mph.
- If you have it, use cruise control, which makes it much easier to maintain a steady speed. It doesn't work so well in urban driving, of course, and can actually be less fuel-efficient when climbing a steep hill.
- Make gradual starts and stops. Don't rush to your target speed or brake heavily.
- If you're familiar with a route, anticipate changes in traffic lights.



Do you have any 'green' initiatives that you would like to share in the next AVK UK Green Paper?

However big or small, we'd love to hear about your ideas and projects. To be considered for inclusion, please send us some brief details of your project, including your contact information, to: Emily Davies - emda@avkuk.co.uk

Thank You





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