A GUIDE TO SAVING WATER FOR FINANCIAL DIRECTORS

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1. Introduction

Finance directors are constantly looking for ways to improve their company's bottom line. One area that is often overlooked is water usage. Saving water is not only an environmentally responsible choice, but it can also have a significant impact on your business's financial health.

Water is a valuable resource and using it efficiently can help your business save money. Reducing water usage can lead to lower water bills, as well as reduced energy costs associated with pumping and heating water. In addition, saving water can also reduce the amount of wastewater your business generates, leading to lower treatment and disposal costs. Water saving technology is also generally associated with lower maintenance costs and greater operational efficiency.

We are in the midst of a global water crisis, with floods and droughts becoming commonplace. Climate change, population growth and increased pollution will all put even greater pressure on global water resources. What does this mean for the UK? It will mean higher water prices. It will mean more restrictions on use. It will mean interruptions in supply. It will mean constraints on growth and development as water neutrality and catchment nutrient limits spread across the UK. And this isn't a prediction of what may happen, it's happening now.

Very few organisations within the UK are prepared for this new reality and all face pressing questions.

- How would your business cope with no water?
- Do you have alternative supplies?
- Do you have a water strategy?
- Do you monitor your water use?
- What do your customers think of your water use?

The true cost of your water use goes far beyond simply what you pay via your water bill. In this white paper we will explore the importance of businesses saving water and how it can benefit your company's financial future and help ensure organisational resilience.

2. Using less water reduces your water bills

At the most basic level, cutting the amount of water that you use will reduce your water bills. Many organisations have no real idea how much water they're actually using, nor how much money they could be saving if they used less.

For example, just a single waterless urinal can save up to 100,000 litres of water per year as well as significantly cutting maintenance and cleaning costs. Water saving sensor taps use up to 70% less water than traditional taps.

These savings can really add up and have a significant impact on your bottom line. A grammar school in the west of England estimates that it has reduced its water bills by between £4,000 and £6,000 per year since it installed waterless urinals throughout its facilities.

A chain of motorway service stations installed CONTI+ sensor taps after a return on investment measurement exercise which demonstrated a reduction of water use by 80% in each washroom in which they were installed as well as a significant cut in the cost of heating water which resulted in a 12% energy reduction. Overall, the exercise showed that:-

Water saving taps would save a total of £3,250 per year (£1,783 in reduced water usage and £1,467 in heating costs) and pay for themselves within 16 months from installation in just one washroom.

The savings when rolled out across the whole of the estate were massive.

Another way to reduce costs is to stop water being wasted through leakage.

The cost of a continually leaking toilet can be up to as much as £6,000 per year

Most such leaks go completely undetected. Investing in leak detecting technology such as the Aguardio Leak Sensor can help you detect even the smallest leaks for very little cost.

Installing smart flood detection technology not only saves you money by preventing escapes of water in your facilities but also leads to lower insurance premiums, as well as enhancing your organisation's disaster recovery plan and overall resilience, as we will discuss further later in this white paper.

3. Using less water enhances your organisation's reputation

As environmental concerns continue to grow, businesses that demonstrate a commitment to sustainability can enhance their reputation and attract customers who prioritize environmental responsibility. By implementing water-saving initiatives, your business can demonstrate its commitment to sustainable practices, leading to increased customer loyalty and improved brand reputation.

More and more consumers are demanding that the companies they do business with can actively demonstrate their eco-credentials and installing water saving technology such as waterless urinals and sensor taps in your washrooms is an easy way of doing this.

4. Meeting regulatory requirements

Governments are increasingly implementing water conservation measures to ensure the sustainable use of water resources. By implementing water-saving measures, your business can meet regulatory requirements and avoid potential fines or legal penalties. In addition, compliance with regulations can also enhance your business's reputation and attract customers who prioritise environmental responsibility.

Regulation is nothing new. Since 1999 businesses in the UK have been required to use water efficient fixtures and fittings throughout all new and refurbished buildings. However, the UK government has launched several initiatives designed to encourage businesses to use less water,

and there's a growing push for water neutrality in new developments.

In Crawley the Borough Council recently announced that all applications for planning permission will now have to demonstrate that they do not increase pressure on water resources because they are water neutral. Similarly, Horsham

District Council has announced that it will not approve planning applications that are unable to show that they are water neutral.

This has meant a huge reduction in new development in the area while water neutrality solutions are sought. Therefore, developers are urgently seeking water efficient fittings, rainwater harvesting and greywater reuse technologies and retrofit scheme that will enable them to build.

Although Natural England is unlikely to mandate water neutrality in the same way in other areas, environmental pressures mean that many councils are now making it a planning requirement and several water companies have stated that there is no new water for new developments. The reality is that water neutrality is de facto spreading to other areas.

In addition, water companies charge developers infrastructure connection charges of several thousand pounds per property to connect to the water and sewerage networks.

- **A number of water companies are now offering discounts of around £1- 2,000 per property if the developer can demonstrate water efficiency or water neutrality.**

Water efficiency measures will need to be demonstrated on each planning application and include the installation of low water usage toilets and showers, rainwater harvesting, grey water recycling, measures to limit water usage to a maximum of somewhere between 100 and 85 litres per person per day, as well as offsetting measures.

This means that in practice the concept of water neutrality will be adopted across the UK on a quasi-statutory basis. 45% of developers assume that half of all developments will have to be water neutral by 2025. Developers are now recognising the importance of water neutrality and considering it as part of their overall sustainability goals.

5. Increasing operational efficiency

Water-saving measures can also lead to increased operational efficiency. By reducing water usage, businesses can minimize downtime associated wwith water shortages or system failures. In addition, water-saving initiatives can lead to a reduction in maintenance costs associated with water-related equipment.

The UK experiences regular droughts and floods now. Organisations are already subject to restrictions on water use and interruptions in supply as well as constraints on growth and development as water neutrality and catchment nutrient limits spread across the UK.

Any organisation that does not have an effective water management strategy in place will struggle to maintain normal operations and hence suffer financially in the future. At the most basic level, water saving technology such as waterless urinals is much simpler to maintain and less likely to need maintenance in the first place. Smart water management systems can save your facilities team many hours of time ensuring that hygiene and safety standards are met.

6. Using less water also reduces your energy bills

People often think of cutting water use and using less electricity as two separate things but it fact doing one can significantly help with the other. This is because water is heavy and so it requires power in order to move it around from its source to where it's actually needed. Similarly, hot water requires energy to be heated. If you can use less water, and in particular less hot water, your energy bills will fall significantly.

The energy used to treat, move water around and heat it where needed is significant. For businesses, the energy costs associated with moving water around can be very significant indeed. For example, the energy cost of associated with irrigating 1,000 acres of farmland using a pump-based irrigation system has been estimated at around $35,000 per year. In California, 20% of the state's electricity and 30% of its natural gas that isn't used by powerplants goes into the water system – from pumping and delivering water through to disposing of wastewater.

- **Water use accounts for 6% of all carbon dioxide emissions in the UK.**

If your organisation is using less water then you're also using less power to move that water around to where it needs to be and to heat that water. For example switching to digital showers that automatically stop after 3 minutes significantly reduces the overall amount of hot water that needs to be supplied, without negatively impacting on the user's showering experience.

- **Sensor taps such as the CONTI+ Ultra use up to 70% less water, much of which represents water that no longer needs to be heated.**

- **Xeros washing machines use up to 70% less water than traditional washing machines which equates to 50% less energy used.**

7. How greywater recycling impacts your organisation's bottom line

Greywater recycling helps your organisation save money through reduced water consumption, lower utility costs and enhanced operational efficiency. Greywater is the wastewater generated from non-toilet plumbing fixtures such as sinks, showers and laundry, which can be treated and reused for non-potable purposes.

Greywater recycling allows your organisation to recycle water that would otherwise be discharged into the sewer system. By treating and reusing greywater for activities like irrigation, toilet flushing and industrial processes, you can significantly reduce your reliance on freshwater sources. This reduction in water consumption translates to lower water bills.

Implementing a greywater recycling system may involve upfront capital investment, but the long-term cost savings can be substantial. By recycling greywater onsite, organisations can decrease their dependence on municipal water supplies and mitigate the impact of fluctuating water prices. Additionally, reducing the volume of wastewater discharged into the sewer system may result in lower wastewater treatment charges, further contributing to utility cost savings.

For example, if your organisation has shower facilities for staff or customers then you could significantly reduce your water bills by reusing that greywater for other applications within your facilities. Rather than just using the water once in the shower and then flushing it away, you could be reusing it to flush your toilets or wash vehicles or some other application for which the water does not need to be potable.

Greywater recycling systems also help organisations comply with water conservation regulations and sustainability standards. By proactively implementing water-saving technologies, businesses can demonstrate their commitment to environmental responsibility and reduce the risk of non-compliance penalties.

Greywater recycling also enhances your organisational resilience by diversifying water sources and reducing dependence on external suppliers. In regions prone to water scarcity, drought, or supply disruptions, having an onsite greywater recycling system can ensure continuity of operations and minimize the financial impact of water-related emergencies.

8. Rainwater harvesting

Rainwater harvesting enables you to reduce water consumption by re-using water that runs off your roof and draining water from hard standing areas. A professionally designed and installed rainwater harvesting system will deliver water quality that will be more than sufficient for non-potable applications such as WC flushing, laundry and so on, potentially saving more money from your water bills.

9. Saving money through automated leak detection

Automated leak detection systems offer significant potential to save your company money by minimising water loss, reducing operational costs, and preventing damage to infrastructure.

Automated leak detection systems continuously monitor water usage patterns and identify abnormalities that indicate a likely leak or pipe failures. By detecting leaks early, before they escalate into larger issues, these systems enable prompt intervention and preventive maintenance, minimising water loss and mitigating potential damage to property and assets.

Undetected leaks can result in substantial water loss, leading to inflated utility bills and unnecessary expenses. Automated leak detection systems help to promptly identify and locate leaks, allowing for swift repairs or interventions to minimise water wastage. Lower utility bills translate to direct cost savings for the company, improving its financial performance and profitability.

Up to 20 percent of all toilets leak and a toilet can leak as much as 275 litre per day without being heard or seen visibly.

- Watersafe estimates the cost of a continually leaking toilet to be from £300 up to as much as £6,000 per year
- A leaking toilet wastes between 215 and 400 litres of clean drinking water on average every day
- According to Waterwise between 5 and 8% of toilets are leaking
- Around 400 million litres of water is currently estimated to leak from UK toilets every day, which is enough water to supply 2.8 million people

In the pursue of water efficiency, leaking toilets are therefore an obvious area to focus on. The Aguardio Leak Sensor is easy to install. The sensor

immediately monitors water consumption in toilets and can contributes to the certification of construction and buildings in operation. The leak sensor detects leaks as small as 3 litres per hour (as tested independently by the leading Danish test institute Teknologisk Institut). When a leak is detected, the Sensor emits digital and/or an audible alarm.

More substantial water leaks such as burst pipes can cause significant floods which result in structural damage to your buildings, equipment and infrastructure, necessitating costly repairs and replacements. Automated leak detection systems help to preserve infrastructure integrity by identifying leaks early, preventing water damage and minimising the need for extensive repairs.

Businesses are increasingly required to comply with regulations related to water conservation and leak detection. Automated leak detection systems help companies meet regulatory requirements by demonstrating proactive measures to prevent water wastage and minimize environmental impact. Compliance with regulations mitigates the risk of fines, penalties and legal liabilities, safeguarding the company's financial interests.

10. Using less water leads to lower maintenance costs

In addition to lower water bills, sensor taps and waterless urinals offer operational cost savings by reducing maintenance and servicing requirements. Traditional faucets and flush toilets often require regular maintenance to address leaks, clogs, and other issues, which can incur labour and material costs. Sensor taps have fewer moving parts and are less prone to leaks, resulting in lower maintenance expenses. Similarly, waterless urinals require less frequent servicing and cleaning compared to conventional urinals, reducing associated labour costs and downtime.

By collecting data for when toilets start to leak, facilities managers begin to accurately foresee maintenance needs. This allows strategically planned maintenance instead of handling the toilets individually when a leak occurs. Strategically planned maintenance is more cost-effective than individually handling. At the same time, it provides better workflows for the technical staff.

Shower sensors not only monitor water usage but also measures both temperature and humidity in the room. Therefore, it can be used to monitor the risk of mould. The risk of mould to occur rises when the humidity rises above 70-75 per cent. To prevent mould it is essential that the bathroom is sufficiently ventilated to keep down the humidity. If the humidity rises above 70-75 per cent for a long period of time, it will appear on data overview from the shower sensor. This allows maintennace staff to know when ventilation is needed. Mould is harmful to health and at the same time the cost of renovation due to mould is high. Renovation costs also can be significant due to mould.

11. Enhancing the productivity of your facilities team

Water-saving technologies contribute to improved operational efficiency by streamlining water usage processes and minimising the time spent on maintenance tasks. Sensor taps eliminate the need for manual operation, reducing user effort and optimising hand hygiene practices. Waterless urinals simplify restroom maintenance by eliminating the need for flushing and reducing the frequency of cleaning tasks. Enhanced efficiency and productivity result in indirect cost savings by allowing employees to focus on core activities and reducing labour overheads associated with maintenance tasks.

For example, building managers in the UK have to complete water temperature checks and record this on regular, weekly, monthly and quarterly routines. This is normally carried out in person by somebody running taps for a pre-determined period of time, 2-3 minute flow time is not unusual for hot, then cold to confirm that cold water is below 22 degrees and hot is stored above 60 degrees and achieves 50 degrees at point of use (55 degrees in healthcare).

The Aguardio system can be installed in such a way as to provide automated reports on the temperature of hot, cold and mixed water connections throughout your facilities, saving significant amounts of both labour and water.

Sensor technology can be used to better understand patterns of usage within your organisation's facilities and identify opportunities to make savings. For example at campsites sensors can be used to plan which and how many of the campsite's toilet buildings will be in use. This is possible using the data from the leak sensor, which tells the campsite owners when and how much the toilets are used via the estimates on number of flushes per toilet.

By closing the redundant toilet buildings when not in use, lower costs for cleaning and heating the toilet buildings are achieved, without compromising customer service.

12. Resilience and business continuity

Water-saving technologies help businesses comply with regulatory requirements related to water conservation and environmental sustainability. Many jurisdictions have regulations and standards aimed at reducing water usage and promoting the adoption of water-efficient technologies. By investing in sensor taps and waterless urinals, companies can demonstrate compliance with these regulations, mitigating the risk of fines, penalties, and legal liabilities associated with non-compliance.

Dealing with water leaks can disrupt business operations, leading to downtime, productivity losses and additional expenses. Automated leak detection systems streamline maintenance processes by pinpointing the location of leaks quickly and accurately, facilitating timely repairs with minimal disruption. Improved operational efficiency ensures that employees can focus on core tasks, enhancing productivity and reducing associated costs.

Water leaks pose risks beyond financial implications, including potential damage to inventory, equipment, and sensitive data. Automated leak detection systems contribute to comprehensive risk management by proactively identifying and addressing water-related risks.

By minimising the likelihood and severity of water-related incidents, financial directors can protect the company's assets, reputation, and long-term viability.

Using less water also helps mitigate the risks associated with interruptions to your organisation's water supply, something that is likely to become a significant problem for organisations in the near future. Ground water levels in the UK now are generally low and many reservoirs have not refilled so that leaves rivers as the only source of water that water companies can take from. But rivers have their own problems. There are serious issues with the amount of sewerage in rivers. If the river levels are lower and the water companies take more water out then there's going to be a higher sewage content in that water. The only other option that is available to water companies is to cut supply.

There are three core groups that water companies need to consider here – domestic customers, farmers and businesses. They have a statutory obligation to supply domestic customers. They are very unlikely to cut off farmers because that then interferes with food production, so the only option remaining is to reduce or cut supply to businesses.

- Water companies do not have a statutory obligation to supply businesses

This reduction in supply could happen in several ways. One option is to reduce water pressure to businesses. It's likely that this will be happening anyway because of there being less water in the network and so this alone will not solve the problem. Another option is to enforce a water usage rota or make water only available to businesses at certain times of the day. This will mean a ban on non-essential water usage which would include any outdoor irrigation, car washing and other similar activities. There could also be interruptions in supply.

This will affect businesses no matter where they get their water from. Those who use boreholes need to think about how they will deal with bans on abstraction because of depleted aquifers. Those who use rainwater harvesting need to think about what they will do if there is not enough rain. Those whose water is supplied in the traditional way need to think about what they will do if their supply is cut off, as even temporary restrictions in supply have an immediate and significant impact on business.

Very few businesses have an effective water strategy that gives clear guidance on what they would do if they did not have any water. Businesses need to consider the seriousness of what a lack of water would mean in practice. If you have no water then you can't flush your toilets at which point the local environmental health department will shut you down, whether you are a city bank or a small local newsagents, it makes no difference.

Water companies will be able to pick and choose to whom they supply, and they are likely to give preferential treatment to those businesses who have already begun to prepare and who can show that they already take water saving seriously.

- The 1991 Water Industry Act contains a whole section on leakage and wastage of water and gives water companies the right to cut businesses off if it thinks they are wasting water.

Businesses that have prepared themselves by enacting water efficiency measures are going to be best placed to manage the drought. A business is much more likely to maintain its water supply if it can show the water company that it has a track record of water saving measures such as installing low flow taps and showers, waterless urinals and other similar products as well as taking steps to reduce water wastage for example by installing leak detecting technology and smart water solutions.

13. Bill validation, savings, allowances and the retail market

Water bills tend to be complex with a range of charges and tariffs. Checking that your water bills are correct and accurate can generate immediate savings. The issues to check are:

Are the meter numbers right?
This sounds basic but you might be paying for someone else's water!

How often are your meters read?
They should be read twice a year but often meters remain unread for ages meaning you are paying an estimated bill, which could mean you are paying too much or paying too little and liable for a large charge.

Do you have the right non-return to sewer allowance?
Water companies assume that 90- 100% of the water you get goes down the sewer, but if you use water for irrigation or manufacturing you could have a lower charge and be due a refund.

Are your surface water drainage and highways charges right?
This varies between water company, but basically if you are in the Midlands or the North you pay drainage charges based on the impermeable area of your site. But if your roof or car park doesn't drain to the sewer you could get a huge discount on your bills.

Are your trade effluent charges correct?
Industrial and agricultural clients often have trade effluent, which is highly polluted waste water. Trade effluent charges are set for several years based on spot inspections, but often these are unrepresentative, and you may be being overcharged.

Do you claim leakage allowances?
If you have a water leak it's likely that the water is soaking into the ground rather than going into the sewer, therefore you are owed money back on your sewerage charge but often this is not claimed.

In addition to basic bill checking, companies may also be able to save by switching to a different water retailer. There is a competitive market for business water supplies and there are around 20 different retailers you can choose from with different tariffs and levels of services, shopping around could save you thousands a year.

14. Cutting water use by changing behaviour

Aguardio's Shower Sensor helps to reduce water consumption through behaviour change by direct interaction with the user. An average shower takes 7.1 minutes (average interval often 6-8 minutes). But even first 2-3 minutes of water flowing can be enough for the body to be clean. The shower sensor detects the exact bath time and displays it while you are in the shower.

UK universities like University of Surrey and Cranfield University have analysed the effect of the Shower Sensor on behaviour. The reporting shows that the showering time was reduced by 21.27% in tourism/hospitality and up to 30% in homes (even 33% in student accommodation), which means reduced shower durations of often 2-3 minutes when the solution is used as specified.

The data about shower behaviour (e.g. when and how being showered including shower duration, e.g. do people pause water while soaping/ using shampoo) and the development can be used for reporting, estimations of usage of water and energy from showering, following-up and changing behaviour further.

15. Encouraging staff to use less water

Optimizing water usage involves identifying inefficiencies, implementing water-efficient technologies, and training staff on best practices. Financial directors should collaborate with operational teams to identify areas for improvement and implement cost-effective solutions to reduce water consumption.

Engaging with stakeholders, including employees, suppliers, and customers, is essential for successful water conservation initiatives. Financial directors should communicate the business case for water conservation and enlist the support of stakeholders in implementing and sustaining water-saving practices.

16. Demonstrating the financial case for water saving technology

The washroom is one of the most intensive areas of water use so water-saving technologies such as waterless urinals, and low-flow sensor taps and showers can dramatically cut water use and associated bills. For example, in an Ecoprod survey, 75% of respondents reported savings on their water bill after fitting waterless urinals, cutting costs and allowing the initial expense of purchasing a waterless urinal to be paid back within as little as 4 ½ months.

So how can FDs prove the business case for a washroom refit?

16.1. Run a metered trial

The most accurate way to estimate return on investment (ROI) is to run a metered trial on the technology you are considering installing. This involves installing water meters in a single bathroom and measuring water use before and after the installation of water-saving equipment. The data can be used to calculate the likely ROI if the equipment were rolled out across your whole estate.

A trial in action

We recently ran a trial for a large chain of motorway service stations that was considering switching to low-flow sensor taps. We installed water meters in two banks of taps in one service station and measured hot and cold water consumption over 10 weeks – enough time to get an accurate measure of typical water use from which annual usage could be extrapolated. We then installed the low-flow taps and measured water use for another 10 weeks.

- **Before installation:** The site used 252 cubic metres of water over the first 10-week monitoring period.

- **After installation:** The site used 51m^3 in the second 10-week period – that's a reduction of almost 80 per cent.

The company was paying £1.70 per m3 for its water so the test showed it would save around £1,800 in a year from just one washroom. More savings were possible by reducing energy used to heat water used in hot taps, so we put meters on both the hot and cold supply. At the service station, the trial showed the water-saving taps would save an additional £1,467 in heating costs.

Rolled out across all washrooms in all sites, the savings ran to hundreds of thousands of pounds and the investment in low-flow taps paid for itself within 16 months, even taking into account the cost of installing the meters and running the trial.

16.2. An alternative to a trial run

You may not want to go to the expense of running a fully metered trial, particularly not if you have a smaller site with only a few washrooms. In that case, you can estimate ROI by using a spreadsheet to calculate likely savings. For example, to calculate the ROI of waterless urinals for your site you need to know:

- How many urinals you have on site
- How many times an hour they flush (four to six is typical)
- How many litres of water each flush uses (nine litres is typical)

From this you can calculate how many litres of water you are using in each urinal each year and, using the information on your water bill, work out the cost. Your supplier can tell you the cost of installing the waterless urinals, which then gives you all the information you need to estimate a fairly accurate ROI time frame. The same principle applies to estimating ROI on other products such as low-flow taps or digital showers.

16.3. What to expect from the analysis

Organisations tend to be really surprised by how much water they use, particularly when translated into financial savings. Water costs vary from region to region, but an average figure is £3 per m3. Switching to waterless urinals could, in a year, save you up to 100,000 litres of water per urinal and cut your water bill by about £300. A single low-flow sensor tap can save water worth £200 a year. Extrapolated across a large site with many taps and urinals, the savings can run into hundreds of thousands of pounds.

Overview of water saving products and solutions

Use the links below to find out more about the products and solutions mentioned in this white paper.

Urimat waterless urinals
CONTI+ sensor taps
miscea sensor taps
Aguardio shower sensor
CONTI+ low flow digital showers
Aguardio leak sensor and temperature monitoring
Aquality rainwater harvesting
Xeros washing machines
Water management strategy

Contact us to find out more

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