Scottish Swimming

A Sustainable Future

Enhancing Energy Efficiency in Scotland's Swimming Pools

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OLM Consulting

sportscotland

Contents

Introduction

The Phase 1 report The Future of Swimming Facilities in Scotland has served as an eye-opener, shedding light on the critical challenges faced by Scotland's ageing swimming facilities. As highlighted in the previous report, the combination of an ageing infrastructure and escalating energy costs has placed immense pressure on these vital aquatic spaces. To address this pressing issue, the need for substantial investment in refurbishment and rebuild was emphasised. However, beyond the immediate need for renovation, the resounding imperative is to ensure that any investment made results in facilities that are sustainable, not only from an economic standpoint but also in terms of their environmental impact.

In light of this, Scottish Swimming has taken proactive steps to address this multifaceted challenge by commissioning this accompanying report, 'A Sustainable Future: Enhancing Energy Efficiency in Scotland's Swimming Pools'. This report focuses on the integration of modern technologies and innovative practices to substantially reduce operational costs and carbon emissions associated with these facilities. The central goal is to usher Scotland's swimming facilities into a more sustainable era, aligning with government green targets, and contributing significantly to the overall reduction of the country's carbon footprint.

This Phase 2 report delves into the strategies, technologies, and recommendations outlined in 'A Sustainable Future' to not only enhance the energy efficiency of Scotland's swimming pools but also to provide a framework, which will pave the way to create a greener, more economically viable, and sustainable future for Scotland's swimming facilities, through a comprehensive exploration of energy-efficient technologies. This report will provide a roadmap for stakeholders, policy makers, and facility managers to make informed decisions that promote the wellbeing of both our environment and the communities that benefit from these essential recreational spaces.

Workforce Development

A well-trained and skilled workforce plays a pivotal role in the efficient operation and energy conservation efforts of swimming facilities in Scotland. Several key reasons underscore the importance of having such expertise.

Swimming pools require meticulous monitoring of water chemistry to ensure safety and comfort for users. A proficient workforce can maintain optimal chemical levels and pH balance. This not only promotes user health but also prevents the accumulation of scale and biofilm, thus enhancing the efficiency of pool equipment and conserving energy.

Efficient operation and maintenance of essential equipment, like pumps, filters, and heaters, are critical. A skilled workforce can ensure that these devices run at peak performance levels, consuming less energy, reducing operational expenses, and minimising the environmental impact.

Energy consumption is a significant cost factor in pool operation. Knowledgeable personnel can implement energy-efficient practices, such as optimising pump schedules, minimising unnecessary water heating, and using energy-efficient lighting. These measures lead to cost savings and reduce the carbon footprint of swimming facilities. Swift identification and resolution of issues with the plant equipment is essential for uninterrupted pool operation. A well-trained workforce can diagnose and address problems promptly, preventing energy wastage due to inefficiencies and water loss.

In summary, in the context of swimming facilities in Scotland, a trained and skilled workforce is indispensable for efficient operation and energy conservation efforts. Their expertise is essential for maintaining water quality, optimising equipment performance, implementing energy-efficient measures, and ensuring safety, all of which contribute to cost savings and environmental sustainability in the swimming pool industry.

In recent years the sector has struggled to recruit and retain a qualified, highly skilled workforce. This chapter evidences the important and significant effect employees have on the efficient operation of swimming facilities in Scotland. It is imperative that investment not only goes into the infrastructure and physical assets, but also the workforce to ensure training and knowledge are maintained to enable efficient and safe operation of swimming facilities in Scotland.

Pool Hall Management & Water Treatment

Before we proceed to technologies and innovations, this document must first explore the very basics of pool water treatment and management. This will ensure a pool in its current state is operated as efficiently and sustainably as possible. This section will therefore highlight some very basic actions that effective management can take or consider in order to ensure energy and carbon are a key focus for the swimming pool operator.

Efficient Water Sampling:
Consider plumbing the sample line water back into the swimming pool system if the Total Dissolved Solids (TDS) can be controlled within acceptable limits (typically in line with mains water plus 1000ppm or less). This not only conserves water but also reduces energy costs associated with heating and treating replacement water.

Insulation & Valve Covers:
Ensure that the primary flow and return pipework on boilers are adequately insulated, and cover any exposed valves. Valve covers are available at a low cost and can contribute to energy efficiency by preventing heat loss.

Lighting Optimisation:
Regularly adjust time clocks throughout the facility, and ensure that light sensors are clean and functional. This helps minimise unnecessary energy consumption from lighting.

Fan & Motor Cleaning:
Ensure that the fans at the back of the pump/motor units remain free from dust and debris. These fans draw in air to cool the pump, and when they operate efficiently, they help reduce energy consumption. This applies to main circulation pumps, heat exchanger boosters, and spa massage jet pumps.

Strainer Basket Maintenance:
Regularly emptying the strainer basket is a simple yet effective way to reduce energy consumption in your swimming pool facility. This practice decreases head loss on the main circulation pumps, leading to energy savings.

Optimal Pool Air Temperature:
Maintain the air temperature in the pool area the same or 1ºC above the pool water temperature, with a maximum limit of 31ºC, as recommended by the Pool Water Treatment Advisory Group (PWTAG) Code of Practice. Deviating from these guidelines can lead to increased evaporation rates, which in turn require more energy to replace lost water and maintain the desired pool temperature.

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Pool Hall Management & Water Treatment

Humidity Control:
Maintain humidity levels within the range of 50–70 per cent, but consider slightly increasing humidity levels if possible. A minor increase, such as from 60 to 62 per cent, can help reduce energy consumption.

Consideration for Poolside Air Temperature:
While cooler air temperatures poolside may seem like an energy-saving measure, it can inadvertently increase water and energy consumption. Cooler air triggers faster evaporation, necessitating more water replacement. This replacement water requires additional energy for heating, which can offset any potential energy savings.

Energy-Efficient Shower Heads:
Consider replacing existing shower heads with more energy-efficient models. Standard showers typically use 8–12 litres of water per minute, while newer energy-saving shower heads can reduce water consumption to as low as 5 litres per minute. This not only conserves water but also reduces the energy required to heat it.

Pool Covers

Indoor community swimming pools in Scotland have the potential to achieve significant savings in energy consumption and carbon emissions through the utilisation of pool covers. Consider two simple retrofit examples showcased in the accompanying photographs. These lightweight sheets can be conveniently stored on large spindle or 'goal post' structures positioned at the pool ends. The alternative to a conventional pool cover is the utilisation of a moveable floor. Placed at the top of the pool the floor acts as a pool cover undertaking the same role as applying the cover. During periods of pool inactivity – typically exceeding 70 hours per week, these covers can be rolled out over the water surface. Implementation of the pool cover offers substantial savings, estimated at over 200,000 kWh/p.a. of energy and 63m³/p.a. of water. Additionally, it can contribute to reducing carbon emissions by approximately 35,000kg CO_2/p.a.

Pool cover

Moveable floor as pool cover

Energy Savings

Given the prevailing energy crisis and the Scottish Government's commitment to achieving Net Zero emissions, these energy-saving measures are of utmost significance, particularly in community swimming pool facilities facing potential restrictions on opening times.

Considering refurbishment and new pool projects, the incorporation of pool covers is highly recommended. Calculations demonstrate favourable payback periods of between 2 and 6 years. In order to achieve these savings the energy modelling suggests optimising energy savings by adjusting the pool hall temperature with the building management system (BMS) to a 24°C overnight setting, striking a balance between energy efficiency and subsequent reheating requirements. This is key to creating savings whilst the pool is not use and the covers are applied.

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Pool Covers

Indicative savings achieved with a pool cover (25m × 6 lane swimming pool):

- Energy (gas/electricity) = 200,000 kWh/p.a.
- Water = 63 m^3/p.a.
- Carbon emissions = 35,000 kg CO_2/p.a.

The implementation of pool covers offers several advantages, effectively minimising:

- Evaporation heat losses
- Make-up water requirements
- Pool hall air handling flow rate
- Pool hall air temperature fluctuations

Furthermore, the covers contribute to reducing heat losses resulting from conduction and radiation between the water surface and the surrounding air.

To facilitate seamless integration, pool covers can be adopted in most Scottish pools with minimal additional capital costs and minimal staff training requirements. Moreover, there are opportunities for additional savings by optimising the pool hall air temperature during night time and controlling the relative humidity (RH) within a range of 60–65 per cent maximum override. However, older pool buildings may require more complex modifications or control system upgrades. In newly constructed or recently renovated pools equipped with building management systems (BMS), implementation is expected to be straightforward.

Understanding the pool hall environment is crucial, as swimming pools encounter energy losses through multiple channels, including conduction, radiation, and evaporation from the water surface. Notably, water evaporation consumes significant energy resources.

By embracing energy-efficient practices such as pool covers, Scotland's indoor community swimming pools can contribute substantially towards achieving sustainable and environmentally conscious operations.

Waste Water Heat Recovery Systems

Energy consumption in community swimming pools is led by two significant contributors: hot water production for showers and pool heating. In fact, these two elements alone account for approximately 50 per cent of the overall energy consumed by the entire facility. However, a considerable amount of this energy goes to waste, escaping through the drainage system during processes aimed at maintaining pool water quality and through showers. Waste Water Heat Recovery (WWHR) systems present a solution that can capture this lost heat and redirect it back into the fresh water supply, resulting in reduced energy consumption associated with hot water production.

Maintaining water quality in pools necessitates a process of dilution using fresh water. According to the recommendations of the Pool Water Treatment Advisory Group (PWTAG), a dilution rate of 30 litres of fresh water per bather is advised. As a result, pools discharge approximately 30 litres of water per bather through backwashing filters or other means, resulting in water loss to the drainage system.

In the case of showers, significant amounts of domestic hot water are produced, typically through the use of gas-fired boilers. This equipment commonly employs domestic hot water cylinders to raise and store incoming cold water from 10°C to 60°C (in compliance with HSE Legionella Guidance). The hot water is then distributed to the showers, where it is mixed with cold water to achieve the desired shower temperature. Once used, the waste water enters the drainage system, causing the heat to be lost.

Energy Savings

This is where Waste Water Heat Recovery plants come into action. These plants utilise warm water, which passes through a recuperator and enters the heat pump evaporator. Simultaneously, an equal amount of cold fresh water travels through the outer pipe of the recuperator and into the heat pump condenser. A substantial portion of the heat from the waste water is transferred directly to the cold fresh water. Moreover, additional heat is recovered within the evaporator from the waste stream, which is then transferred to the warm fresh water in the condenser through a compressor. This process allows the fresh water to be heated to the temperature of the pool or slightly below the temperature required for showers. The WWHR plant operates using electrical power for the compressor. With an impressive Coefficient of Performance (overall efficiency) of 10, for every 1 kW of energy input, the plant produces 10 kW of heat. This high efficiency is achieved by utilising the recuperator to elevate the temperature of the incoming water.

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Waste Water Heat Recovery Systems

The installation cost depends on the size of the WWHR unit provided. For a smaller unit dedicated solely to waste water recovery, the approximate cost is between £40,000 and £50,000. Accounting for additional factors such as waste storage tanks, pump sets, and installation expenses, the total cost for a waste water recovery system would amount to approximately £60,000. Calculating based on a typical 25m x 6 lane pool, the estimated annual cost savings for a pool water recovery system are around £9,000 per year, while a shower recovery system saves approximately £7,500 per year. This suggests a payback period of 6–7 years based on the estimated installation cost and projected annual savings.

In terms of design integration, the system requires a coarse filter, a pump, and the WWHR plant itself, all located within the plant room near the point of waste pipe discharge into the sewer system.

Backwash water recovery system

Ceramic Microfiltration

Microfiltration is a highly effective filtration process that can be used as an equivalent to sand/glass media filtration and has been adopted in the UK swimming pool industry in recent years. The process can be used in both new and refurbished facilities as a replacement for ageing media filters. This innovative technology utilises ceramic membranes, particularly Recrystallised Silicone Carbide (R-SiC), to separate microorganisms and suspended particles from contaminated fluids. Ceramic microfiltration, known for its durability and ability to withstand harsh conditions, offers an ideal solution for improving water quality and creating operational cost savings in Scottish swimming pools.

Ceramic microfiltration surpasses traditional media bed filtration systems in terms of filtration performance. The unique honeycomb structure of the ceramic membranes provides a significantly larger filtration area, up to 20 times greater than media bed filtration vessels. Although the filtration rate is slower (approximately 1.5m^3/m^2/hr), this deliberate design contributes to a more efficient filtration process. Notably, ceramic microfiltration systems demonstrate exceptional effectiveness in removing Cryptosporidium, with a 99.996 per cent removal rate on the first pass.

Microfiltration systems are designed as modular units, with each membrane capable of filtering a maximum flow rate of around 15–20m^3/hr. These membranes are housed within chambers and mounted on frames, which include pipework and control valves. This design allows for easy integration into existing pool systems or delivery as complete pre-tested units. Water is pumped through the membranes, where particles larger than 3 microns are captured within the material's pores. A pressure monitoring system triggers an automatic washing process when the membranes reach a pre-set pressure parameter. During washing, isolated membranes undergo high-pressure air blasts to dislodge particles, followed by a flushing process to remove the particles from the membrane chambers. This automated process ensures uninterrupted pool operation, even during membrane cleaning cycles.

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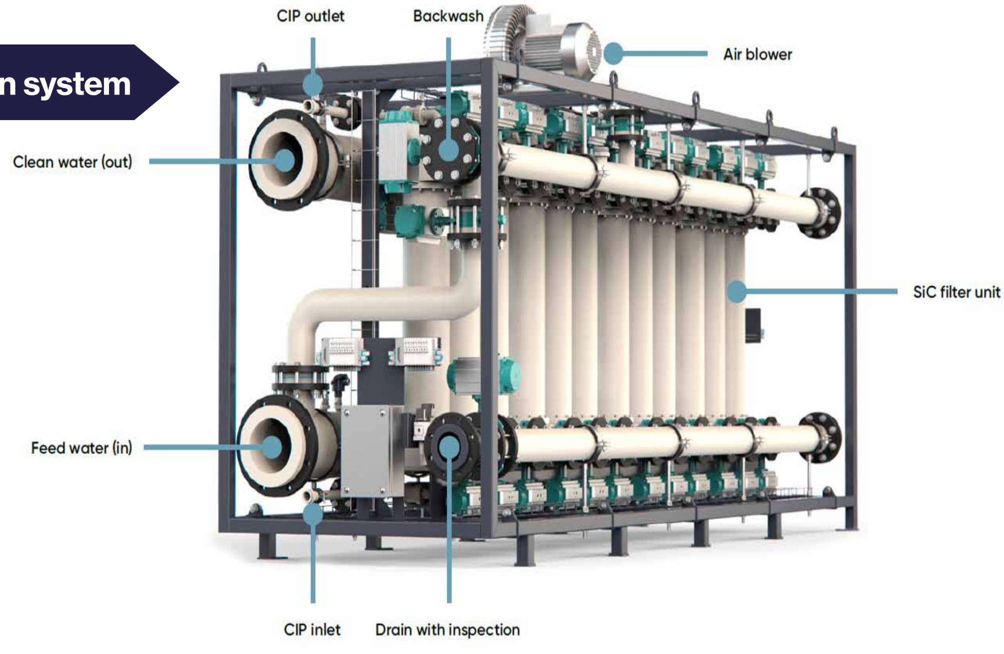
Ceramic Microfiltration

Ceramic microfiltration systems offer several advantages in terms of construction, sustainability, and operational costs. These include:

1. Smaller footprint and reduced access requirements compared to media bed filtration systems, resulting in potential space savings
2. Lower plantroom height requirements, making it suitable for various pool settings, including those with limited overhead space
3. Reduced size of balance tanks due to the elimination of large-volume backwashing requirements
4. Lower friction losses and reduced power consumption compared to media bed filtration systems, resulting in long-term energy savings

Sustainability is a crucial aspect, and ceramic microfiltration systems support water conservation efforts. The improved filtration efficiency allows for a potential reduction in dilution rates while maintaining optimal water quality. This reduction in water consumption, along with lower energy and chemical usage, contributes to a more environmentally friendly approach to pool management. Embracing ceramic microfiltration in Scottish swimming pools not only enhances filtration efficiency, but also promotes sustainable practices for a more enjoyable swimming experience.

Ceramic microfiltration system



Solar PV Systems

With an increasing urgency to combat climate change, the transition to renewable energy sources has become imperative. Scottish public swimming pools are at the forefront of this movement, recognising the potential of solar photovoltaic (PV) technology to decarbonise their operations.

Solar PV systems harness the abundant energy from the sun and convert it into electricity. By utilising photovoltaic cells that absorb sunlight, these systems generate direct current (DC) electricity. This power is then converted into alternating current (AC) through inverters, making it suitable for various applications.

Rooftop solar photovoltaic (PV) system

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Solar PV Systems

Scottish public swimming pools can reap numerous advantages from the adoption of solar PV systems.

Clean Energy Generation:

By installing solar PV panels on rooftops, canopies, or open areas, public swimming pools can generate their own electricity from a clean and renewable source. Scotland's unique weather patterns may bring occasional clouds, but the ample sunlight still offers significant energy potential. By reducing reliance on traditional grid electricity, these pools can substantially decrease their carbon emissions. Most new installations use batteries, allowing storage of excess energy which can be utilised during periods of low yield from PV panels.

Financial Benefits:

Solar PV systems present compelling financial advantages for Scottish public swimming pools. While the initial installation costs require an investment, the long-term savings far outweigh the initial expenses. With a lifespan of 25 years or more, solar PV systems can generate substantial cost savings on electricity bills. These savings can be redirected towards pool maintenance, facility enhancements, or other sustainability initiatives. A 300m² roof covering should yield savings in excess of 30,000 kWh per year, at current energy prices this is a saving of around £8,000 per year and would pay back in under 5 years.

Carbon Footprint Reduction:

Public swimming pools contribute to carbon emissions through their energy consumption and day-to-day operations. By embracing solar PV systems, these pools actively contribute to reducing their carbon footprint. Each kilowatt-hour of solar electricity generated offsets the need for electricity produced from fossil fuel sources, resulting in direct emission reductions.

Energy Resilience:

Solar PV systems provide a level of energy independence and resilience for Scottish public swimming pools. By generating their electricity on-site, these facilities become less vulnerable to power outages or disruptions in the grid. This ensures uninterrupted operations, especially during critical times when public access to swimming pools is essential.

Heat Pumps

Heat pumps operate by converting one unit of electricity into two to five units of heat. This exceptional performance makes them an attractive alternative to gas boilers as they require less energy. Additionally, the carbon emissions associated with each unit of electricity have significantly decreased in recent years due to Scotland's increasing use of wind turbines and solar panels for electricity generation. As a result, heat pumps produce considerably less carbon compared to their gas boiler counterparts.

While heat pumps offer remarkable efficiency, it's important to note that electricity currently costs five to six times more than gas. Despite generating two to five units of heat per unit of electricity, the running costs of heat pumps can be higher than that of gas boilers due to the higher electricity costs. Speculating on future fuel costs is uncertain, but what we do know is that the carbon footprint of electricity production will continue to decline as more carbon-free sources are utilised. This is why heat pumps are seen as a key element in decarbonising Scottish public swimming pools. Added to this, a combination of a facility using heat pumps and generating electricity through PV creates a perfect scenario.

Types of Heat Pumps:

Air source heat pumps are the most common and affordable type used in swimming pools. They extract heat from the air and convert it into hot water. These pumps achieve peak efficiency at lower water temperatures, typically around 50°C. Generating water at higher temperatures reduces efficiency and increases running costs and carbon emissions.

However most heating systems in swimming pools currently utilise boilers that produce water at 80°C. Therefore, replacing a gas boiler with a heat pump can present challenges, as the heat emitters may not provide the same level of heat output. In such cases, it may be necessary to replace all heat emitters or supplement heat pumps with gas boilers.

Another challenge lies in generating hot water for showers, as hot water must be stored at 60°C to reduce the risk of legionella. Traditional air source heat pumps struggle to efficiently achieve this temperature. It can be done but the efficiency of the heat pump is reduced.

Advancements in heat pump technology have led to the development of heat pumps using CO_2 as a refrigerant. These pumps can generate water at 80°C while maintaining high efficiency. However, they are more expensive and add complexity to the design. They are also primarily suited for generating domestic hot water and are not compatible with radiators.

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Heat Pumps

Ground source heat pumps are similar to air source heat pumps but offer slightly better efficiencies. They extract heat from the ground by circulating water through pipes buried in the earth. Since ground temperatures are generally higher than air temperatures, especially during winter when heating demand is highest, these pumps can achieve greater efficiency. However, they can be costly due to excavation or deep borehole drilling requirements.

Heat pumps are leading the way in sustainable heating for Scottish public swimming pools. While they may be more expensive compared to gas boilers, they significantly reduce carbon emissions. Traditional air source heat pumps are suitable for heating modern swimming pool facilities but may not efficiently generate domestic hot water.

Heat pumps using CO_2 offer excellent domestic hot water generation but at a higher cost and limited applicability.

Ground source heat pumps provide impressive efficiency, particularly for heating, but require careful consideration of site-specific ground conditions.

With the aim of reducing carbon emissions, heat pumps are poised to transform heating systems in Scottish public swimming pools, contributing to a more sustainable future. They can often also be retrofitted into existing facilities, therefore this is a solution for existing facilities as well as new builds.

Rooftop heat pumps

Air handling extract

Variable Speed Drives

Variable speed drives (VSDs), also known as variable frequency drives or adjustable speed drives, are electronic devices that control the speed and torque of an electric motor. VSDs facilitate the adjustment of motor speed according to the actual requirements of the system. By modulating the speed, VSDs enable the motor to operate more efficiently and adapt to changing load conditions. In the context of public swimming pools, VSDs can be applied to pool pumps and ventilation systems, which are primary energy consumers.

Public swimming pools in Scotland face the challenge of maintaining high water quality, temperature control, and proper air circulation, which collectively demand substantial amounts of energy. Traditionally, fixed-speed pumps and motors have been used in these facilities, resulting in inefficient energy usage due to constant operation at full speed. By replacing these conventional systems with VSDs, energy efficiency can be significantly improved.

VSDs can adjust motor speed to operate at lower levels during periods of low usage, such as nights or off-peak hours, reducing energy consumption. In contrast, fixed-speed systems operate at maximum capacity regardless of actual requirements, resulting in wasted energy and increased energy costs.

Energy Savings

The use of VSDs in pool pumps can lead to substantial energy savings. Energy consumption reductions of up to 30 per cent are achievable by implementing VSDs.

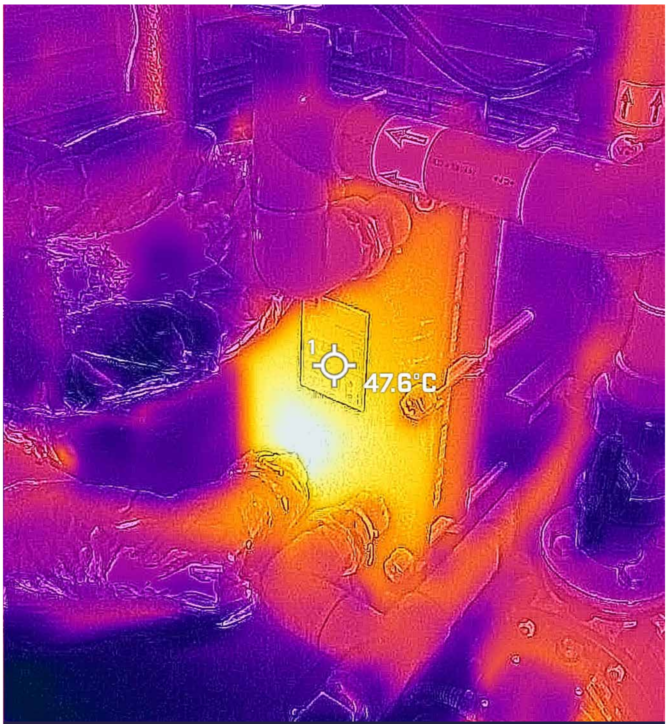
In addition to lowering energy costs, VSDs also contribute to the reduction of carbon emissions. By optimising energy consumption, public swimming pools using VSDs can effectively lower their environmental footprint. Scotland, with its commitment to environmental sustainability, can benefit from the implementation of VSDs to meet national carbon reduction targets.

Variable speed drives

Single VSD

Jackets & Thermal Insulation

A stacked heat exchange is the modern primary method used for exchanging heat into the swimming pool water in order to provide pools at comfortable temperatures for users. Heat exchangers are modelled on the basis of the swimming pool losing 0.5ºC per hour constantly throughout the day. The stacked exchanger can however lose significant heat to the atmosphere within the plant room. Furthermore a warmer plant room may also place further strain and increase energy cost for pumps and motors. Heat exchange covers can be purchased in order to retain heat and achieve savings. These covers vary in insulation values and quality which again can influence the savings. Most jackets are insulation 50mm × 45kg/m² Rockwool or mineral fibre, waterproof with velcro attachments for fixings.



Thermal imaging showing heat loss on a plate heat exchanger

Energy Savings

Based on figures taken, the external temperature of the plate heat exchangers with a cover is approximately 25.4ºC and without covers 54ºC. So there is a retention of 29ºC held inside the plate. The temperature loss will also equate to a saving in the energy drawn from the circulation pumps.

Our calculations indicate that the application of a plate heat exchanger cover would save the typical 25m 6 lane pool with a varied depth of 1–2 metres in excess of £4,000 per year based on standard quarter one 2023 energy costs within the UK.

The average cost of a cover is approximately £500 which is a payback period of approximately 45 days.

Building Design

Building design plays a crucial role in ensuring that swimming pools can operate efficiently in relation to energy consumption. The design of the pool facility encompasses a range of factors, including the pool's orientation, insulation, ventilation, and the choice of materials used in construction. All of these elements are interconnected and directly impact energy efficiency.

In 2022, the United Kingdom celebrated a significant milestone in its pursuit of sustainable architecture with the opening of its first Passivhaus certified swimming pool and leisure complex.

The journey towards the UK's first Passivhaus swimming pool and leisure complex began more than ten years ago when the country embarked on a mission to embrace energy-efficient building practices. Scotland, in particular, has been a pioneer in this regard, incorporating stringent building regulations that prioritise energy efficiency and sustainability.

Over the years, the application of these principles expanded to encompass diverse building projects. The introduction of a housing development company further advanced the cause, demonstrating that Passivhaus standards could be implemented in real-world scenarios while adhering to Scotland's building regulations.

The certification process for Passivhaus buildings is carried out by the Passivhaus Institute, a recognised authority in this field. Beyond certification, the institute also plays a pivotal role in monitoring the performance of these buildings once they are operational. The data collected from these projects are invaluable, as they are used to refine and inform new Passivhaus standards, particularly tailored for UK leisure centres.

As we look to the future of public swimming pool design, it is crucial to set ambitious sustainability targets that align not only with Passivhaus principles but also with the building regulations in Scotland and beyond. These targets should guide the construction and operation of public swimming pools, promoting energy efficiency and environmental responsibility within the context of established regulations.

Within the mechanical and engineering design of these facilities, there is a growing emphasis on meeting energy targets. These targets are integrated into the broader building design and operational planning to ensure that the mechanical and engineering systems are optimised for sustainability.

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Building Design

Here are the energy targets to be achieved in any future design of public swimming pools, in compliance with both Passivhaus principles and relevant building regulations:

- **Space heating demand for the pool hall:**
  - ➔ Less than 40 kWh/m² per year
- **Space heating demand for all other areas:**
  - ➔ Less than 20 kWh/m² per year
- **Gym cooling demand:**
  - ➔ Less than 22 kWh/m² per year
- **Pool water heating demand:**
  - ➔ Less than 73 kWh/m² per year
- **Domestic hot water heating demand:**
  - ➔ Less than 56 kWh/m² per year
- **Total electricity demand (ventilation, lighting, appliances, pool water treatment, and circulation):**
  - ➔ Less than 120 kWh/m² per year

These targets not only serve as critical benchmarks but also reflect a commitment to building regulations and energy efficiency standards in Scotland and the UK. The aim is to create facilities that not only provide enjoyable experiences, but also contribute to a more sustainable and eco-friendly future, while aligning with the rigorous regulations that govern construction in the region.

Whether through Passivhaus, LEED, BREEAM, or other sustainable practices, the goal remains consistent: designing and building pools that are both enjoyable and environmentally responsible, within the framework of established building regulations.

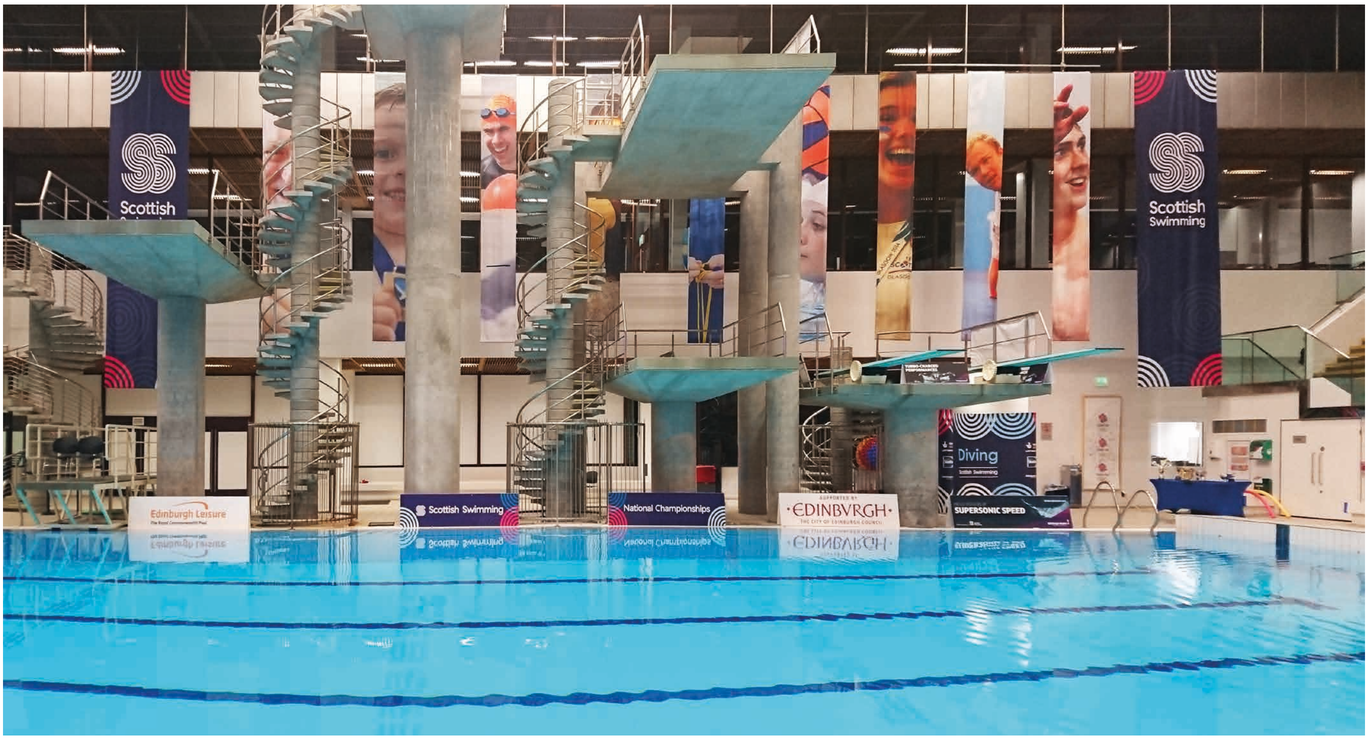
Government Support & Incentives

The Scottish Government recognises the significance of renewable energy adoption and provides various support mechanisms and incentives to facilitate the transition to greener and more efficient technology.

In the context of swimming pools in Scotland, it is crucial to highlight the significant role played by Salix under the Scottish Green Public Sector Estate Decarbonisation Scheme. Salix's commitment to offering funding in the form of loans to eligible public bodies in Scotland, through the established Scottish Public Sector Energy Efficiency Loan Scheme, is a key driver in advancing energy efficiency and sustainability within the public sector.

It's important to note that Salix's funding is in the form of loans, which must be repaid. These zero-interest loans empower public sector entities to undertake energy efficiency improvement projects that yield substantial financial benefits and carbon savings. Salix's support in providing loans is invaluable. Government grants can complement the loan scheme by providing much-needed financial support that does not require repayment.

Funded by the Scottish Government, Salix has been a trusted partner working alongside the public sector in Scotland since 2008. Since then it has channelled over £75 million into energy efficiency initiatives in Scotland with these investments projected to generate savings exceeding £202 million over the lifespan of the projects, benefitting both the public sector and the environment.



Conclusion & Next Steps

In this paper, we have explored a range of technologies and strategies, summarised in the Appendix, that can be harnessed to enhance the energy efficiency of swimming pools in Scotland. These advancements offer significant potential to mitigate the environmental impact of these essential community assets. However, their successful implementation is contingent upon a critical factor – the support of both local and central governments.

Scotland's swimming pools face a pressing challenge – an ageing stock of facilities that demands substantial refurbishment and modernisation. To ensure the viability of these facilities, it is imperative that we secure the necessary investments. The benefits of such investments are twofold: economic and environmental.

Economically, upgrading swimming pool facilities is vital to their sustainable operation. Ageing infrastructure often results in exorbitant energy costs, which not only burden the facilities themselves but also potentially limit access to swimming for the community. It is essential that local and central governments recognise the economic importance of investing in swimming facilities and commit to providing the necessary resources.

Environmentally, the urgency to act cannot be overstated. Scottish swimming facilities contribute more than 80,000 tonnes of carbon emissions annually, a substantial environmental footprint. Yet, through basic good management and the adoption of relatively inexpensive measures, such as pool covers, we can foresee a potential reduction of over 5,000 tonnes of carbon per year. This is just the tip of the iceberg. With the support of government funding to facilitate the implementation of comprehensive interventions, we could significantly reduce carbon emissions.

The implications are clear. It is not only economically prudent but also an environmental imperative to invest in the upgrade and transformation of Scotland's swimming pool facilities. In so doing, we not only ensure their long-term viability, but also align with the government's targets for carbon reduction and sustainability. The collective benefits of this investment are numerous, ranging from reduced energy costs to enhanced community access and a substantially reduced carbon footprint.

In conclusion, this paper underscores the urgency and importance of protecting and revitalising swimming facilities in Scotland. Through government support, responsible resource allocation, and a shared commitment to sustainability, we can create a brighter, more sustainable future for these cherished community assets. The time to act is now, for the wellbeing of our communities and the preservation of our environment.

Appendix

Summary of Technology Interventions

Intervention	Capital Cost	Lifecycle Savings	Carbon Savings
Effective Management	£	£££	3 leaves
Pool Covers	£	£££	2 leaves
Waste Water Heat Recovery	££	££	2 leaves
Ceramic Microfiltration	££	£££	3 leaves
Solar PV	£££	££	3 leaves
Heat Pumps	£££	£	3 leaves
Variable Speed Drives	£	££	2 leaves
Jackets/ Thermal Insulation	£	££	2 leaves
Building Design	£££	£££	3 leaves

Scottish Swimming

scottishswimming.com

Name and Registered Office:
Scottish Amateur Swimming Association Ltd
University of Stirling Sport | University of Stirling
Stirling | FK9 4LA

Email: info@scottishswimming.com